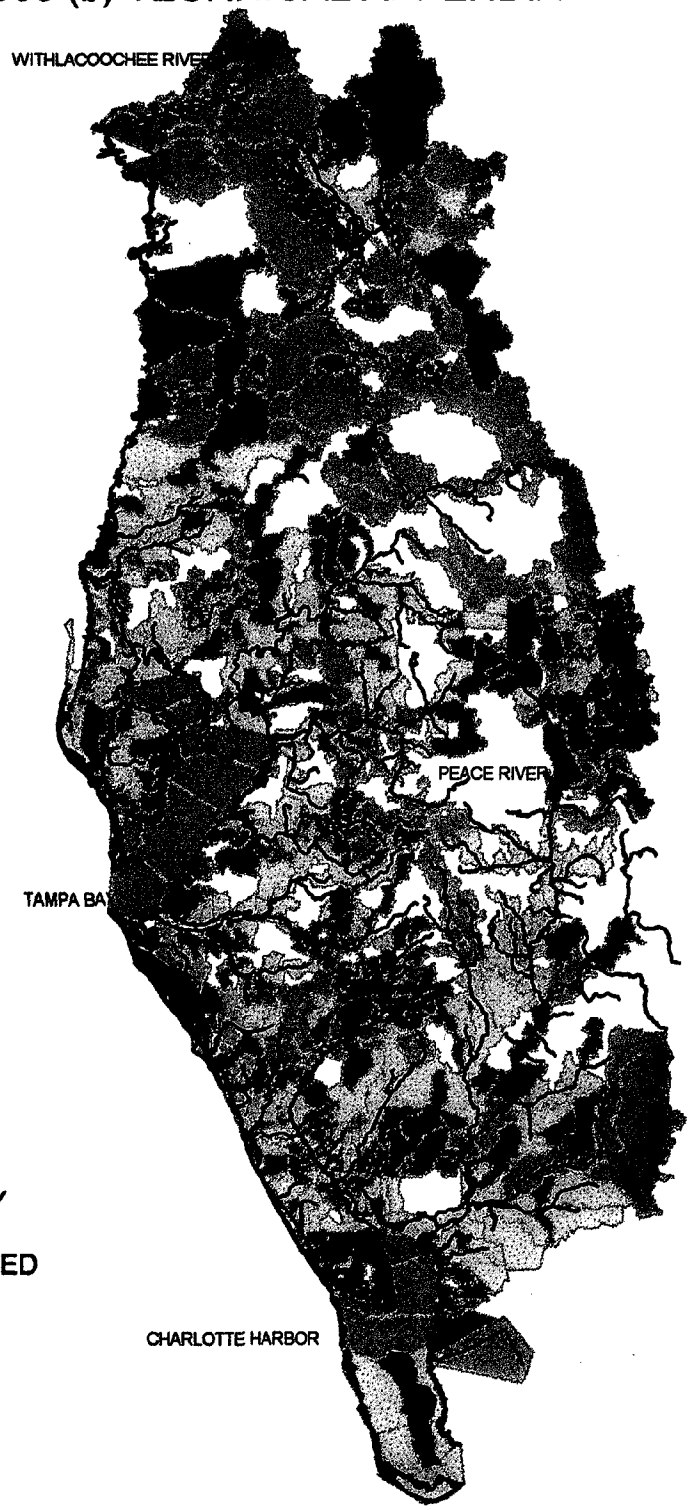
SOUTHWEST FLORIDA DISTRICT WATER QUALITY
1994 305 (b) TECHNICAL APPENDIX



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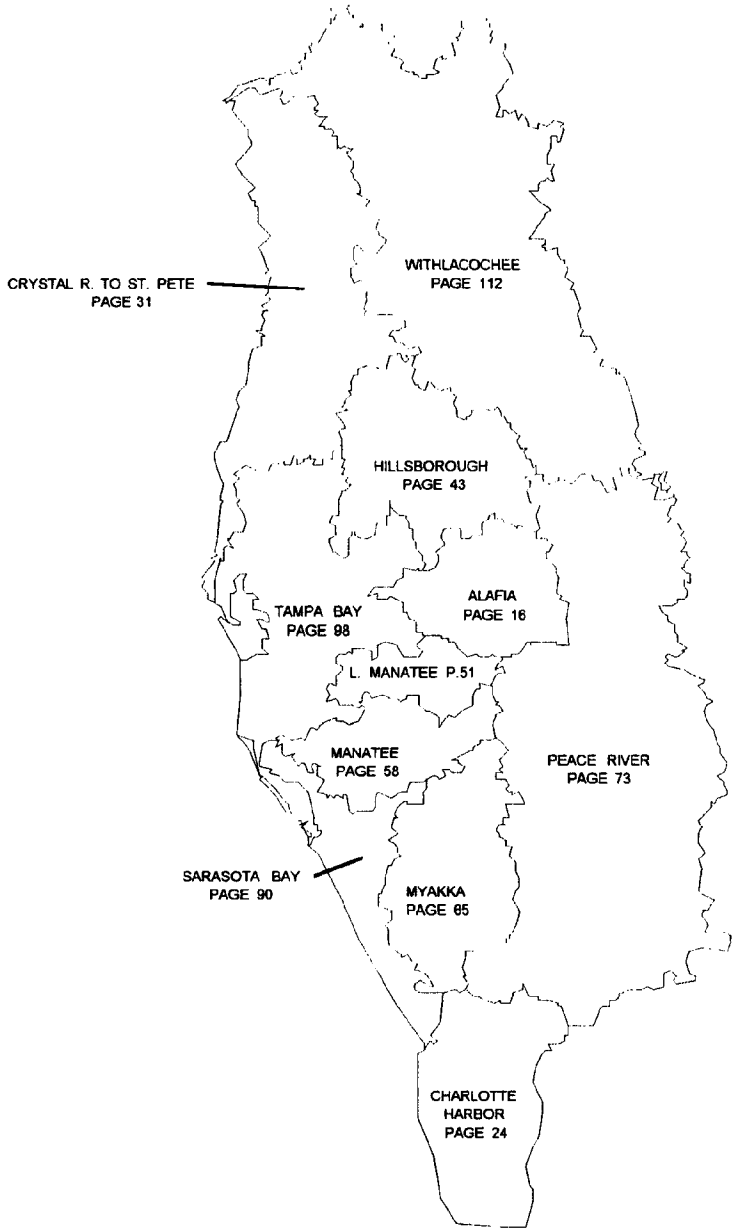
FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
NOVEMBER, 1994

TASK 4.1

INDEX TO RIVER BASINS



1994 WATER QUALITY ASSESSMENT FOR THE STATE OF FLORIDA

TECHNICAL APPENDIX

Submitted in accordance with the Federal Clean Water Act Section 305(b)

November, 1994

Standards and Monitoring Section
Bureau of Surface Water Management
Division Of Water Facilities

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PREFACE

This report is produced to inform Floridians and the EPA about surface water quality conditions and trends in Florida. Originally produced in 1978, this report has been updated every two years since, and has gone through many changes. The items listed below identify the major format changes which distinguish this report from its predecessor.

- **Regional Reports** - The large size of the statewide report (550 pages) necessitated its subdivision into 5 regional reports which correspond roughly with Department of Environmental Protection District Office boundaries (South and Southeast District Office reports are under one cover).
- **Watersheds versus Reaches** - In 1992 the State's rivers, lakes and estuaries were subdivided into 1600 'reaches' and the assessment was based on this reach structure, however much of the State's waters were not contained within the reaches. For 1994, the assessed area has been enlarged to cover the entire State by dividing the State into 4400 watersheds. The original 1600 reaches remain pretty much intact within the new watersheds, and the terminology now includes watershed and waterbody rather than reach.
- **ARC/INFO Water Quality Color Maps** - GIS techniques were used to produce color maps depicting water quality (designated use support) in each river basin. Watersheds were color coded based on good, threatened, fair or poor water quality designations.
- **New Nonpoint Source Qualitative Survey** - A nonpoint source qualitative survey was performed in 1988 and has been updated and included in this report for 1994. The survey used the same watersheds which were used to assess the water quality data and the qualitative results were integrated into this report to both supplement the quantitative information and to provide information when no quantitative information was available.
- **Current versus Historic Data** - Water quality data were examined for two time periods: current data from 1989-1993 and historic data from 1970-1988. Historic data were used to assess waterbodies only when there was no current data available.

ACKNOWLEDGMENTS

We would like to express our gratitude to all of the professionals that supplied us with water quality data and reports, responded to surveys, and answered telephone inquiries concerning the status of waterbodies in their area. The quality of this report has been greatly enhanced by their efforts.

Many individuals in the District Offices reviewed the report on their sections of the State. These individuals include Rick Bradburn, Glenn Butts, Donald Ray, and Tone Touart-Rohlke in the Northwest District; Cathy Krestalude, Ernie Frey, Lee Banks, Angela Halfacre, and Jim Wright of the Northeast District ; Eric Pluchino and Dave Herbster of the Central District; Paul Wierzbicki, Herb Zebuth, and John Moulton of the Southeast District; Gordon Romeis of the South District, and Pat Fricano of the Southwest District . Sid Flannery of the Southwest Florida Water Management District also reviewed the report for his area.

The Nonpoint Source Stormwater Section put in a tremendous amount of work on the 1994 Nonpoint Source Assessment Survey . This team included Kent Cain, Ellen McCarron, and Mike Scheinkman. Don Foose, recently retired from the USGS , spent four years delineating and digitizing the new watersheds. Bernadette Howe, formerly with the St. Johns River Water Management District, provided much of the foundation work on GIS techniques for handling watersheds and water quality data and mapping the information.

Several of the DEP Tallahassee staff are to be thanked for their support and review of the final document including Don Axelrad, Vivian Garfein, Mark Latch and Richard Harvey, and Machelle Jarmon, who produced numerous draft copies of this text.

List of Abbreviations

AWT	advanced wastewater treatment
BAS	DEP basin water quality study
BMPs	best management practices
BOD	biochemical oxygen demand
cfs	cubic feet per second
DEP	Department of Environmental Protection
DO	dissolved oxygen
EAA	Everglades Agricultural Area
EPA	Environmental Protection Agency
FGFWFC	Florida Game and Fresh Water Fish Commission
MGD	millions of gallons per day
NPDES	National Pollutant Discharge Elimination System
NPS	nonpoint source
NWFWMD	Northwest Florida Water Management District
OFW	Outstanding Florida Waters
REACH	an EPA-designated waterbody or portion of a waterbody
SFWMD	South Florida Water Management District
SJRWMD	St. Johns River Water Management District
SRWMD	Suwannee River Water Management District
STORET	EPA's water quality data STOrage and RETrieval system
SWFWMD	Southwest Florida Water Management District
SWIM	Surface Water Improvement and Management
TKN	total Kjeldahl nitrogen (organic nitrogen and ammonia)
TSI	trophic state index
WLA	wasteload allocation
WMD	Water Management District
WQI	water quality index
WWTP	wastewater treatment plant

EXECUTIVE SUMMARY/OVERVIEW

The 305(b) Technical Report provides useful surface water quality related information in a format that is helpful to managers, planners, permit staff, and laymen, as well as water quality experts. For each of the 52 basins, a narrative summary, a map, and data tables identify the quality and trends of Florida's waterbodies, the causes of water quality problems, and the present regulatory activities conducted by DEP and EPA to improve the problem areas. It is the most widely circulated water quality assessment in the State, and also serves as the support document for the Surface Water Section of the 1994 305(b) Water Quality Assessment Main Report submitted to EPA.

The assessment required analysis of the available STORET water quality data for the 1970-1993 time period (STORET is EPA's computerized water quality database). Data from approximately 4,000 stations are assessed in this report, necessitating the extensive use of computerized assessment techniques. Water quality assessment techniques used to identify problem areas included: water quality indices, screening level exceedances, statistical trend analysis, information from special studies, and interviewing local experts. The 305(b) assessment also includes information from the 1994 DEP Nonpoint Source Assessment Survey (which is based on the responses of 50 Florida agencies).

Statewide Results From the Main Report

In the 1992 305(b) assessment report, Florida was subdivided into 1600 reaches which were based on EPA's RF2 (river reach file #2). A reach was defined as a 5 mile long section of river, or 5 square mile section of lake or estuary. Only major waterbodies were assessed in the 1992 report due to the resolution limitations imposed by the RF2 file. For 1994, Florida has been subdivided into 4400 watersheds based on EPA's RF3 and USGS watershed delineations. Many more miles of Florida waterbodies were assessed (50% more river miles, 30% more lake miles, and 20% more estuary miles) due to the increased number of watersheds available for assessment and due to efforts to collect more ambient data and store the data into STORET. Table 1 and Figure 1 show the mileages of Florida waters which were assessed in this year's report. A striking feature shown in Figure 1 is that 77% of river miles have unknown quality. This large percentage is due to the fact that EPA classified Florida's many ditches and canals as rivers, which were not assessed in this report.

A quantitative summary of the State's water quality was accomplished by determining the degree of designated use support for the different waterbody types. The vast majority of assessed Florida waterbodies meet or partially meet their designated use (92% of the river miles, 81% of the lake miles, and 96% of the estuary miles). Figure 2 shows that the river and estuary results are fairly similar, however the lake results show generally worse overall quality than the rivers and estuaries with fewer miles in the "meets use" category and more miles in the "does not meet use" category. Interestingly enough, this year's lake assessment brought in many more small lakes with good overall quality, however, Florida's largest lakes (Lake Okeechobee and Lake George) still overwhelm the State average with their large mileages of fair to poor quality.

It is very important to address both the sources of pollution and trends in water quality. In the past, the majority of identified water quality problems in the State were caused by point sources, including both domestic and industrial sources. Recently, however, nonpoint sources accounted for the majority of Florida's water quality problems. This is due to the fact that point source treatment processes have improved while there has been an increase in acreage of agricultural and urban developed land and their associated runoff.

Water quality trend analysis was performed on waterbodies which had sufficient data for analysis (467 out of 4400 waterbodies). The majority (70%) of these waterbodies (as seen in Figure 3) exhibited no significant trends. Five times as many waterbodies (24%) have improving water quality trends as have degrading trends. The improved water quality trends were generally the result of wastewater treatment plant upgrades or the additions of new regional WWTPs and nonpoint source controls in Tampa, Orlando and several other cities (as seen in Figure 4). Five percent of the waterbodies assessed for trends showed degrading trends; however, there are no regional patterns for degrading trends similar to the improving trends. The causes of degrading trends included point sources and nonpoint sources. Statewide trend detection is limited for the following reasons:

1. Only one-tenth of the waterbodies are assessed for trends.
2. The primary focus of our monitoring network is not trend assessment; most of our stations are frequently moved, and there are very few sites with long-term, monthly data.
3. Our trend assessment technique is tailored to the problem identified in #2, thus, it only identified relatively drastic changes in water quality. Subtle water quality changes due to population growth or nonpoint source treatment improvements are not picked up by this analysis.

Table 1. Mileages of Florida Waters Assessed

	Monitored 1.	Evaluated 2.	Unknown 3.	Total
River (miles)	7,025	4,855	39,978 2.	51,858
Lake (sq. miles)	1,541	400	124	2,064
Estuary (sq. miles)	2,417	1,290	347	4,054

1. Monitored data includes 1989-1993 STORET data.
2. Qualitative information or older STORET data (1970-1988)
3. This number includes 25,909 miles of ditches and canals which have not been assessed.

Table 2. Overall Designated Use Support Summary

RIVERS	(All size units in Miles)		
Degree of use support	Evaluated	Monitored	Total
Fully Supporting	1116	4378	5495
Supporting but Threatened	2259	0	2259
Partially Supporting	1139	2093	3232
Not Supporting	342	554	895
Total Size Assessed	4856	7025	11881

LAKES	(All size units in Square Miles)		
Degree of use support	Evaluated	Monitored	Total
Fully Supporting	213	494	707
Supporting but Threatened	100	0	100
Partially Supporting	53	714	766
Not Supporting	34	332	366
Total Size Assessed	400	1541	1940

ESTUARIES	(All size units in Square Miles)		
Degree of use support	Evaluated	Monitored	Total
Fully Supporting	501	1427	1928
Supporting but Threatened	402	0	402
Partially Supporting	358	851	1209
Not Supporting	28	139	167
Total Size Assessed	1290	2417	3707

Evaluated means qualitative information or older STORET data (1970-1988).
Monitored means recent STORET data (1989-1993).

FIGURE 1. MILES MONITORED, EVALUATED AND UNKNOWN

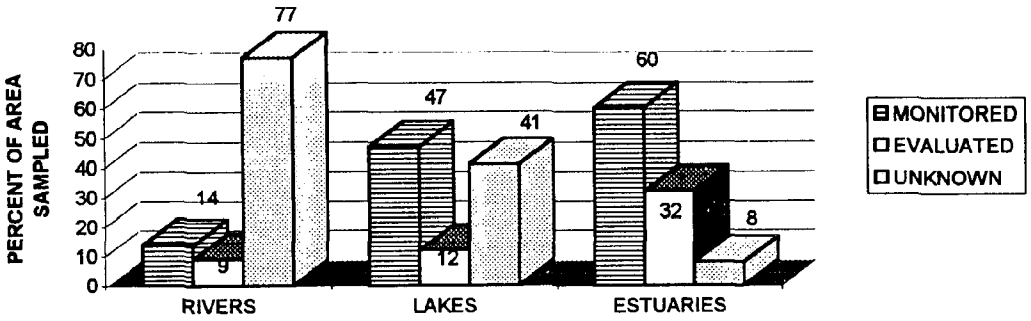


FIGURE 2. DESIGNATED USE SUPPORT IN FLORIDA WATERBODIES

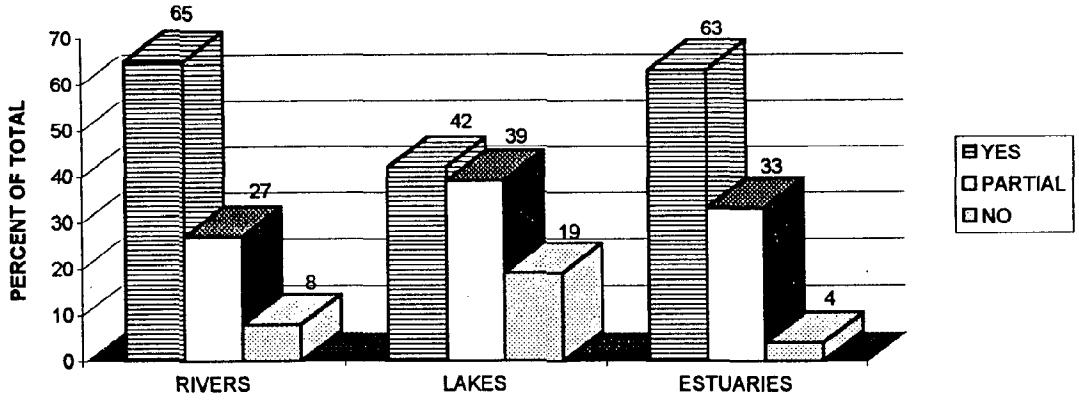
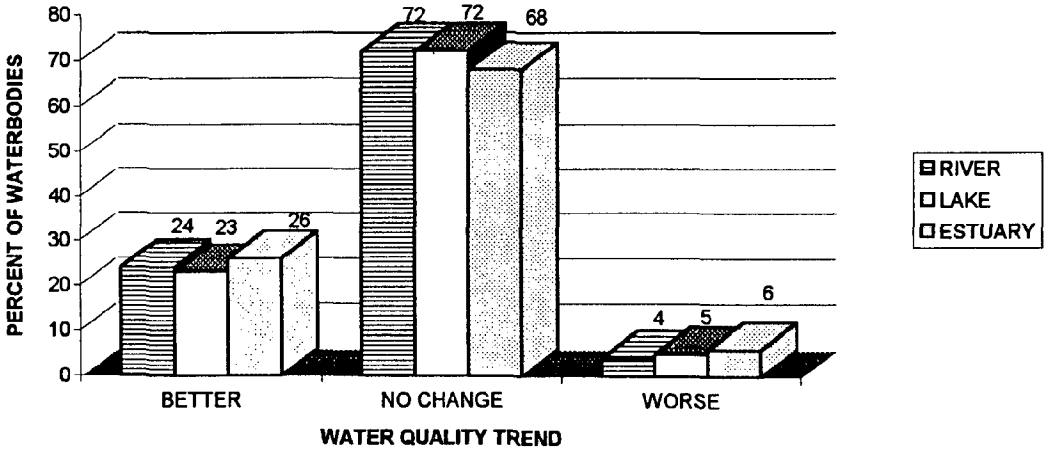
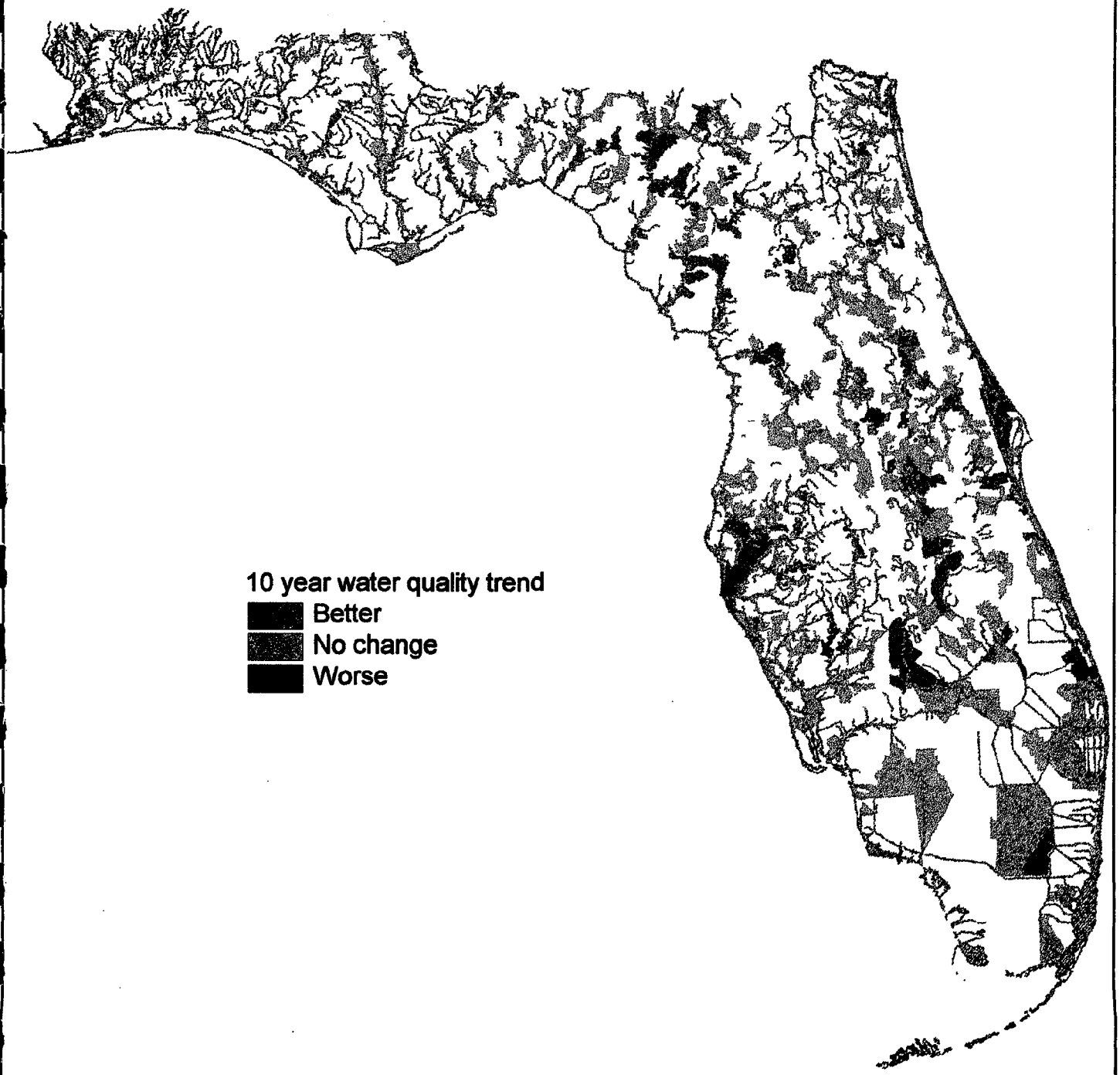


FIGURE 3. TEN YEAR WATER QUALITY TREND ANALYSIS FOR FLORIDA WATERBODIES (1984-1993)



Ten Year Florida Water Quality Trends (1984-1993)



Florida's surface water quality is displayed on the map on the cover of the main report. Two important conclusions can be drawn from this figure: first, the majority of Florida's surface water has good quality; and second, the majority of problems are found in Central and South Florida.

The sparsely populated northwest and west-central sections of the State have relatively better water quality than other areas. Water quality problem areas in the State are evident around the densely populated, major urban areas including: Jacksonville, Orlando, Tampa, Pensacola, the Cape Kennedy area and the southeastern Florida coast. Other areas of poor water quality, not associated with population, are found in basins with intense agricultural usage.

Pollution sources and problems in Florida are varied. The State does not have extensive industrialization, but rather localized concentrations of heavy industry centered mostly in urban areas. Many of the problems found in surface waters in urban areas can be attributed to industrial discharges. Silviculture, agriculture and various types of animal husbandry are a large part of Florida's current and historical economy. Furthermore, Florida has undergone rapid population growth over the past two decades and this continues. This has resulted in more pollution sources associated with residential development.

Florida's major surface water quality problems can be summarized into five general categories :

1. Urban Stormwater. Stormwater carries a wide variety of pollutants from nutrients to toxicants. Siltation and turbidity associated with construction activities can also be a major problem. Problem areas are concentrated around urban centers and mirror, quite well, the population map of the State. Current stormwater rules and growth management laws address this problem for new sources, but are difficult to monitor and enforce.

2. Agricultural Runoff. The major pollutants involved include nutrients, turbidity, BOD, bacteria and herbicides/pesticides. These pollutants generally do their worst damage in lakes and slow moving rivers and canals, and sometimes, the receiving estuary. Problems are concentrated in the central and southern portions of the State, and in several of the rivers entering the State from the north. Traditionally, agricultural operations have had far more lenient regulation than point sources; however, there is increasing recognition of the need for improved treatment of runoff water.

3. Domestic Wastewater. This is an area that has shown significant improvement in the last decade. Most of the waterbodies with improving water quality trends can be traced to wastewater treatment plant (WWTP) upgrades. Further advancements are being encouraged with design innovations such as wastewater discharge to wetlands, water reuse and advanced treatment. Still, a problem exists in the rural areas of the State where financial and technological resources are limited. Consequently, several of these poorly operating facilities are polluting some of Florida's relatively pristine natural waterbodies. Also, septic tank leachate contributes to the degradation of many of Florida's waterbodies.

4. Industrial Wastewater. Most notable among these are the pulp and paper mills. Because of the volume and nature of their discharge, all of the pulp and paper mills operating in the State seriously degrade their receiving waters. The phosphate and fertilizer industries are

major pollution sources (both point and nonpoint) in several of Florida's surface water basins. In addition, the mining of phosphate causes surface water hydrological modifications and major land use disturbances.

5. Hydrological Modifications. This can take the form of damming running waters, channelizing slow moving waters, or dredging, draining and filling wetlands. Such modifications are not strictly pollution sources. However, in most cases where the natural hydrological regime was modified (mostly for water quantity purposes) water quality problems have ensued. Rating the effect of hydrologic modification is difficult. Dredge and fill activities result in a loss of habitat. Disruption of wetlands with a resultant net loss of area reduces the buffering and filtering capacities and biological potential of wetlands. This is a particularly important problem in estuaries. The loss of seagrasses and other marine habitats can seriously affect the maintenance of a viable fishery.

The assessment of public health and aquatic life impacts uncovered several areas of concern. Many of these problems are associated with estuaries and are of a persistent nature. Fish with Ulcerative Disease Syndrome are still present in the lower St. Johns River. This problem was first identified in the early to mid-80s. Second, major fish kills (as many as 1 million fish) occurred in the Pensacola Bay system over the past two years. The more massive of these kills occurred in Bayou Chico. Bacterial contamination in the water and contaminated sediments of the Miami River threaten Biscayne Bay. Many urban estuaries throughout the State have elevated levels of metals and organic contaminants in their sediments. Examples are Tampa Bay, St. Johns River Estuary and Pensacola Bay. The continued loss of fishery habitat from dredge and fill and construction activities is a threat to the maintenance of a viable fishery. The extensive die off of mangroves and seagrasses and algal blooms in Florida Bay are an important State concern. The probable cause is the extensive channelization and hydrological modification of the bay's watershed exacerbated in recent years by a lack of flushing from hurricanes, high water temperature and high salinity.

On the positive side, seagrasses have increased in area in Tampa Bay and there has been an improvement in water quality in Hillsborough Bay.

Three other problems exist which are also of a persistent nature, but largely impact fresh water systems. First, fish consumption advisories for largemouth bass continue to be issued because of elevated mercury concentrations in their tissue. Second, a no fish consumption advisory has been issued for the Fenholloway River. Elevated levels of dioxin were found in fish from this stream. This waterbody receives effluent from a pulp mill. The third problem is the coliform bacteria contamination of the Miami River. Sources of this contamination are illegal sewer connections to the stormwater pipe system, leaking or broken sewer lines, and direct discharges of raw sewage when pump stations have exceeded their capacity. During acute contamination events (direct discharge of sewage) coliform bacteria counts in the Miami River and adjoining waters of Biscayne Bay are hundreds of times higher than State criteria. Efforts are being made by the City of Miami and Dade County to correct these problems.

Southwest Region Basin-by-Basin Evaluation of Water Quality

The quality of Florida waters is graphically depicted on basin maps which follow each basin description. Areas of good, fair, and poor quality are readily discernible on these maps. The following is a summary of the status of the quality of waters in southwest Florida:

This area of the State has many good water quality coastal rivers, often with significant spring flow. The major pollution sources are associated with urbanization around Tampa and phosphate mining and processing operations.

The rivers along the west coast of Florida from Waccasassa River to the Anclote River are mostly small, spring-fed streams and generally have good water quality. However, problems of high nutrient inputs and high bacterial counts exist for many of these rivers. High total coliform counts in the Weeki Wachee River resulted in the closure of Rodgers Park to swimming. The only large river basin in this stretch of the west coast, the Withlacoochee River, originates in Green Swamp, but also has significant ground water inflow. This basin generally has good water quality.

The upper portion of Boca Ciega Bay and its tributaries have fair to poor water quality. Water quality problems are caused by runoff and wastewater discharges. The Hillsborough River has a considerable number of problems in its upper reaches and tributaries to these reaches. Pollution sources in the upper basin and tributaries include citrus processing, wastewater discharge, and construction and agricultural runoff. The lower portion of the Hillsborough River has been dammed to form a drinking water reservoir. The reservoir has frequent algal blooms and occasional fish kills due to low DO. The estuarine portion of the Hillsborough River is degraded by urban runoff from Tampa and severe bank modification (sea walls). Lake Thonotosassa, in the Hillsborough River Basin, receives excess nutrient loads from streams entering it. These loads have caused algal blooms and fish kills. This lake is a SWIM priority waterbody.

The Alafia River is degraded by phosphate mining activities in the eastern portion of its basin. The surficial aquifer is degraded by seepage from gypsum stacks and this seepage enters the Alafia. The upper Alafia's reaches are particularly heavily impacted. Sources of pollutants to these two waterbodies are point source discharges, runoff from mined and barren lands, and spills originating from clay settling ponds. The lower Alafia River has elevated nutrient levels, low DO, and on occasion, fish kills and algal blooms. Radium levels in this river are some of the highest found in streams on the west coast of Florida. The biological and water quality degradation and recent improvement of the Tampa Bay system have been documented. Causes for this degradation have been identified as loss of vegetation in coastal areas, dredge and fill activities, destruction of submerged habitat and increased pollutant loading. Sources of pollution are wastewater discharges, stormwater runoff, spills and wash off at fertilizer loading docks, and oil,

grease, and fuel from the shipping industry. Tampa Bay is part of the National Estuary Program. A plan has been designed and is beginning to be implemented to improve conditions in the bay.

Tampa Bay also receives water from the Hillsborough, Manatee, Little Manatee, and Alafia Rivers. These rivers can also contribute nutrients or toxics to the bay in addition to point and nonpoint sources located around the bay. Hillsborough and Old Tampa Bays, have historically had eutrophication problems. Trends in Hillsborough Bay indicate that conditions are improving.

The Sarasota Bay basin has fair to good water quality. The major pollution sources are urban runoff, which affects both the tributaries and the bay, historical WWTP discharges, and septic tanks. Actions have been taken to upgrade WWTP to advanced treatment. Sarasota Bay is also part of the National Estuary Program. Studies have been initiated to address the problems of the bay.

The Peace River has several problems, most of which originate in the upper reaches of the system. Tributaries to the upper Peace River originate from lakes which have eutrophic conditions. Sources of discharge to the upper Peace River include phosphate mining, fertilizer and other chemical manufacturing, discharge from WWTP, citrus processing, and runoff from agriculture and urban areas. Water quality in the middle and lower Peace River improves although it still has very high phosphorus values. Unmined tributaries are important sources of high quality water and benthic fauna for recolonizing the main channel when it becomes stressed.

Many of the lakes in this basin have poor water quality. Banana Lake is considered to be the most polluted lake in the State. Sources of pollution to these lakes are historical direct discharges from WWTP, runoff from agricultural activities and phosphate mining, and industrial effluent discharges.

The Myakka River has good water quality although it has naturally low DO concentrations from swamp drainage and has nutrient loading from agricultural runoff and natural phosphate rich soils. The river is impounded in its middle reach to form upper and lower Lake Myakkas. The upper lake is eutrophic with dense growth of hydrilla and hyacinth.

The Charlotte Harbor Estuary system generally has good water quality. Phosphorus loading can be high as a result of contributions from the Peace River, which is affected by phosphate mining, and from the Myakka and Caloosahatchee Rivers' nonpoint source nutrient loading. The harbor is affected by urbanization, but still supports a healthy estuarine habitat.

INTRODUCTION AND METHODS

This section describes the water quality assessment procedures used by the Bureau of Surface Water Management to prepare the 1994 Florida Water Quality Inventory [305(b)]. The procedures are:

1. Divide State into Assessment Watersheds.
2. Inventory STORET data.
3. Calculate Stream Water Quality Index (WQI).
4. Calculate Lake/Estuary Trophic State Index (TSI).
5. Apply Screening Levels.
6. Conduct Trend Analysis.
7. Conduct Toxic Pollutant Assessment.
8. Conduct Nonpoint Source Assessment.

Florida's 52 major river basins were subdivided into 4400 watersheds of approximately five square miles each. The predominate waterbody within each watershed was identified and classified as a lake, stream, or estuary. Each watershed and its waterbody formed an assessment unit and all water quality stations within the watershed were aggregated as if they were from the same site (the stations were screened for unwanted sites, such as, point source discharge sites). A water quality inventory was performed on EPA's STORET database. The inventory included the years 1970 through 1993 and was classified as recent (1989-1993) or historic (1970-1988). Tables of water quality data were prepared for each of Florida's 52 basins. Three procedures were then used to assess the water quality data. A Water Quality Index was calculated to determine the overall quality of Florida streams and rivers. The Water Quality Index summarizes information from six categories including water clarity (turbidity and total suspended solids), dissolved oxygen, oxygen demanding substances (biochemical oxygen demand, chemical oxygen demand, and total organic carbon), nutrients (total nitrogen and total phosphorus), bacteria (total coliform and fecal coliform), and macroinvertebrate diversity index (based on natural substrate samples, artificial substrate samples and Beck's Biotic Index). The water quality of lakes and estuaries is described by the Trophic State Index which is a measure of the potential for algal or aquatic weed growth. The components which make up the Trophic State Index include total nitrogen, total phosphorus, chlorophyll and Secchi depth. Screening levels for 19 water quality parameters were also used to determine the quality of Florida lakes, estuaries and streams.

The water quality indices and screening levels have all been tailored to Florida's water quality by using the actual distribution of Florida data to determine the water quality criteria used by the procedures. Specific information on each of the procedures is described in the following sections.

Watershed as the Assessment Unit

In the 1992 305(b) assessment report, Florida was subdivided into 1600 reaches which were based on EPA's RF2 (river reach file #2). A reach was defined as a 5 mile long section of river, or 5 square mile section of lake or estuary. Only major waterbodies were assessed in the 1992 report due to the resolution limitations imposed by the RF2 file. For 1994, Florida has been subdivided into 4400 watersheds based on EPA's RF3 and USGS watershed delineations. The original 1600 reach delineations have been kept intact, however, many additional watersheds have been added due to the increased resolution of RF3 and the USGS watersheds which cover the entire State. USGS was contracted to develop useable, small watersheds (approximately 5 square miles) using watershed boundaries identified on USGS topological maps and ARC/INFO GIS techniques. USGS completed 75% of the State, but unfortunately they did not delineate watersheds in south Florida (USGS subregion 0309) . Watersheds for South Florida were adapted from a much coarser delineation developed by the South Florida Water Management District. The resulting watersheds in this area are about 50 square miles each, ten times larger than those for the rest of the State.

The major waterbody within each watershed was identified and named. Usually each watershed encompassed one major or one minor named waterbody (similar to the 1992 reach structure). The length of each stream waterbody and the area of lake and estuary waterbodies is essential information. The length of stream waterbodies was determined by GIS measurements of the RF3 trace (or assigned a length of 5 miles if no RF3 trace was available). The area of lake and estuary waterbodies was determined with crude GIS aerial measurement techniques (if estuary waterbodies had no RF3 traces, their area was set to 5 square miles and unknown lake waterbodies were assigned an area of 1 square mile). The water quality within each waterbody is assumed to be homogenous (if data prove this assumption to be wrong, then the waterbody was subdivided). GIS techniques were used to assign STORET sites to their respective watersheds and the location of each site was visually inspected on a GIS map. If more than one named waterbody showed up in a watershed (based on the STORET data within a watershed), then the watershed was subdivided.

Inventory of STORET Data

An inventory of data was retrieved from STORET for the 1970-1993 time period. If data within a watershed were available for the current time period (defined as 1989-1993), then historical data was not examined, except for trend analysis. If no current data were found, then historic data (defined as 1970-1988) were used for the assessment. Fifty STORET parameter codes representing 21 different water quality parameters were inventoried (Table 3). There are about 8000 Florida stations in STORET which were sampled in 1970-1993. These stations are located in 1500 of the 4400 watersheds. Annual average (median) water quality was calculated for each of these stations and the data were stored on a local IBM Personal computer. In order for an annual average to be calculated for a station, the station had to be sampled at least twice within each year. STORET remark

Table 3. Storet Water Quality Assessment Parameters.

Category	Storet Parameter	Name	Storet Parameter Code
Coliform	Fecal Coli	MPN-FCBR/100ml	31616
Coliform	Fecal Coli	MPNECMED/100ml	31615
Coliform	Total Coli	MGIMENDO/100ml	31501
Coliform	Total Coli	MPN CONG/100ml	31505
Conductivity	Conductivity	at 25c micromho	95
Conductivity	Conductivity	Field micromho	94
Dissolved Oxygen	Dissolved Oxygen	% saturation	301
Dissolved Oxygen	Dissolved Oxygen	mg/l	300
Dissolved Oxygen	Dissolved Oxygen	Probe mg/l	299
Diversity Index	Biotic Index	BI	82256
Diversity Index	Diversity Index	Artificial substrate	82251
Diversity Index	Diversity Index	Natural substrate	82246
Flow	Stream Flow	cfs	60
Flow	Stream Flow	inst.-cfs	61
Oxygen Demand	BOD 5 day	mg/l	310
Oxygen Demand	COD Hi Level	mg/l	340
Oxygen Demand	Tot Organic Carbon	C mg/l	680
pH-Alkalinity	pH SU		400
pH-Alkalinity	pH SU	lab	403
pH-Alkalinity	Total Alkalinity	CaCO3 mg/l	410
Temperature	Temperature Water	cent	10
Trophic Status	Chlorophyll A	mg/l	32230
Trophic Status	Chlorophyll A	mg/l	32217
Trophic Status	Chlorophyll A	mg/l	32210
Trophic Status	Chlorophyll A	mg/l corrected	32211
Trophic Status	Chlorophyll Total	mg/l	32234
Trophic Status	Chlorophyll	total ug/l	32216
Trophic Status	Nitrogen ammonia	Diss-NO2 mg/l	71846
Trophic Status	Nitrogen NH3+NH4-	N Diss mg/l	608
Trophic Status	Nitrogen NH3_NH4-	N total mg/l	610
Trophic Status	Nitrogen Nitrate	Diss-NO3 mg/l	71851
Trophic Status	Nitrogen Nitrate	Tot-NO3 mg/l	71850
Trophic Status	Nitrogen NO2&NO3	N-Diss mg/l	631
Trophic Status	Nitrogen NO2&NO3	N-Total mg/l	630
Trophic Status	Nitrogen NO3-N	Diss mg/l	618
Trophic Status	Nitrogen NO3-N	Total mg/l	620
Trophic Status	Nitrogen Org N	N mg/l	605
Trophic Status	Nitrogen Tot Kjel	N mg/l	625
Trophic Status	Nitrogen Total N	As NO3 mg/l	71887
Trophic Status	Nitrogen Total N	N mg/l	600
Trophic Status	Phosphorus	OrthoPO4 mg/l	660
Trophic Status	Phosphorus Total	As PO4 mg/l	71886

Table 3. Storet Water Quality Assessment Parameters (continued).

Category	Storet Parameter	Name	Storet Parameter Code
Trophic Status	Phosphorus Total	mg/l P	665
Trophic Status	Transparency	Secchi Inches	77
Trophic Status	Transparency	Secchi Meters	78
Water Clarity	Color	PT-CO Units	80
Water Clarity	Color-AP	Pt-CO Units	81
Water Clarity	Residue Tot NFLT	mg/l	530
Water Clarity	Turbidity	JKSN JTU	70
Water Clarity	Turbidity	TRBIDMTR HACH FTU	76

codes also present a problem in data analysis when a data value is recorded as "less than" the actual value reported. In these cases the reported value was multiplied by 0.5 to adjust for the "less than" condition. Data with STORET remark codes indicating that the reported value was "greater than" the actual value were dropped from further analysis. A Water Quality Index value was calculated for each stream/river annual median and a Trophic State Index value was calculated for each lake/estuary annual median.

Florida Stream Water Quality Index Procedure

To assess Florida stream water quality, a Florida stream Water Quality Index (WQI) was developed and first used in the 1988 305(b) report. The WQI is based on the quality of water as measured by six water quality categories (water clarity, dissolved oxygen, oxygen demanding substances, bacteria, nutrients and biological diversity). Each category may have more than one parameter as shown in Table 4. Raw (annual average) data are converted into index values which range from 0 to 99 for the six categories. Index values correspond to the percentile distribution of stream water quality data in Florida (Table 4). [The percentile distribution of STORET water quality data were determined in 1987 for 2,000 ambient, stream STORET locations in Florida.] For example, Table 4 shows the BOD concentrations ranged from 0.8 mg/l (10 percentile) to 5.1 mg/ (90 percentile) with a median value of 1.5 mg/l (50 percentile). A BOD concentration of 0 to less than 0.8 mg/l is assigned an index value of 0 to 9, etc.

The overall WQI is the arithmetic average of the six water quality index categories. The index for each category is determined by averaging its component parameter index values. Missing water quality parameters and missing water quality categories are ignored in the final calculation. Therefore, the final WQI is based on an average of anywhere from 1 to 6 water quality index categories. Table 5 shows an example calculation of the WQI. The WQI can be calculated from just one index category; however, it becomes more reliable as more categories are used in its calculation.

In order to determine the range of values of the WQI which correspond to good, fair and poor quality, the WQI was correlated with the EPA National Profiles Water Quality Index for Florida data. (The EPA WQI was used in the 1986 305(b)). Based on this correlation, the cutoff values for the WQI were determined as follows: 0 to less than 45 represents good quality, 45 to less than 60 represents fair quality, and 60 to 99 represents poor quality.

The Florida stream Water Quality Index has several advantages over indices used previously. First, the index is tailored to Florida water quality data, since it is based on the percentile distribution of Florida stream data. Second, it uses the water quality categories which are felt to be the most important measures of water quality in Florida: water clarity, dissolved oxygen, oxygen demanding substances, nutrients, bacteria and biological diversity. Third, it is simple to understand and calculate and does not require a mainframe computer or any complex data transformations or averaging schemes. Finally, the index

Table 4. Florida Stream Water Quality Index Criteria.
Percentile Distribution of STORET Data.

Parameter	Unit	Best Quality			Median Value				Worst Quality	
		10%	20%	30%	40%	50%	60%	70%	80%	90%
** Category: Water Clarity										
Turbidity	JTU	1.50	3.00	4.00	4.50	5.20	8.80	12.20	16.50	21.00
Total Suspended Soldis	mg/l	2.00	3.00	4.00	5.50	6.50	9.50	12.50	18.00	26.50
** Category: Dissolved Oxygen										
Dissolved Oxygen	mg/l	8.00	7.30	6.70	6.30	5.80	5.30	4.80	4.00	3.10
** Category: Oxygen Demand										
Biochemical Oxygen Demand	mg/l	0.80	1.00	1.10	1.30	1.50	1.90	2.30	3.30	5.10
Chemical Oxygen Demand	mg/l	16.00	24.00	32.00	38.00	46.00	58.00	72.00	102.00	146.00
Total Organic Carbon	mg/l	5.00	7.00	9.50	12.00	14.00	17.50	21.00	27.50	37.00
** Category: Nutrients										
Total Nitrogen	mg/l as N	0.55	0.75	0.90	1.00	1.20	1.40	1.60	2.00	2.70
Total Phosphorus	mg/l as P	0.02	0.03	0.05	0.07	0.09	0.16	0.24	0.46	0.89
** Category: Bacteria										
Total Coliform	#/100 ml	100.00	150.00	250.00	425.00	600.00	1100.00	1600.00	3700.00	7600.00
Fecal Coliform	#/100 ml	10.00	20.00	35.00	55.00	75.00	135.00	190.00	470.00	960.00
** Category: Biological Diversity										
Diversity Index Nat. Substrate	Index	3.50	3.10	2.80	2.60	2.40	2.15	1.95	1.50	1.20
Diversity Index Art. Substrate	Index	3.55	3.35	3.20	3.05	2.90	2.65	2.40	1.95	1.35
Beck's Biotic Index	Index	32.00	28.00	23.00	18.50	14.00	11.00	8.00	5.50	3.50

Table 5. An Example Calculation of the Florida Stream Water Quality Index (WQI).

Water Quality Category[1]	Water Quality Parameter[2]	Value[3]	Parameter Index Value[4]	Index Average[5]
Water Clarity	Turbidity	3.9 mg/l	29	40
Water Clarity	Total Suspended Solids	7.0 mg/l	52	
Dissolved Oxygen	Dissolved Oxygen	5.4 mg/l	58	58
Oxygen Demanding Substances	BOD	2.8 mg/l	75	
Oxygen Demanding Substances	COD	31.0 mg/l	29	52
Oxygen Demanding Substances	TOC	.	--	
Nutrients	Total Nitrogen	1.87 mg/l	77	79
Nutrients	Total Phosphorus	0.56 mg/l	82	
Bacteria	Total Coliform	1800 MPN/100 ml	71	70
Bacteria	Fecal Coliform	1900 MPN/100 ml	70	
Macroinvertebrate Diversity	Natural Substrate	1.7	76	
Macroinvertebrate Diversity	Artificial Substrate	2.3	72	69
Macroinvertebrate Diversity	Beck's Biotic Index	11.0	60	
				WQI = 61[6]

[1] - These are the 6 water quality categories.
[2] - These are the 13 water quality parameters which make up the 6 categories.
[3] - These are the actual data values ('.' indicates no measurement was taken for this parameter).
[4] - The index value is based on the percentile distribution values shown in Table 4.
[5] - The category average is based on an average of each of the water quality parameter values.
[6] - The WQI is an average of the category index values, i.e., WQI = (40+58+52+79+70+69)/6=61.

works; it nicely identifies areas of good, fair, and poor water quality that correspond to professional and public opinion.

A toxic pollutants category would be a valuable addition to the index; however, toxic pollutants were not included in the index since there is relatively little data in Florida (compared to the amount of data for conventional pollutants). Toxic pollutants were assessed separately as discussed later in this section of the report.

Trophic State Index Procedure

The Trophic State Index procedure provides an effective method of classifying lakes based on the lake's chlorophyll, Secchi depth, nitrogen and phosphorus concentrations. The index was developed in 1982 in response to the EPA Clean Lakes Program and is documented in the Classification of Florida Lakes Report by the University of Florida, Department of Environmental Engineering Sciences. This index remains unchanged from the 1988 305(b) report.

The index is based on a trophic classification scheme developed in 1977 by R.E. Carlson. It relies on three trophic indicators to describe the trophic status of a lake. The goal was to have each indicator relate to algal biomass such that a 10 unit change in the index would represent a doubling or halving of algal biomass. Carlson developed indices based on Secchi disc transparency, chlorophyll concentration and total phosphorus concentration. The Florida Trophic State Index (TSI) is based on the same rationale, but also includes total nitrogen concentration as a fourth index. Criteria were developed for Florida lakes from a regression analysis of data on 313 Florida lakes. The desirable upper limit for the index is set at 20 ug/l chlorophyll which corresponds to an index of 60. Doubling the chlorophyll concentration to 40 ug/l results in an index increase to 70 which is the cutoff for undesirable (or poor) lake quality. Index values from 60 to 69 represent 'fair' water quality. The criteria for chlorophyll, Secchi depth, total phosphorus and total nitrogen concentrations are shown in Table 6.

A nutrient index is also calculated based on phosphorus and nitrogen concentrations and the limiting nutrient concept. The limiting nutrient concept identifies a lake as phosphorus limited if the nitrogen to phosphorus concentration ratio is greater than 30, as nitrogen limited if the ratio is less than 10, and balanced (depending on both nitrogen and phosphorus) if the ratio is 10-30. Thus, the nutrient TSI is based solely on phosphorus if the ratio is greater than 30, solely on nitrogen if less than 10, or based on both nitrogen and phosphorus if the ratio is between 10 and 30. An overall index (TSI) is calculated based on the average of the chlorophyll TSI, the Secchi depth TSI and the nutrient TSI. For this index to be calculated, both nitrogen and phosphorus measurements are required for the sample. The lake trophic state index was also applied to Florida estuaries to describe estuarine water quality. The criteria for the estuary quality ratings is 10 less than the lake ratings (i.e., good estuarine water quality is a TSI value of 0-49, fair quality is 50-59, and poor quality is a value of 60-100). Table 7 shows an example TSI calculation.

Screening Levels

Screening levels were used to determine water quality problems caused by each of nineteen water quality parameters (Table 8). Screening levels were based on either Florida criteria or on criteria established by professional judgment when quantitative Florida criteria are absent. Different screening levels were developed for streams, lakes and estuaries to take into account the natural differences among these waterbodies. The criteria which were established by professional judgment were based on the percentile distribution of Florida data.

The eightieth percentile was chosen as the cutoff between acceptable and unacceptable water quality. This means that 80% of Florida's water quality data will have acceptable levels. Table 8 identifies the screening levels used, the typical values measured and the Florida criteria for streams, lakes and estuaries. Screening level exceedances are noted in the data tables for each watershed in each basin.

Trend Analysis

Water quality trend analysis was performed on 12 water quality parameters (plus the overall stream water quality index and the trophic state index) for 460 watersheds. The time frame for the analysis is from 1984-1993. The analysis was quite simple; a non-parametric correlation analysis (Spearman's Ranked Correlation) was used to analyze the ten-year trend of the annual STORET station medians for each watershed. There may have been only one station analyzed within a watershed resulting in a maximum of ten years of data, or there may have been many stations sampled within the watershed resulting in the analysis of many more yearly station medians and a more meaningful trend analysis.

A separate trend assessment technique was used to analyze stream, lake, and estuary waterbodies. Stream trend analysis utilized the trend information from eight water quality parameters (bacteria, turbidity, total suspended solids, BOD, dissolved oxygen, Secchi depth, nitrogen and phosphorus) plus the overall water quality index. Lake and estuary trend analysis focused on four trophic state parameters (chlorophyll, Secchi depth, nitrogen and phosphorus) plus the trophic state index.

The overall trend of each waterbody was determined by comparing the number of improved water quality parameters to the number of degraded water quality parameters. Some waterbodies showed quite strong trends. If a waterbody showed no trends, or just one parameter showed a trend (or the number of improved trends minus the number of degraded trends is zero or one), then the trend is classified as "no change". This trend analysis must be considered preliminary due to the simplicity of the technique.

Table 6. Trophic State Index (TSI) for Lakes and Estuaries.

For Lakes: 0-59 is good, 60-69 is fair, 70-100 is poor
For Estuaries: 0-49 is good, 50-59 is fair, 60-100 is poor

Trophic State Index TSI	Chlorophyll CHLA (ug/l)	Secchi Depth SD (m)	Total Phosphorus TP (mgP/l)	Total Nitrogen TN (mgN/l)
0	0.3	7.4	0.003	0.06
10	0.6	5.3	0.005	0.10
20	1.3	3.8	0.009	0.16
30	2.5	2.7	0.01	0.27
40	5.0	2.0	0.02	0.45
50	10.0	1.4	0.04	0.70
60	20.0	1.0	0.07	1.2
70	40	0.7	0.12	2.0
80	80	0.5	0.20	3.4
90	160	0.4	0.34	5.6
100	320	0.3	0.58	9.3

TSI equations which generate the above criteria:

$CHLA_{TSI} = 16.8 + [14.4 \times LN\ (CHLA)]$ (use Natural Log)

$SD_{TSI} = 60 - [30 \times LN\ (SD)]$

$TN_{TSI} = 56 + [19.8 \times LN\ (TN)]$

$TP_{TSI} = [18.6 \times LN\ (TP \times 1000)] - 18.4$

$TSI = (CHLA_{TSI} + SD_{TSI} + NUTR_{TSI*}) / 3$

* Limiting Nutrient considerations for Calculating $NUTR_{TSI}$:

If $TN/TP > 30$ then $NUTR_{TSI} = TP_{TSI}$

If $TN/TP < 10$ then $NUTR_{TSI} = TN_{TSI}$

If $10 < TN/TP < 30$ then $NUTR_{TSI} = (TP_{TSI} + TN_{TSI}) / 2$

Table 7. An Example Calculation of the Trophic State Index (TSI) (See Table 6 for Formulas).

	Annual Average	TSI Calculation	Average TSI
Chlorophyll	6.0 ug/l	42.6[1.]	42.1
Secchi Depth	1.8 meters	42.3[2.]	42.3
Phosphorus*	0.04 mg P/l	50.2[3.]	
Nitrogen*	0.67 mg N/l	48.1[4.]	49.2[5.]
			45.0[6.]

1. CHLA = 16.8 + [14.4 x LN (6.0)] = 42.1 (use Natural Log)

2. SD = 60 - [30 x LN (1.9)] = 42.3

3. TP = [18.6 x LN (0.04 x 1000)] - 18.4 = 50.2

4. TN = 56 + [19.8 x LN (0.67)] = 48.1

5. TN/TP Ratio = 0.67/0.04 = 16.7 therefore, TSI NUTR = an average of TSI Phosphorus and TSI Nitrogen = (50.2 + 48.1)/2 = 49.2

6. (42.6 + 42.3 + 49.2)/3 = 45

* Note: If either phosphorus or nitrogen sampling information are missing, then the index is not calculated. Chlorophyll and/or Secchi Depth may be missing and the index will be calculated.

Table 8. Water Quality Assessment Parameters For Florida Streams, Lakes and Estuaries, Screening Levels-Typical Values-Florida Criteria.

Parameter	Units	Screening Level	Typical Values 10%	(Median)	90%	Florida Criteria (17-302) Class III
** Water Body Type: Stream						
Alkalinity	$CaCO_3$ mg/l		13	(75)	150	20.0 mg/l min.
Beck's Biotic Index	Index #	<5.5	4	(14)	32	
BOD 5 Day	mg/l	>3.3	0.8	(1.5)	5.1	Not cause DO<5 mg/l
Chlorophyll	ug/l		1	(6)	30	
COD	mg/l	>102	16	(46)	146	
Coliform-Fecal	#/100 ml	>470	10	(75)	960	200/100 ml
Coliform-total	#/100 ml	>3700	100	(600)	7600	1000/100 ml
Color	Platinum-Color Units		21	(71)	235	No nuisance conditions
Conductivity	micromho	>1275	100	(335)	1300	1275 or 50% abv background
Dissolved Oxygen	mg/l	<4.0	3.1	(5.8)	8.0	5.0 mg/l
Diversity Artificial Sub	index	<1.95	1.4	(2.9)	3.6	min. 75% of DI
Diversity Natural Substr	index	<1.50	1.2	(2.4)	3.5	min. 75% of DI (marine)
DO % Saturation	%		36	(68)	90	
Fecal Strep	#/100 ml		20	(15)	1700	
Fluoride	mg/l		0.1	(0.2)	0.8	10.0 mg/l
Nitrogen-total	mg/l as N	>2.0	0.5	(1.2)	2.7	Not cause imbalance
pH	standard units		6.1	(7.1)	7.9	<6.0 >8.5
Phosphorus-total	mg/l as P	>0.46	0.02	(0.09)	0.89	Not cause imbalance
Secchi Disc Depth	meters		0.4	(0.8)	1.7	min. 90% background
Temperature	centigrade		19	(23)	28	No nuisance conditions
Total Organic Carbon	mg/l	>27.5	5	(14)	37	
Total Suspended Solids	mg/l	>18.0	2	(7)	26	
Turbidity	JTU FTU	>16.5	1.5	(5)	21	29 NTUs above background
** Waterbody Type: Lake						
Alkalinity	$CaCO_3$ mg/l	>20.	2	(28)	116	20.0 mg/l min.
Chlorophyll	ug/l	>40.	1	(12)	70	
Nitrogen-total	mg/l as N	>2.0	0.4	(1.1)	2.5	Not cause imbalance
Phosphorus-total	mg/l as P	>0.12	0.01	(0.05)	0.29	Not cause imbalance
Secchi Disc Depth	meters	<0.7	0.4	(0.9)	2.7	Min. 90% background
** Waterbody Type: Estuary						
Chlorophyll	ug/l	>40	1	(9)	36	
Nitrogen-total	mg/l as N	>2.0	0.3	(0.8)	1.6	Not cause imbalance
Phosphorus-total	mg/l as P	>0.12	0.01	(0.07)	0.20	Not cause imbalance
Secchi Disc Depth	meters	<0.7	0.6	(1.1)	3.0	Min. 90% background

Table 9. Toxic Metals in the Water Column.

Metal	Storet Parameter Number	Number of Waterbodies Sampled	Florida Criteria (ppb)	% of Waterbodies With Exceedances
Arsenic	1002	162	50	0%
Cadmium	1027	211	1.1	17%
Chromium	1034	155	207*	0%
Copper	1042	330	12*	10%
Iron	1045	378	1000	22%
Lead	1051	240	3.2*	30%
Mercury	71900	129	0.012	47%
Nickel	1067	130	158*	0%
Zinc	1092	253	106	10%

* actual criteria is dependent on water hardness which was assumed to be 100 mg/l as calcium carbonate since hardness was not available in all waterbodies

The impairment rating of a waterbody was defined as status of waters within a watershed as determined by support or nonsupport of designated use. The status of a watershed was dependent on making a determination of designated use support that applied to all surface waters within the aerial extent of that watershed. Designated use refers to the classification or standards and criteria applied to all Florida waters.

Impairment rating categories used were as follows:

1. Good (meets designated use). All surface waters in the watershed are supporting their use classification with no evidence of nonpoint source problems.
2. Threatened (meets designated use). All surface waters in the watershed are attaining their use classification, but in the absence of any future management activities, it is suspected that within five years at least some of the surface waters in the watershed will not support their designated use.
3. Fair (partially meets designated use). Some, but not all, surface waters in the watershed are not supporting their designated use.
4. Poor (does not meet use). All surface waters in the watershed are not supporting their designated use.

Nonpoint source pollution is generally associated with land use activities which do not have a well-defined point of discharge, such as discharge from a pipe or smoke stack. Nonpoint contaminants are carried to waterbodies by direct runoff or percolation through the soil to groundwater. There are many different potential source areas. Some of the common activities and sources which were considered in the nonpoint source assessment include:

1. Construction site runoff. This type of source can provide sediment, chemicals and debris to surface waters.
2. Urban stormwater. Runoff from buildings, streets and parking lots carries with it oil, grease, metals, fertilizers and other pollutants.
3. Land disposal. Leachate from septic tanks and landfills may pollute groundwater or local surface waters. Contamination of surface waters can be by either by direct runoff or discharge from groundwater.
4. Agricultural runoff. Runoff from fields and pastures carries with it sediments, pesticides and animal wastes (which can be a source of bacteria and viruses and nutrients).
5. Silvaculture operations. Logging activities which erode forest soils add turbidity and suspended solids to local surface waters.
6. Mining. This type of activity can cause siltation in nearby waterbodies, release of radioactive materials to groundwater, discharge of acid mine drainage and depletion of water supplies in aquifers.

7. Hydrologic modification. Dams, canals, channelization and other alternations to the flow of a waterbody result in habitat destruction and in general water quality deterioration.

Abbreviations were used for the nonpoint source categories in the NPS data tables which are found in each basin write-up on the following pages. Those abbreviations correspond to the sources as described below:

AG	=	Agricultural runoff
RE	=	Resource extraction or mining
SL	=	Silvaculture or for operations
LD	=	Land disposal
UR	=	Urban runoff
CN	=	Construction site runoff
HM	=	Hydrologic Modification
OT	=	Other nonpoint source
IND	=	Industrial site runoff
STP	=	Sewage treatment plant

Data for the last two point source categories were not obtained from the 1994 NPS assessment survey, but rather they come from the 1992 305(b) Report.

Respondents were provided with 15 choices of pollutants and 9 choices of symptoms for use in characterizing the status of a watershed. Pollutant choices or categories and their descriptions are provided below:

1. Nutrients. An imbalance of nitrogen and or phosphorus which resulted in algal blooms or nuisance aquatic plant growth. Standards for Class III waterbodies are based on this criteria.
2. Bacteria. This refers to the presence of high levels of coliform, strep and enteric fecal organisms which cause the closure of waters to swimming and shellfishing.
3. Sediments. Soil erosion which results in high levels of turbidity.
4. Oil and Grease. Hydrocarbon pollution resulting from highway runoff, marina, and industrial areas. Their presence is evidenced as a sheen on the water surface.
5. Pesticides. These class of chemicals can be found in runoff from agricultural lands and some urban areas.
6. Other Chemicals. General category for other chemicals besides pesticides and oil and grease, typically associated with landfills, industrial land uses and hazardous waste sites.

7. Debris. This category includes trash ranging from Styrofoam plates and cups to yard clippings and dead animals.
8. Oxygen Depletion. Low levels of dissolved oxygen in the water column resulting in odor problems (anoxic waters) and fish kills.
9. Salinity. Changes in salinity caused by too much or too little freshwater inflows. Typical results are declines in the fishery and changes in species composition.
10. pH. Change in the acidity of surface waters with resultant declines in fisheries and other changes to flora and fauna, such as reductions in diversity or abundance.
11. Metals. Anthropogenically enriched levels of trace metals commonly associated with urbanized watersheds and marinas.
12. Habitat Alteration. Landuse activities which adversely affect the resident flora and fauna. Included with habitat alteration is habitat loss.
13. Flow Alteration. Landuse activities which influence the flow characteristics of a watershed resulting in adverse affects upon flora and fauna.
14. Thermal Pollution. Activity which changes local temperature of receiving water relative to ambient temperature.
15. Other Pollutants. General category used to describe activities and impacts not described in the other 14 categories.

Responses of waterbodies to the above listed sources of pollutants were defined as symptoms. The nine symptoms used for categorization are defined as follows:

1. Fish Kills. Dead and dying fish caused by designated source of pollution.
2. Algal Blooms. Excessive growth of algae resulting from nutrient enrichment.
3. Aquatic Plants. Density of exotic and nuisance plants such that impairment of the waterbody occurs. Nutrient enrichment is usually the cause.
4. Turbidity. High suspended sediment loads in water column resulting from soil erosion. Effects on the waterbody include smothering of benthos and reduced light penetration with resultant loss of plant and algal productivity.
5. Odor. Unpleasant smells resulting from low dissolved oxygen conditions (anoxia) and or fish kills.
6. Declining Fisheries. Reduction in landings of or increases in catch per unit effort to catch game and commercial species indicating loss of productive fishery.
7. No Swimming. Closure of recreational swimming areas due to public health risks, usually caused by high coliform bacteria counts.
8. No Fishing. Closure of recreational or commercial fishing areas because of threats to human health from elevated bacteria counts or levels of contaminants.

9. Other Symptoms. General category used for information that cannot be placed in any other category.

Making Use Support Determinations

EPA has revised its criteria for determining the status of waters as documented in Appendix B of the Guidelines for the Preparation of the 1994 State Water Quality Assessments (305(b) Report). Often, a variety of assessment techniques were available for each watershed (e.g., chemical data, biological data and NPS survey results) and in this case a use decision was made based on integrating all the information. If quantitative data were available on the water quality of a waterbody (through the Trophic State Index or Water Quality Index) then the designated use of the waterbody was determined from the quantitative information, and if no quantitative data were available, then the qualitative NPS survey results were used to estimate designated use of the waterbody. Current data was available for assessment of about 1100 watersheds, historic data was used in 400 watersheds, and qualitative data was used in 1000 watersheds. The NPS survey provided all the information on sources of pollution (e.g. urban or construction runoff) and part of the information on causes and symptoms of pollution. Integrating the information from the quantitative (STORET) analysis and the qualitative NPS survey was not easy, but many additional watersheds were assessed based on the results of the integration. In the future, the two techniques should blend together much better through increased coordination of efforts.

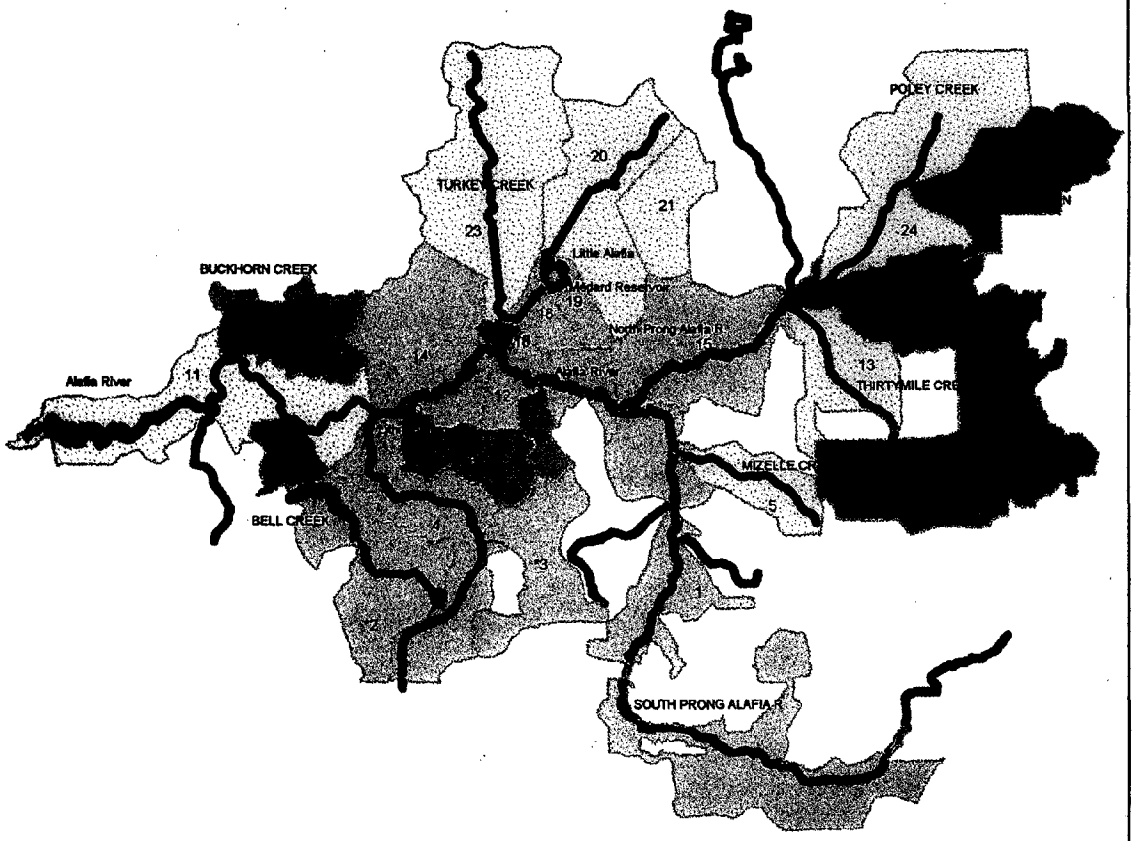
Toxic Pollutant Assessment

The assessment of toxic pollutants in Florida's waters was accomplished by an inventory of 9 STORET toxic metal parameters for 1991-93 (Table 9). The Florida surface water quality standards (Chapter 17-302, Florida Administrative Code) were used to assess whether the toxic pollutant was found at an elevated level. Several standards are based on hardness levels, however, since hardness levels were not available in all cases, a hardness value of 100 mg/l as calcium carbonate was assumed. An elevated level was defined as any exceedance of the standard for any of the nine metals. Generally, each waterbody was sampled two or three times for several of the metals during the last three years.

Nonpoint Source Assessment

An extensive assessment of nonpoint source impacts on Florida's waters was conducted in 1988 through the use of a questionnaire sent to all major State agencies (Water Management Districts, Division of Forestry, Game and Fresh Water Fish Commission), city and county offices, U.S. Soil Conservation Service, U.S. Forestry Service, Regional Planning Councils, local Soil and Water Conservation Districts, citizen environmental groups (Sierra Clubs, Audubon Society and others) and professional outdoor guides. The respondents (approximately 150 agencies and 350-400 participants) to the questionnaire identified nonpoint sources of pollution, environmental pollution symptoms (fish kills, algal blooms, etc.) pollutants and miscellaneous comments. The assessment has been updated in 1994. The 1994 nonpoint source assessment was performed more efficiently than the 1988 version due largely to the use of GIS technology for compiling and displaying the data, and also advancements in the questionnaire methodology. Scannable forms were used eliminating the need to key punch data and integration with the 305b report was much improved.

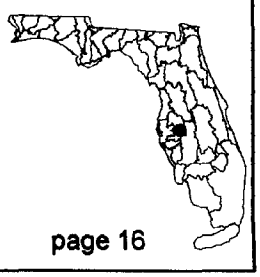
Florida's 1994 nonpoint source assessment was performed using a qualitative, best professional judgment approach. Unlike point source pollution analysis and its readily available STORET ambient data, there is rarely any convenient database of water quality monitoring data that has been designed for analyzing impacts of nonpoint source pollution on surface waters. Therefore, the assessment procedure was designed to make use of the knowledge of experienced field personnel who had information about individual waterbodies. The 1994 survey was sent to essentially the same group of professionals as the 1988 report and approximately fifty respondents identified nonpoint sources of pollution, environmental symptoms of pollution (fish kills, algal blooms, etc.), degree of impairment (rating) of a waterbody and miscellaneous comments. A total of 1720 watersheds or about 40 % of the total watersheds were qualitatively assessed by the respondents. Data tables summarizing the 1994 NPS survey are presented for each basin in this report. The remainder of this section describes the information presented in these tables.



ALAFIA RIVER BASIN
03100204

AVERAGE WATER QUALITY
1984-1993 STORET DATA
WATERSHED ID NUMBERS LINK MAP TO TABLES
* INDICATES QUALITATIVE ASSESSMENT

WATER QUALITY
- GOOD
- THREATENED
- FAIR
- POOR
- UNKNOWN



ALAFIA RIVER BASIN

Basic Facts

Drainage Area: 460 square miles
Major Land Uses: agriculture, mining, rangeland, urban development, aquaculture
Population Density: moderate, higher at the mouth
Major Pollution Sources: phosphate mining and processing, WWTP, agriculture, urban development
Best Water Quality Areas: Lithia Springs area, Mid Alafia River and South Prong
Worst Water Quality Areas: North Prong, Scott Lake
Water Quality Trends: Stable quality at 4 sites, Alafia River at mouth and Little Alafia River are improving
OFW Waterbodies:
SWIM Waterbodies: None
Reference Reports:
Alafia River Biological Survey, DEP (Tampa), 1989
The Alafia River Study, Hillsborough County Planning Commission, 1989
Florida Rivers Assessment, DEP/FREAC/NPS, 1989
Basin Water Quality Experts:
Peter Clark, TBRPC, 813/577-5151
Doug Farrell, DEP (Tampa) 813/744-6100

In the News

* Major upgrades of the processing and treatment facility and restoration of the property owned by Cargill, at the mouth of the river, are occurring.
* IMC Fertilizer has proposed an 18,290 acre expansion of its phosphate mining operation in southeastern Hillsborough County (South Prong drainage).

Ecological Characterization

The Alafia River, formed by the confluence of the North Prong and the South Prongs, is a blackwater river located in Hillsborough and Polk counties, draining approximately 460 square miles. From the headwaters in the swamp and prairie area south of Mulberry, Florida, the river flows 24 miles westward through coastal lowlands prior to entering the southern end of Hillsborough Bay. The discharge of the Alafia River averages 330 cfs above Lithia Springs which contributes about 50 cfs flow. Although there are a few springs, surface runoff contributes most of the flow. Its heavily vegetated main stem masks impacts in the headwater tributaries which have been seriously disrupted by phosphate mining activities.

Land use categories in the Alafia River basin include agriculture, rangeland, and barren land (12%). The relatively high percentage of barren land reflects the fact that the basin includes an area of extensive phosphate mining and processing operations. The lower basin has considerable urban development.

Anthropogenic Impacts

The major pollution sources in this basin are the phosphate mining and processing industries. Also, Mulberry and Lakeland both have point source discharges to the Alafia River North Prong. Most of the phosphate processors are located along the North Prong, whereas mining occurs in both the North and South Prong drainages. Simply stated, phosphate processing involves strip mining of calcium phosphate deposits and treating them in sulfuric acid to produce phosphoric acid (from which fertilizers are made) and calcium sulfate (gypsum). Pollutants evolved in this process are strong acids, phosphates, fluorides, sulfates, ammonia, and low levels of radiation. Pollutant loading occurs through point source discharges, runoff from mined and barren lands, and occasional spills of water from settling pools (slime ponds). The surficial aquifer is degraded by seepage from gypsum stacks (CaSO4 waste), and this aquifer water seeps laterally into the river bed. The processing operations cause worse pollution problems than mining operation. Both the North and South Prong reaches exhibit high nutrient concentrations and frequent DO sags; however, the North Prong of the Alafia has considerably poorer water quality.

A biological study of the Alafia Basin also indicated severe stress to both macroinvertebrates and floodplain vegetation in the North Prong. The report suggested that a significant problem in the river was toxicity from hydrogen sulfide, a toxic sulfur compound found when oxygen levels are low. The South Prong also showed stress, though not as pronounced. The study also indicated some community composition shifts from what would be expected in a similar unaffected stream.

Both reaches flow through heavily vegetated wetlands which take up nutrient and dilute sulfates so that water quality is much improved at their confluence. Lithia Springs also contributes about 51 cfs of flow in this area. The water quality, however, is variable because the nature of the upstream discharge tends to be in slugs of highly polluted waters as well as some continuous flow. The effect of these slugs on the lower river and bay is poorly documented. The river below the confluence of the North and South Prongs is used recreationally for tubing and canoeing.

The lower Alafia River also exhibits poor water quality with elevated nutrients, depressed DOs, and occasional algal blooms and fish kills. These problems appear to be caused by urban runoff, upstream nutrient loading and the tidal influx of Hillsborough Bay waters. Cargill (formerly Gardinier), a phosphate processing facility located at the mouth of the river, has had a history of environmental problems contributing to the degradation of the lower Alafia. Discharges from a gypsum stack have built up a layer of calcium fluoride at the mouth of the river and in the bay. These sediments do not support a healthy biological community. The company has also been responsible for some major acid spills into the river and Tampa Bay wetlands, the most recent in 1989. The Cargill Company is investing a large amount of effort and money to update and safeguard their processes. The estuarine deposits have been partially excavated, a new "state of the art" gypsum stack will replace the old one which will be permanently closed and sealed, and plans for on-site stormwater diking and treatment are being instituted.

Other reaches in the basin have historically exhibited water quality problems. Tributaries such as Bell Creek and Turkey Creek are impounded and exhibit poor water quality because of low or intermittent flows and high nutrient and bacteria levels attributed to runoff from rangeland and residential development.

Water from Buckhorn and Lithia Springs is very high in nitrates. Septic tanks, stormwater seepage via sinkholes and historic citrus farming have been implicated as the cause.

Finally, it should be noted that radium levels in the Alafia River are higher than any other stream on the west coast of Florida. The radium source is presently unknown, but probably attributable to phosphate mining residues and discharges.

** USGS HYDROLOGIC UNIT: 03100204 ALAFIA RIVER

SURFACE WATER QUALITY DATA FOR 1970-1993
MEDIAN VALUES FOR EACH WATERSHED
CURRENT PERIOD OF RECORD (1989-1993) USED WHERE AVAILABLE
PERIOD PRIOR TO 1989 IS EVALUATED AS HISTORICAL INFORMATION

INDEX	GOOD	FAIR	POOR
WQI-RIVER	0-44	45-59	60-90
TSI-ESTUARY	0-49	50-59	60-100
TSI-LAKE	0-59	60-69	70-100

WATERSHED ID	NAME	WATERSHED DATA RECORD				WATER CLARITY				DISSOLVED OXYGEN		OXYGEN DEMAND			PH	ALKALINITY	TROPHIC STATUS			COLIFORM		BIOLOGICAL SPECIES DIVERSITY			COND	FLOW	WATER QUALITY INDICES	
		MAX #OBS	BEG YR	END YR	DATA PERIOD	TURB	SD	COLOR	TSS	DO	DOSAT	BOD	COD	TOC	PH	ALK	NITRO	PHOS	CHLA	TOTAL	FECL	NAT	ART	BECK	COND	FLOW	WQI	TSI
* WATER BODY TYPE: LAKE																												
19	MEDARD RESERVOIR	82	78	87	Historical	2.5	.	240	.	6.9	81	1.9	.	13	7.6	.	1.11	0.69	.	.	.	.	.	.	223	.	.	58
22	LAKE DRAIN	63	70	79	Historical	20.0	.	20	.	11.1	136	.	.	.	7.0	8	2.62	0.21	75	.	.	.	.	.	182	.	.	79
* WATER BODY TYPE: SPRING																												
10	LITHIA SPRINGS	7	92	92	Current	.	.	3	.	4.0	47	.	.	.	7.9	.	3.15	0.08	.	.	.	.	.	.	449	28	74	.
* WATER BODY TYPE: STREAM																												
1	SOUTH PRONG ALAFIA R	254	89	93	Current	6.2	0.8	50	3	7.5	84	1.0	.	10	7.4	.	1.44	0.88	2	675	200	.	.	.	340	29	42	.
4	FISHHAWK CREEK	16	76	77	Historical	1.5	.	48	2	7.3	81	0.9	.	9	7.4	.	0.57	0.53	2	2225	88	.	.	.	183	.	32	.
5	MIZELLE CREEK	9	92	93	Current	3.4	0.2	55	7	7.6	79	.	.	14	7.6	110	0.98	0.59	.	.	880	.	.	.	309	.	49	.
7	BELL CREEK	11	92	93	Current	9.5	0.6	140	9	6.0	69	.	.	20	6.7	28	1.45	0.53	.	.	193	.	.	.	182	.	61	.
8	North Prong Alafia R.	56	70	77	Historical	4.7	0.2	30	23	5.6	54	2.7	.	7	6.6	160	11.80	6.34	13	4800	150	.	.	.	1198	.	67	.
11	Alafia R AB HILLS. BAY	609	89	93	Current	4.2	1.2	31	29	5.7	62	1.3	.	7	7.5	.	1.24	1.14	10	350	115	.	.	.	18487	.	50	.
12	Alafia R AB TURKEY CK	8	92	93	Current	2.5	0.8	50	1	8.9	89	.	.	11	7.7	73	1.38	2.05	.	.	88	.	.	.	469	.	37	.
13	THIRTYMILE CREEK	8	92	93	Current	4.4	1.1	28	2	5.2	55	.	.	9	7.2	75	1.37	1.05	.	.	165	.	.	.	499	.	46	.
14	Alafia R AB FLINT HAWK	97	89	92	Current	2.3	.	50	4	7.3	80	.	.	11	7.5	63	1.67	2.75	2	328	112	.	.	.	433	105	41	.
15	North Prong Alafia R.	165	89	93	Current	6.2	0.6	38	4	7.3	84	0.9	.	9	7.5	83	1.52	4.54	1	700	250	.	.	.	545	44	44	.
18	LTL ALAFIA BL MEDARD	95	70	80	Historical	3.0	.	.	.	6.8	81	1.6	.	13	7.7	.	0.29	0.12	.	.	.	.	.	.	405	1	34	.
20	LTL ALAFIA AB MEDARD	70	70	81	Historical	3.0	.	80	.	7.2	82	1.3	.	16	6.7	28	.	0.87	.	.	.	.	.	.	226	1	51	.
21	ENGLISH CREEK	8	92	93	Current	2.7	0.1	35	7	8.5	86	.	.	5	7.6	86	2.64	0.77	.	.	755	.	.	.	333	.	46	.
23	TURKEY CK AB LTL ALAFI	114	89	93	Current	7.0	0.4	52	2	6.2	71	1.1	.	15	7.3	62	2.30	0.80	1	3800	1475	.	.	.	357	.	55	.
24	POLEY CREEK	6	92	93	Current	7.6	0.4	135	10	6.3	62	.	.	20	7.0	56	0.98	0.66	.	.	433	.	.	.	242	.	59	.

LEGEND:
ALK-ALKALINITY MG/L
ART-ARTIFICIAL SUBSTRATE DI
BEG YR-BEGINNING SAMPLING YEAR
BECK-BECK'S BIOTIC INDEX
BOD-BIOCHEMICAL OXYGEN DEMAND MG/L
CHLA-CHLOROPHYLL UG/L
COD-CHEMICAL OXYGEN DEMAND MG/L
COLOR-COLOR PCU
COND-CONDUCTIVITY UMHOS
DO-DISSOLVED OXYGEN MG/L
DOSAT-DO % SATURATION
END YR-ENDING YEAR
FECL-FECAL COLIFORM MPN/100ML
FLOW-FLOW CFS
MAX #OBS-MAXIMUM NUMBER OF SAMPLES
NAT-NATURAL SUBSTRATE DIVERSITY
NITRO-TOTAL NITROGEN MG/L
PH-PH STANDARD UNITS
PHOS-TOTAL PHOSPHORUS MG/L
SD-SECCHI DISC METERS
TOC-TOTAL ORGANIC CARBON MG/L
TOTAL-TOTAL COLIFORM MPN/100ML
TSI-TROPHIC STATE INDEX
TSS-TOTAL SUSPENDED SOLIDS MG/L
TURB-TURBIDITY MG/L
WQI-WATER QUALITY INDEX

SURFACE WATER QUALITY DATA SCREENING REPORT
MEDIAN VALUES FOR EACH WATERSHED SCREENED

** USGS HYDROLOGIC UNIT: 03100204 ALAFIA RIVER

'x'=EXCEEDS SCREENING CRITERIA
'0'=WITHIN SCREENING CRITERIA
'.'=MISSING DATA

WATERSHED ID	NAME	RANK WQI OR TSI	DATA RECORD CURRENT OR HISTORICAL	SCREENING VARIABLES AND CRITERIA: TN TN>2.0	STREAM TP TP>.46	LAKE TP TP>.12	PH PH>8.8 PH<5.2	ALK ALK<20	TURB & TSS TURB>16.5 TSS>18	COND COND>1275	OXYGEN DEMAND BOD>3.3 COD>102 TOC>27.5	DO DO<4	COLIFORM BACTI TOT>3700 FECAL>470	BIOL DIV DIART<1.95 DINAT<1.5 BECK<5.5	CHLA CHLA>40	SECCHI DISC SD<.7
* WATER BODY TYPE: LAKE																
19	MEDARD RESERVOIR	GOOD	Historical	0	.	x	0	.	0	.	0	0	.	.	.	.
22	LAKE DRAIN	POOR	Historical	x	.	x	0	x	x	.	.	0	.	.	x	.
* WATER BODY TYPE: SPRING																
10	LITHIA SPRINGS	POOR	Current	x	0	.	0	.	.	.	.	0	.	.	.	.
* WATER BODY TYPE: STREAM																
1	SOUTH PRONG ALAFIA R	GOOD	Current	0	x	.	0	.	0	0	0	0	0	.	0	0
4	FISHHAWK CREEK	GOOD	Historical	0	x	.	0	.	0	.	0	0	0	.	0	.
5	MIZELLE CREEK	FAIR	Current	0	x	.	0	0	0	.	0	0	x	.	.	x
7	BELL CREEK	POOR	Current	0	x	.	0	0	0	.	0	0	0	.	.	x
8	North Prong Alafia R.	POOR	Historical	x	x	.	0	0	x	0	0	0	x	.	0	x
11	Alafia R AB HILLS. BAY	FAIR	Current	0	x	.	0	.	x	x	0	0	0	.	0	0
12	Alafia R AB TURKEY CK	GOOD	Current	0	x	.	0	0	0	.	0	0	0	.	.	0
13	THIRTYMILE CREEK	FAIR	Current	0	x	.	0	0	0	.	0	0	0	.	.	0
14	Alafia R AB FLINT HAWK	GOOD	Current	0	x	.	0	0	0	.	0	0	0	.	0	.
15	North Prong Alafia R.	GOOD	Current	0	x	.	0	0	0	0	0	0	0	.	0	x
18	LTL ALAFIA BL MEDARD	GOOD	Historical	0	0	.	0	.	0	.	0	0	.	.	.	.
20	LTL ALAFIA AB MEDARD	FAIR	Historical	.	x	.	0	0	0	.	0	0	.	.	.	.
21	ENGLISH CREEK	FAIR	Current	x	x	.	0	0	0	.	0	0	x	.	.	x
23	TURKEY CK AB LTL ALAFI	FAIR	Current	x	x	.	0	0	0	0	0	0	x	.	0	x
24	POLEY CREEK	FAIR	Current	0	x	.	0	0	0	.	0	0	0	.	.	x

LEGEND:
ALK-ALKALINITY
BECK-BECK'S BIOTIC INDEX
BIOL DIV-BIOLOGICAL DIVERSITY
CHLA-CHLOROPHYLL

COND-CONDUCTIVITY
DO-DISSOLVED OXYGEN
CURRENT-1989 TO 1993
DIART-ARTIFICIAL SUBSTRATE DIVERSITY
DINAT-NATURAL SUBSTRATE DIVERSITY

FECAL-FECAL COLIFORM BACTERIA
HISTORICAL-1970 TO 1988
OXYGEN DEMAND-BOD,COD,TOC
PH-PH
TN-NITROGEN

TP-PHOSPHORUS
TOT-TOTAL COLIFORM BACTERIA
TSS-TOTAL SUSPENDED SOLIDS
TURB-TURBIDITY
SD-SECCHI DISC METERS

WQI OR TSI-WATER QUALITY INDEX RATING
WHICH INDEX USED, WQI OR TSI, IS
BASED ON WATERBODY TYPE

SURFACE WATER QUALITY ASSESSMENT REPORT ** USGS HYDROLOGIC UNIT: 03100204 ALAFIA RIVER
TRENDS-SOURCES-CLEANUP

'x'=DEGRADING TREND
'0'=STABLE TREND
'+'=IMPROVING TREND
'.'=MISSING DATA

WATERSHED ID	NAME	QUALITY RANK: MEETS USE ?	WQI OR TSI	OVER-ALL TREND	W Q or I	T S I	1984 - 1993 TRENDS: T N	T P	T C	S D	P H	A L K	T U R B	T S I	B O D	O C	D O S A T	D O S A T	T C O L I	F C O L I	T E M P	F L O W	T N	T O C	T P	T S S	<--- PLEASE READ THESE COLUMNS VERTICALLY: DEGRADATION SOURCES, PRESENT CONDITIONS AND CLEANUP EFFORTS
* WATER BODY TYPE: LAKE																											
19	MEDARD RESERVOIR	YES	GOOD	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
22	LAKE DRAIN	NO	POOR																								
* WATER BODY TYPE: SPRING																											
10	LITHIA SPRINGS	NO	POOR	0		0	0	0	.	.	+	.	.	.	0	0	0	0	.	.	0	0					
* WATER BODY TYPE: STREAM																											
1	SOUTH PRONG ALAFIA R	YES	GOOD	0		0	0	+	0	0	0	.	x	0	0	0	0	0	0	0	0	0					
4	FISHHAWK CREEK	YES	GOOD																								
5	MIZELLE CREEK	PARTIAL	FAIR	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.					
7	BELL CREEK	NO	POOR	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.					
8	North Prong Alafia R.	NO	POOR																								
11	Alafia R AB HILLS. BAY	PARTIAL	FAIR	+		0	+	+	0	0	0	.	0	.	0	.	0	0	0	0	0	.					
12	Alafia R AB TURKEY CK	YES	GOOD	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.					
13	THIRTYMILE CREEK	PARTIAL	FAIR	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.					
14	Alafia R AB FLINT HAWK	YES	GOOD	0		0	0	0	.	.	0	0	x	0	.	0	0	0	0	x	0	0					
15	North Prong Alafia R.	YES	GOOD	0		0	+	+	0	x	+	.	0	0	0	0	0	0	0	0	0	0					
18	LTL ALAFIA BL MEDARD	YES	GOOD																								
20	LTL ALAFIA AB MEDARD	PARTIAL	FAIR																								
21	ENGLISH CREEK	PARTIAL	FAIR	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.					
23	TURKEY CK AB LTL ALAFI	PARTIAL	FAIR	+		+	+	+	+	0	0	.	+	.	+	.	+	+	+	+	+	.					
24	POLEY CREEK	PARTIAL	FAIR	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.					

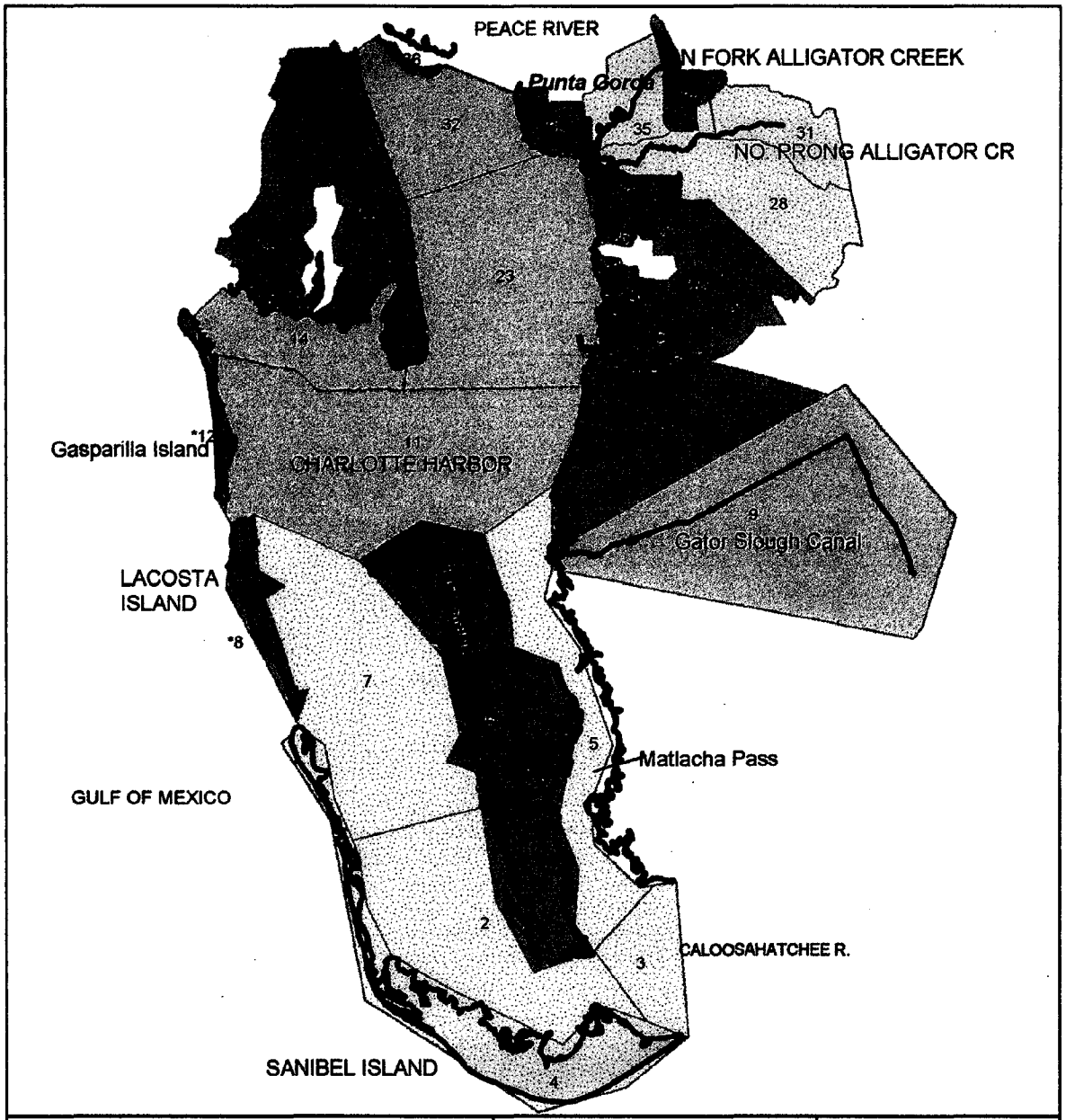
LEGEND:

ALK-ALKALINITY
BOD-BIOCHEM. OXYGEN DEMAND
CHLA-CHLOROPHYLL
DO-DISSOLVED OXYGEN
DOSAT-DO SATURATION
FCOLI-FECAL COLIFORM
FLOW-FLOW
MEETS USE-MEETS DESIGNATED USE
PH-PH
SD-SECCHI DISC METERS
TCOLI-TOTAL COLIFORM
TEMP-TEMPERATURE
TN-NITROGEN
TOC-T.ORGANIC CARBON
TP-PHOSPHORUS
TSS-TOTAL SUSPENDED SOLIDS
TURB-TURBIDITY
TSI-TROPHIC STATE INDEX FOR LAKES AND ESTUARIES
WQI-WATER QULAITY INDEX FOR STREAMS AND SPRINGS

NPS QUALITATIVE SURVEY RESULTS
AN "X" INDICATES A PROBLEM WITH POLLUTANT OR SOURCE
THE * ON MAPID INDICATES NO STORET INFORMATION AVAILABLE FOR THIS WATERSHED
-SEE PAGE 11 FOR LEGEND FOR THIS TABLE-

CATNAME=ALAFIA RIVER HUC=03100204

MAP ID	WBID	BASIN	WQ3 05	WQNPS	NUTRIENT	BACTERIA	SEDIMENT	OIL	PESTICIDE	OTHER	DEBRIS	OXYGEN	SALINITY	PH	METAL	HABITAT	FLOW	THERMAL	OTHERS	FISHKILL	ALGAE	WEED	TURBID	ODOR	FISHDEC	NOSWIM	NOFISH	OTHERS	IND	STP	AG	RE	SL	LD	UR	CN	HM	OT
2*	1669	BELL CREEK RESERVOIR		GOOD																																		
3*	1670	DOE BRANCH		GOOD																																		
4	1658	FISHHAWK CREEK	GOOD	THREAT	X	X	X	X			X	X	X		X	X	X		X	X			X	X	X						X	X						X
6*	1657	LITTLE FISHHAWK CREEK		THREAT	X	X	X	X			X	X	X		X	X	X		X	X			X	X	X						X	X						X
7	1660	BELL CREEK	POOR	THREAT	X		X	X																				X			X			X	X	X	X	X
8	1621E	North Prong Alafia R.	POOR	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X			X			X	X		X	X	X	X	X
9*	1649	MCCULLOUGH BRANCH		THREAT	X	X	X	X			X	X	X		X	X	X		X	X			X	X	X						X	X						X
10	1621F	LITHIA SPRINGS	POOR	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X			X			X	X		X	X	X	X	X
11	1621A	Alafia R AB HILLS. BAY	FAIR	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X			X			X	X		X	X	X	X	X
12	1621C	Alafia R AB TURKEY CK	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X			X			X	X		X	X	X	X	X
14	1621B	Alafia R AB FLINT HAWK	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X			X			X	X		X	X	X	X	X
15	1621D	North Prong Alafia R.	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X			X			X	X		X	X	X	X	X
16*	1578A	TURKEY CK AB ALAFIA R		THREAT	X	X	X	X			X	X	X		X	X	X		X	X			X	X	X						X	X						X
17*	1635	BUCKHORN SPRING		THREAT	X	X	X	X		X	X	X	X		X	X	X		X	X			X	X	X			X			X	X		X	X	X	X	X
18	1592	LTL ALAFIA BL MEDARD	GOOD	GOOD																																		
19	1592A	MEDARD RESERVOIR	GOOD	GOOD																																		
20	1592B	LTL ALAFIA AB MEDARD	FAIR	GOOD																																		
21	1592C	ENGLISH CREEK	FAIR	GOOD																																		
23	1578B	TURKEY CK AB LTL ALAFI	FAIR	THREAT	X	X	X	X			X	X	X		X	X	X		X	X			X	X	X						X	X						X



CHARLOTTE HARBOR BASIN
03100103

AVERAGE WATER QUALITY
1984-1993 STORET DATA
WATERSHED ID NUMBERS LINK MAP TO TABLES
* INDICATES QUALITATIVE ASSESSMENT

WATER QUALITY
- GOOD
- THREATENED
- FAIR
- POOR
- UNKNOWN

CHARLOTTE HARBOR BASIN

Basic Facts

Drainage Area: 236 square miles
Major Land Uses: basin mostly open water; adjacent drainage is urban and wetlands, sport fishing, marine nursery, urban development
Population Density: moderate, concentrated in a few cities (Port Charlotte, Punta Gorda)
Major Pollution Sources: urban runoff, reverse osmosis reject outfalls
Best Water Quality Areas: Pine Island Sound
Worst Water Quality Areas: Lower Pine Island Sound, Captiva Island
Water Quality Trends: stable quality in 3 watersheds
OFW Waterbodies:
Pine Island Sound State Aquatic Preserve
Matlacha Pass State Aquatic Preserve
Gasparilla Sound - Charlotte Harbor State Aquatic Preserve
Cape Haze State Aquatic preserve
SWIM Waterbodies: Charlotte/Placida Harbor
Reference Reports:
Charlotte Harbor Special Studies Report, USGS, 1984-1990
Florida Rivers Assessment, DEP/FREAC/NPS, 1989
Basin Water Quality Experts:
Ford Walton, DEP (Punta Gorda), 813/639-4967
David Heil, DEP (Tallahassee), 904/488-5471
Rick Cantrell, DEP (Tallahassee), 904/488-0130
David Ceilley, Lee County Lab, 813/939-7908
Tom Fraser, Dexter Bender and Associates, 813/334-3680
Ben McPherson, USGS (Tampa) 813/228-2124
Gerold Morrison, SWFWMD (Brookesville) 813/796-7211
Ralph Montgomery, (Environmental Quality Lab - Port Charlotte)

In the News

* Fish kills occurred in Clam Bayou and Palm Ridge Lake during the summer of 1990.

Ecological Characterization

The Charlotte Harbor estuary is one of the largest bays in Florida, covering 119 square miles of Charlotte Harbor proper as well as Pine Island Sound (71 square miles), San Carlos Bay (23 square miles), and Matlacha Pass (23 square miles). The northern part of Charlotte Harbor receives fresh water from the Peace River and Myakka River. The eastern side of the bay also receives drainage from several small coastal creeks and canals. San Carlos Bay is an extension of the Caloosahatchee River estuary.

Charlotte Harbor proper is heavily influenced by flow from the blackwater, phosphorus-laden Peace River. Pine Island Sound and Matlacha Pass have less fresh water inflow. Mangroves line the shorelines and create hundreds of small islands throughout the area. They also support more seagrass areas. San Carlos Bay's water is influenced by the Caloosahatchee River. The basin is a productive nursery area for marine life.

Urban development in the basin is heavily concentrated in the north at Port Charlotte and near the mouth of the Peace River at Punta Gorda. There is also a localized urbanization in the south, at the mouth of the Caloosahatchee. However, more and more of the drainage area is being developed, mostly as massive communities. Most of the rest of the shoreline is mangrove forests. The barrier islands are moderately developed, primarily for tourism. The economy of the area is based on tourism, retirement communities and fisheries.

Anthropogenic Impacts

Water quality in this basin is generally good. The predominant pollution problems are associated with development: bacteria from accelerated urban runoff through canals and sediments from construction and reverse osmosis effluent discharges. Nutrient levels, particularly phosphorus, are elevated, and Secchi readings are somewhat low in areas. High phosphorus levels primarily originate from the Peace River Basin. Nutrient loading in San Carlos Bay may be the result of urban runoff in the Ft. Myers area and agricultural runoff in the Caloosahatchee River drainage. Upper Charlotte Harbor is probably affected to some degree by urbanization at the mouth of the Peace River. There have been reports of declining fisheries and shellfishing is periodically closed because of bacteria. The timing and possible quality of fresh water inflows into the north end of Matlacha Pass are affected by an extensive canal system in the largely undeveloped northern portion of Cape Coral. The most serious water quality problem in the basin is the Sanibel River located on Sanibel Island at the southern end of the Charlotte Harbor Basin. It has previously received domestic wastewater and runoff from the island's more developed areas. Leachate from local WWTPs has been controlled, but stormwater runoff remains a problem. The area has not been sampled recently, but the Nonpoint Source Assessment still indicates impairment of the water body.

A technical advisory committee was formed in the early 1980s to recommend necessary planning actions in this rapidly growing and developing basin area. The Southwest Florida Water Management District is currently developing a SWIM plan for Charlotte Harbor.

** USGS HYDROLOGIC UNIT: 03100103 CHARLOTTE HARBOR

SURFACE WATER QUALITY DATA FOR 1970-1993
MEDIAN VALUES FOR EACH WATERSHED
CURRENT PERIOD OF RECORD (1989-1993) USED WHERE AVAILABLE
PERIOD PRIOR TO 1989 IS EVALUATED AS HISTORICAL INFORMATION

INDEX	GOOD	FAIR	POOR
WQI-RIVER	0-44	45-59	60-90
TSI-ESTUARY	0-49	50-59	60-100
TSI-LAKE	0-59	60-69	70-100

WATERSHED ID	NAME	WATERSHED DATA RECORD				WATER CLARITY				DISSOLVED OXYGEN		OXYGEN DEMAND			PH	ALKALINITY	TROPHIC STATUS			COLIFORM		BIOLOGICAL SPECIES DIVERSITY			COND	FLOW	WATER QUALITY INDICES	
		MAX #OBS	BEG YR	END YR	DATA PERIOD	TURB	SD	COLOR	TSS	DO	DOSAT	BOD	COD	TOC	PH	ALK	NITRO	PHOS	CHLA	TOTAL	FECL	NAT	ART	BECK	COND	FLOW	WQI	TSI
* WATER BODY TYPE: ESTUARY																												
1	GULF OFF CHARLOTTE HAR	373	90	90	Current	.	.	.	.	9.4	101	.	.	.	8.0	.	0.34	0.01	.	.	.	.	.	.	53175	.	.	24
3	San Carlos Bay	107	73	85	Historical	5.6	0.9	5	19	6.3	73	1.0	.	5	8.1	.	0.71	0.06	4	5	5	.	.	.	46175	.	.	55
4	Pine Island Sound LOWR	68	73	85	Historical	5.0	0.9	13	17	6.3	75	2.0	.	7	8.1	111	0.82	0.06	15	5	5	.	.	.	43525	.	.	59
5	Matlacha Pass	126	73	85	Historical	2.1	1.1	23	14	6.8	83	1.0	.	8	7.9	117	0.87	0.08	6	6	5	.	.	.	34525	.	.	57
7	Pine Island Sound UPPR	3	89	89	Current	4.7	1.2	5	.	7.5	89	.	.	.	8.3	.	0.90	0.07	.	.	1	.	.	.	40500	.	.	56
11	CHARLOTTE HARBOR LOWER	185	82	88	Historical	1.6	2.1	10	13	6.5	77	1.4	.	4	7.8	.	0.54	0.10	6	.	1	4.2	.	.	45150	.	.	41
14	CHARLOTTE HARBOR MID	5	89	89	Current	7.5	1.0	8	.	7.2	84	2.1	.	.	8.1	.	0.45	0.07	7	.	1	.	.	.	38850	.	.	48
23	CHARLOTTE HARBOR MID	4	93	93	Current	1.0	.	30	15	7.3	85	1.6	.	.	7.5	.	0.71	0.14	.	.	1	.	.	.	33200	.	.	49
32	CHARLOTTE HARBOR UPPER	9	92	93	Current	2.0	.	40	12	7.2	85	3.8	.	.	7.7	.	0.82	0.19	4	.	4	.	.	.	36175	.	.	49
* WATER BODY TYPE: STREAM																												
2	CAPTIVA ISLAND	237	71	77	Historical	5.0	0.7	100	.	5.1	59	3.5	190	53	7.9	233	4.74	0.62	.	89	141	.	.	.	4653	0	59	.
9	Gator Slough Canal	63	79	88	Historical	0.8	.	30	1	7.6	80	.	.	9	7.6	124	0.75	0.01	.	.	.	.	.	.	593	86	24	.
28	ALLIGATOR CREEK	6	89	90	Current	1.4	.	40	.	2.8	32	2.7	.	.	6.9	.	0.83	0.09	3	.	98	.	.	.	981	.	53	.
31	NO. PRONG ALLIGATOR CR	11	90	92	Current	7.1	0.7	60	6	4.5	45	0.4	.	14	7.4	124	0.75	0.03	.	.	226	.	.	.	414	.	45	.
35	N FORK ALLIGATOR CREEK	4	84	84	Historical	2.0	.	50	.	1.7	20	.	.	.	7.4	.	0.91	0.12	31	.	60	.	.	.	1100	.	48	.

LEGEND:
ALK-ALKALINITY MG/L
ART-ARTIFICIAL SUBSTRATE DI
BEG YR-BEGINNING SAMPLING YEAR
BECK-BECK'S BIOTIC INDEX
BOD-BIOCHEMICAL OXYGEN DEMAND MG/L
CHLA-CHLOROPHYLL UG/L
COD-CHEMICAL OXYGEN DEMAND MG/L
COLOR-COLOR PCU
COND-CONDUCTIVITY UMHOS
DO-DISSOLVED OXYGEN MG/L
DOSAT-DO % SATURATION
END YR-ENDING YEAR
FECL-FECAL COLIFORM MPN/100ML
FLOW-FLOW CFS
MAX #OBS-MAXIMUM NUMBER OF SAMPLES
NAT-NATURAL SUBSTRATE DIVERSITY
NITRO-TOTAL NITROGEN MG/L
PH-PH STANDARD UNITS
PHOS-TOTAL PHOSPHORUS MG/L
SD-SECCHI DISC METERS
TOC-TOTAL ORGANIC CARBON MG/L
TOTAL-TOTAL COLIFORM MPN/100ML
TSI-TROPHIC STATE INDEX
TSS-TOTAL SUSPENDED SOLIDS MG/L
TURB-TURBIDITY MG/L
WQI-WATER QUALITY INDEX

SURFACE WATER QUALITY DATA SCREENING REPORT
MEDIAN VALUES FOR EACH WATERSHED SCREENED

** USGS HYDROLOGIC UNIT: 03100103 CHARLOTTE HARBOR

'x'=EXCEEDS SCREENING CRITERIA
'0'=WITHIN SCREENING CRITERIA
'.'=MISSING DATA

WATERSHED ID	NAME	RANK WQI OR TSI	DATA RECORD CURRENT OR HISTORICAL	SCREENING VARIABLES AND CRITERIA: TN TN>2.0	STREAM TP TP>.46	LAKE TP TP>.12	PH PH>8.8 PH<5.2	ALK ALK<20	TURB & TSS TURB>16.5 TSS>18	COND COND>1275	OXYGEN DEMAND BOD>3.3 COD>102 TOC>27.5	DO DO<4	COLIFORM BACTI TOT>3700 FECAL>470	BIOL DIV DIART<1.95 DINAT<1.5 BECK<5.5	CHLA CHLA>40	SECCHI DISC SD<.7
* WATER BODY TYPE: ESTUARY																
1	GULF OFF CHARLOTTE HAR	GOOD	Current	0	.	0	0	.	.	x	.	0	.	.	.	.
3	San Carlos Bay	FAIR	Historical	0	.	0	0	.	x	x	0	0	0	.	0	0
4	Pine Island Sound LOWR	FAIR	Historical	0	.	0	0	0	0	x	0	0	0	.	0	0
5	Matlacha Pass	FAIR	Historical	0	.	0	0	0	0	x	0	0	0	.	0	0
7	Pine Island Sound UPPR	FAIR	Current	0	.	0	0	.	0	x	.	0	0	.	.	0
11	CHARLOTTE HARBOR LOWER	GOOD	Historical	0	.	0	0	.	0	x	0	0	0	0	0	0
14	CHARLOTTE HARBOR MID	GOOD	Current	0	.	0	0	.	0	x	0	0	0	.	0	0
23	CHARLOTTE HARBOR MID	GOOD	Current	0	.	x	0	.	0	x	0	0	0	.	.	.
32	CHARLOTTE HARBOR UPPER	GOOD	Current	0	.	x	0	.	0	x	x	0	0	.	0	.
* WATER BODY TYPE: STREAM																
2	CAPTIVA ISLAND	FAIR	Historical	x	x	.	0	0	0	x	x	0	0	.	.	x
9	Gator Slough Canal	GOOD	Historical	0	0	.	0	0	0	.	0	0	.	.	.	.
28	ALLIGATOR CREEK	FAIR	Current	0	0	.	0	.	0	.	0	x	0	.	0	.
31	NO. PRONG ALLIGATOR CR	FAIR	Current	0	0	.	0	0	0	.	0	0	0	.	.	x
35	N FORK ALLIGATOR CREEK	FAIR	Historical	0	0	.	0	.	0	.	.	x	0	.	0	.

LEGEND:
ALK-ALKALINITY
BECK-BECK'S BIOTIC INDEX
BIOL DIV-BIOLOGICAL DIVERSITY
CHLA-CHLOROPHYLL
COND-CONDUCTIVITY
DO-DISSOLVED OXYGEN
CURRENT-1989 TO 1993
DIART-ARTIFICIAL SUBSTRATE DIVERSITY
DINAT-NATURAL SUBSTRATE DIVERSITY
FECAL-FECAL COLIFORM BACTERIA
HISTORICAL-1970 TO 1988
OXYGEN DEMAND-BOD,COD,TOC
PH-PH
TN-NITROGEN
TP-PHOSPHORUS
TOT-TOTAL COLIFORM BACTERIA
TSS-TOTAL SUSPENDED SOLIDS
TURB-TURBIDITY
SD-SECCHI DISC METERS
WQI OR TSI-WATER QUALITY INDEX RATING WHICH INDEX USED, WQI OR TSI, IS BASED ON WATERBODY TYPE

SURFACE WATER QUALITY ASSESSMENT REPORT
TRENDS-SOURCES-CLEANUP

** USGS HYDROLOGIC UNIT: 03100103 CHARLOTTE HARBOR

'x'=DEGRADING TREND
'0'=STABLE TREND
'+'=IMPROVING TREND
'.'=MISSING DATA

WATERSHED ID	NAME	QUALITY RANK: MEETS USE ?	QUALITY RANK: WQI OR TSI	1984 - 1993 TRENDS: OVER-ALL TREND	WQI or TSI	TN	TP	TOC	CHLA	PH	ALK	TURB	TSS	BOD	TCOLI	DOSAT	DO	FCOLI	TEMP	FLOW	MEETS USE	TSI OR WQI	<--- PLEASE READ THESE COLUMNS VERTICALLY: DEGRADATION SOURCES, PRESENT CONDITIONS AND CLEANUP EFFORTS
* WATER BODY TYPE: ESTUARY																						
1	GULF OFF CHARLOTTE HAR	YES	GOOD	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
3	San Carlos Bay	PARTIAL	FAIR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
4	Pine Island Sound LOWR	PARTIAL	FAIR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
5	Matlacha Pass	PARTIAL	FAIR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
7	Pine Island Sound UPPR	PARTIAL	FAIR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
11	CHARLOTTE HARBOR LOWER	YES	GOOD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	.	
14	CHARLOTTE HARBOR MID	YES	GOOD	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
23	CHARLOTTE HARBOR MID	YES	GOOD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	+	.	0	.	
32	CHARLOTTE HARBOR UPPER	YES	GOOD	0	0	0	0	0	x	.	0	0	x	.	0	0	.	x	0	.	.	
* WATER BODY TYPE: STREAM																						
2	CAPTIVA ISLAND	PARTIAL	FAIR																			
9	Gator Slough Canal	YES	GOOD	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
28	ALLIGATOR CREEK	PARTIAL	FAIR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
31	NO. PRONG ALLIGATOR CR	PARTIAL	FAIR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
35	N FORK ALLIGATOR CREEK	PARTIAL	FAIR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	

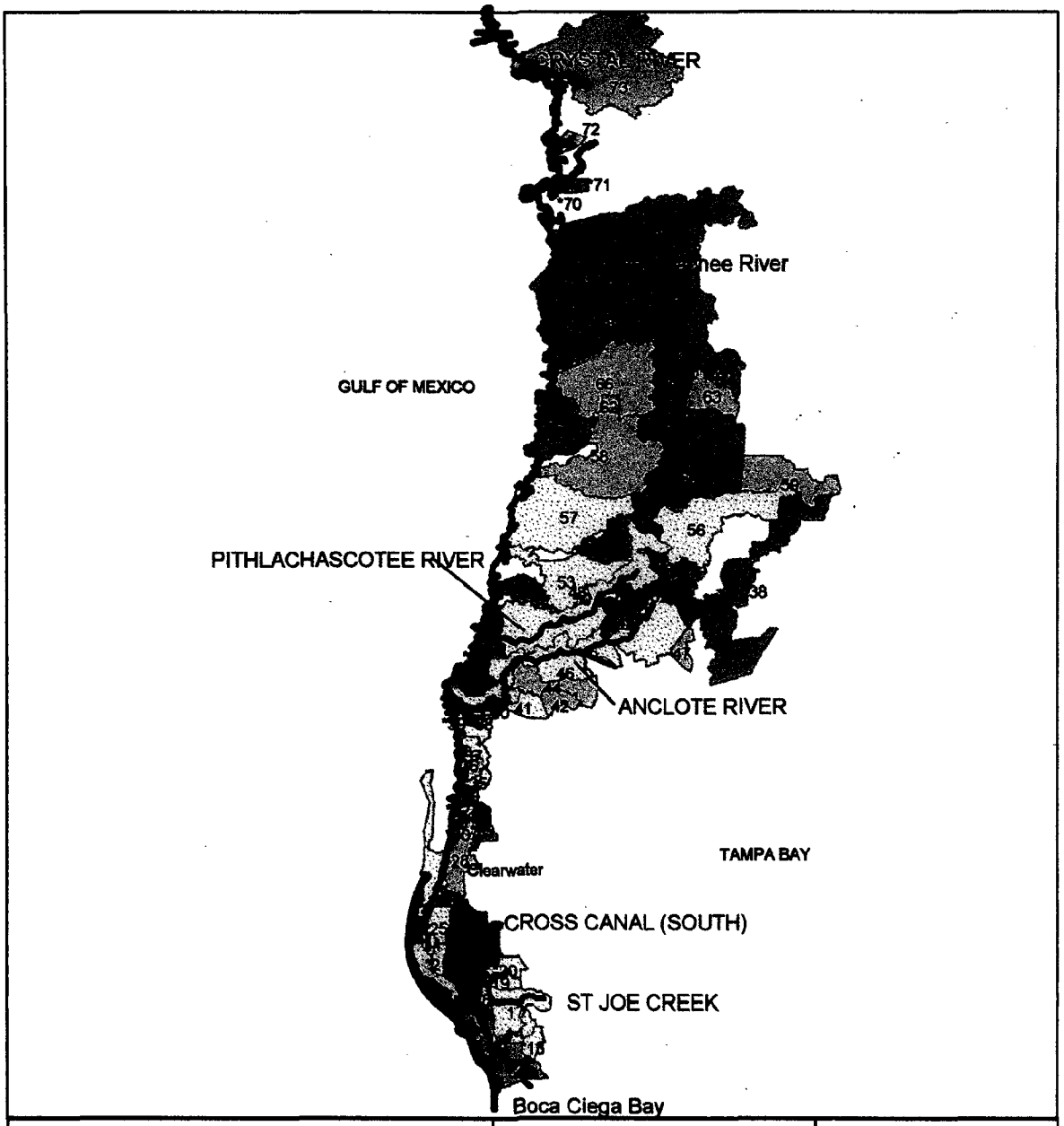
LEGEND:

ALK-ALKALINITY
BOD-BIOCHEM. OXYGEN DEMAND
CHLA-CHLOROPHYLL
DO-DISSOLVED OXYGEN
DOSAT-DO SATURATION
FCOLI-FECAL COLIFORM
FLOW-FLOW
MEETS USE-MEETS DESIGNATED USE
PH-PH
SD-SECCHI DISC METERS
TCOLI-TOTAL COLIFORM
TEMP-TEMPERATURE
TN-NITROGEN
TOC-T.ORGANIC CARBON
TP-PHOSPHORUS
TSS-TOTAL SUSPENDED SOLIDS
TURB-TURBIDITY
TSI-TROPHIC STATE INDEX FOR LAKES AND ESTUARIES
WQI-WATER QULAITY INDEX FOR STREAMS AND SPRINGS

NPS QUALITATIVE SURVEY RESULTS
AN "X" INDICATES A PROBLEM WITH POLLUTANT OR SOURCE
THE * ON MAPID INDICATES NO STORET INFORMATION AVAILABLE FOR THIS WATERSHED
-SEE PAGE 11 FOR LEGEND FOR THIS TABLE-

CATNAME=CHARLOTTE HARBOR HUC=03100103

MAP_ID	WBID	BASIN	WQ3 05	WQP S	NUTRIENT	BACTERIA	SEDIMENT	OIL	PESTICID	OTHER	DEBRIS	OXYGEN	SALINITY	PH	METAL	HABITAT	FLOW	THERMAL	OTHER POL	FISHKILL	ALGAL	WEED	TURBIDITY	ODOR	FISHDEC	NOSWIM	NOFISH	OTHERSYM	IND	STP	AG	RE	SL	LD	UR	CN	HM	OT
1	2065	GULF OFF CHARLOTTE HAR	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X		X	X		X	X	X	X	X		X		X				X	X		X		X	X	
2	2092D	CAPTIVA ISLAND	FAIR	THREAT		X																			X		X			X				X	X	X		
3	2065H	San Carlos Bay	FAIR	THREAT	X	X	X	X	X	X	X	X	X	X		X	X		X	X	X	X	X		X		X				X	X		X		X	X	
4	2065G	Pine Island Sound LOWR	FAIR	THREAT	X	X	X	X	X	X	X	X	X	X		X	X		X	X	X	X	X		X		X		X	X	X	X		X		X	X	
5	2065F	Matlacha Pass	FAIR	THREAT	X	X	X	X	X	X	X	X	X	X		X	X		X	X	X	X	X		X		X				X	X		X		X	X	
6*	2092E	PINE ISLAND		THREAT		X																			X		X							X	X	X		
7	2065E	Pine Island Sound UPPR	FAIR	THREAT	X	X	X	X	X	X	X	X	X	X		X	X		X	X	X	X	X		X		X				X	X		X		X	X	
8*	2092C	NORTH CAPTIVA ISLAND		THREAT		X																			X		X							X	X	X		
9	2082C	Gator Slough Canal	GOOD	THREAT	X	X	X	X	X	X															X	X	X							X		X		
10*	2082B	Yucca Pen Creek		THREAT	X	X	X	X	X	X															X	X	X							X		X		
11	2065D	CHARLOTTE HARBOR LOWER	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X		X	X		X	X	X	X	X		X		X				X	X		X		X	X	
12*	2092B	GASPARILLA ISLAND		THREAT		X																			X		X							X	X	X		
13*	2093	DIRECT RUNOFF TO BAY		THREAT	X	X	X	X	X	X															X	X	X							X		X		
14	2065C	CHARLOTTE HARBOR MID	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X		X	X		X	X	X	X	X		X		X				X	X		X		X	X	
15*	2094	BEAR BRANCH		THREAT	X	X	X	X	X	X															X	X	X							X		X		
16*	2091	DIRECT RUNOFF TO BAY		THREAT	X	X	X	X	X	X															X	X	X							X		X		
17*	2092A	DIRECT RUNOFF TO BAY		THREAT		X																			X		X							X	X	X		
18*	2090	DIRECT RUNOFF TO BAY		THREAT		X																			X		X							X	X	X		
19*	2088	DIRECT RUNOFF TO BAY		THREAT	X	X	X	X	X	X															X	X	X							X		X		
20*	2089	BOGGESS HOLE OUTFLOW		THREAT		X																			X		X							X	X	X		
21*	2082A	PIRATE CANAL		THREAT	X	X	X	X	X	X															X	X	X							X		X		
22*	2086	WINEGOURD CREEK		THREAT	X	X	X	X	X	X															X		X							X		X		
23	2065B	CHARLOTTE HARBOR MID	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X		X	X		X	X	X	X	X		X		X		X		X	X		X		X	X	
24*	2085	DIRECT RUNOFF TO BAY		THREAT	X	X	X	X	X	X															X	X	X							X		X		
25*	2080	CATFISH CREEK BAYOU		THREAT		X																			X		X							X	X	X		
26*	2083	DIRECT RUNOFF TO BAY		THREAT	X	X	X	X	X	X															X	X	X							X		X		
27*	2081	ALLIGATOR CREEK		THREAT	X	X	X	X	X	X															X		X							X		X		
28	2074	ALLIGATOR CREEK	FAIR	THREAT	X	X	X	X	X	X	X	X	X	X		X	X				X	X	X				X	X	X	X	X	X		X	X	X	X	X
29*	2066	DIRECT RUNOFF TO BAY		THREAT	X	X	X	X	X	X	X					X					X		X		X		X				X			X		X		
30*	2077	DIRECT RUNOFF TO BAY		THREAT	X	X	X	X	X	X															X	X	X							X		X		
31	2071	NO. PRONG ALLIGATOR CR	FAIR	FAIR	X	X	X	X	X	X	X	X	X	X		X	X		X		X	X	X				X	X			X	X		X	X	X	X	X
32	2065A	CHARLOTTE HARBOR UPPER	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X		X	X		X	X	X	X	X		X		X		X		X	X		X		X	X	
33*	2073	MANGROVE POINT CANAL		THREAT	X	X	X	X	X	X	X	X	X	X		X	X		X	X	X	X	X				X	X				X			X	X	X	X	X
34*	2062	NO. FORK ALLIGATOR CR		THREAT	X	X	X	X	X	X	X	X	X	X		X	X		X	X	X	X	X		X		X				X	X		X		X	X	
35	2063	N FORK ALLIGATOR CREEK	FAIR	THREAT	X	X	X	X	X	X	X			X		X	X				X	X	X		X						X			X		X	X	
36*	2064	DIRECT RUNOFF TO BAY		THREAT	X	X	X	X	X	X											X	X	X								X			X		X		



CRYSTAL RIVER TO ST. PETE
03100207

AVERAGE WATER QUALITY
1984-1993 STORET DATA
WATERSHED ID NUMBERS LINK MAP TO TABLES
* INDICATES QUALITATIVE ASSESSMENT

WATER QUALITY
- GOOD
- THREATENED
- FAIR
- POOR
- UNKNOWN

CRYSTAL RIVER TO ST. PETERSBURG BEACH BASIN

Basic Facts

Drainage Area: 1,261 square miles
Major Land Uses: wetlands, urban, forest
Population Density: moderate, highly concentrated in southern basin (St. Petersburg, Clearwater, New Port Richey)
Major Pollution Sources: urban drainage
Best Water Quality Areas: springs, upper portion of basin
Worst Water Quality Areas: Cross Bayou Canal, Lake Seminole
Water Quality Trends: stable quality at 8 sites
OFW Waterbodies: Crystal River and Kings Bay
SWIM Waterbodies: Crystal River/Kings Bay
Reference Reports:
Copper and Other Contaminants in King's Bay and Crystal River Sediments: Implications for Impact on the West Indian Manatee, U.S. Fish and Wildlife Service, 1991
Crystal River/Kings Bay SWIM Plan, SWFWMD, 1989
Anclote River Water Quality Study, TBRPC/DEP, 1986
Florida Rivers Assessment, DEP/FREAC/NPS, 1989
Florida Nonpoint Source Assessment, DEP (Tallahassee), 1988
Homosassa River Water Quality Study; Phase 2; Final Report, Florida Land Design and Engineering, Inc., 1989
Resource Evaluation of the Proposal Chassahowitzka Water Management Land Acquisition, SWFWMD, 1989
Pithlachascotee River Water Quality Assessment, SWFWMD, 1991
An Evaluation of Factors Contributing to the Growth of Lyngbya spp. in Kings Bay/Crystal River, Florida, SWFWMD, 1990.
A Diagnostic Feasibility Study of the Weeki Wachee River, SWFWMD, 1994
Basin Water Quality Experts:
Gary Maidhof, Citrus County, 904/746-4223
Sid Flannery, Craig Dye, Ken Romie, SWFWMD, 904/796-7211
Don Moores, Pinellas County, 813/462-4761

In the News

* Citrus County has submitted petitions to designate the Chassahowitzka and Homosassa/Halls Rivers as Outstanding Florida Waters.
* Rodgers Park on the Weeki Wachee River has been closed since summer 1989 because of high coliform bacteria counts. The cause of the high count is unknown, but under study by SWFWMD.
* Boca Ciega Bay as part of Tampa Bay is included in the National Estuary Program.
* Pinellas County adopted a seagrass protection ordinance. It includes closing parts of lower Boca Ciega Bay to motorboat traffic and provides signs in other areas.
* The SWFWMD recently completed a detailed report on water quality in the Weeki Wachee River (see Reference Reports above).

Ecological Characterization

This coastal basin stretches from Crystal River on the north to Tampa Bay on the south and consists of many short meandering streams in the northern portion of the basin. Most of these have tidal characteristics, and four, the Weeki Wachee, Chassahowitzka, Homosassa and Crystal Rivers, have headwaters which are major Florida springs. They empty into the large sawgrass and Juncus dominated estuary that lines this entire 40 mile stretch of the coast. The Department of Natural Resources recently commissioned a study of the main spring of the Homosassa River located at the Homosassa Springs Wildlife Park and preliminary results indicate the spring production has fallen below first order magnitude status.

The waterbodies in this basin are typically clear, high transparency waters which are major recreational and economic attractions. For example, Crystal River is one of the south's most popular diving sites and a wintertime manatee refuge. Crystal River and Kings Bay are designated as Outstanding Florida Waters.

There are two streams in the central portion of the basin, the Pithlachascotee and Anclote Rivers, each with a length of over twenty miles. Both have their origin in the same swampy area and are blackwater rivers. They are affected by urban growth especially in the lower coastal segments. The southernmost reaches of the basin includes Boca Ciega Bay, St. Joseph Sound, and several St. Petersburg area feeder creeks and canals. This area is heavily urbanized.

Anthropogenic Impacts

The spring-fed rivers in the northern basin generally have very good water quality. Crystal River has relatively high nutrient input and because of its high transparency it is subject to dense aquatic weed growths in the Kings Bay area. Historical sources of nutrient input are the Crystal River WWTP discharge, spring discharge, septic tanks and stormwater runoff. The City of Crystal River has completed construction of a new inland spray field and has eliminated the surface discharge from their wastewater treatment facilities. In addition the Homosassa River has a history of bacterial problems of unknown source, possibly residential canals and septic tanks. Also, the Weeki Wachee has some bacteria problems. Rodgers Park on the river has been closed since summer 1989 because of high coliform bacteria counts. The source of the bacteria is unknown. The lower Pithlachascotee and Anclote have also had some bacteria problems, presumably from septic tank drainage and/or urban runoff. There have been some swimming bans in the area.

The worst water quality in the basin is found in the highly developed southern portion. Pinellas County is almost entirely urbanized; the largest cities are Clearwater and St. Petersburg. The barrier islands and beaches are also urban. All of the feeder creeks and most of the lakes in the area have pollution problems with elevated coliform and nutrient concentrations and depressed DO values. The Nonpoint Assessment reports moderate impairment with low DO, excessive algal and weed growth, high bacteria counts and swimming closures in these urban lakes and canals. The Tampa District sampled the Cross Bayou Canal (and Joe Creek, a major tributary) 3 times in 1975 and discontinued their program. Pinellas County initiated a sampling program in August 1990, which includes this waterbody. The WWTP sources previously discharging to these waterbodies have been removed. Pinellas County's South Cross Bayou WWTP (33 MGD capacity) is under consent order to discontinue deep well injection of their wastewater by April 1999. They have applied for a permit to shift all of their effluent (AWT) disposal to a surface water discharge (Joe's Creek) and a reuse system. Bear Creek which also receives urban drainage, has

poor water quality. A portion of Long Bayou was impounded in the 1960s to form Lake Seminole. The Lake has almost no circulation and receives urban drainage. Consequently, it has a nearly perpetual algal bloom and poor water quality. Pinellas County and the SWFWMD have been engaged in an intensive study of the Lake for the past few years. The County is beginning to develop a watershed management plan for the Lake's basin.

A DEP intensive study has been conducted in St. Joseph Sound. It indicated elevated chlorophyll values in the estuary near Clearwater and poor water quality in some of the feeder creeks. The ongoing SWIM study of Crystal River/Kings Bay has generated numerous reports and data concerning current water quality and impacts in the area. Of final note is the ongoing public acquisition of land in this area. The former Lykes Ranch near the Chassahowitzka and the adjoining Walker tract have been acquired by the SWFWMD under the Save Our Rivers Program. Under the CARL and Preservation 2000 programs, the Homosassa Reserve, Pappas property, and additions to St. Martin's Marsh Aquatic Preserve are planned or being acquired.

** USGS HYDROLOGIC UNIT: 03100207 CRYSTAL RIVER TO ST. PETE

SURFACE WATER QUALITY DATA FOR 1970-1993
MEDIAN VALUES FOR EACH WATERSHED
CURRENT PERIOD OF RECORD (1989-1993) USED WHERE AVAILABLE
PERIOD PRIOR TO 1989 IS EVALUATED AS HISTORICAL INFORMATION

INDEX	GOOD	FAIR	POOR
WQI-RIVER	0-44	45-59	60-90
TSI-ESTUARY	0-49	50-59	60-100
TSI-LAKE	0-59	60-69	70-100

WATERSHED ID	NAME	WATERSHED DATA RECORD MAX #OBS	BEG YR	END YR	DATA PERIOD	WATER CLARITY TURB	SD	COLOR	TSS	DISSOLVED OXYGEN DO	DOSAT	OXYGEN DEMAND BOD	COD	TOC	PH	ALKALINITY ALK	TROPHIC STATUS NITRO	PHOS	CHLA	COLIFORM TOTAL	FECL	BIOLOGICAL SPECIES DIVERSITY NAT	ART	BECK	COND	FLOW	WATER QUALITY INDICES WQI	TSI
* WATER BODY TYPE: ESTUARY																												
12	Boca Ciega Bay	8	92	92	Current	5.2	1.0	10	32	6.0	71	.	.	4	7.8	119	0.56	0.08	6	.	5	.	.	.	47729	.	.	49
15	Boca Ciega Bay	53	75	75	Historical	7.1	.	.	17	6.2	78	1.6	.	.	7.7	25	0.81	0.16	5	50	50	.	.	.	45600	.	.	45
18	Boca Ciega Bay	9	92	92	Current	6.0	0.7	40	23	4.2	49	.	.	9	7.3	124	0.80	0.12	10	.	80	.	.	.	30040	.	.	58
19	Bonn Creek	61	75	84	Historical	8.0	.	.	21	7.0	77	2.0	34	14	7.5	.	1.07	0.17	39	106E3	750	.	.	.	8575	1	.	57
22	CROSS CANAL (SOUTH)	10	75	75	Historical	9.7	.	.	23	3.2	39	8.0	.	.	7.7	.	7.33	2.40	88	40000	900	.	.	.	10800	.	.	88
27	DIRECT RUNOFF TO GULF	6	89	89	Current	7.8	1.3	8	69	6.0	66	.	.	.	7.6	.	1.04	0.07	7	13	16	.	.	.	52200	.	.	52
64	WEEKIWATCHEE RIVER	221	70	85	Historical	1.1	1.9	9	4	7.0	79	.	.	.	8.1	130	0.57	0.05	1	.	.	.	.	.	27602	143	.	35
73	CRYSTAL RIVER	223	70	85	Historical	3.0	1.8	6	6	6.9	79	0.8	.	2	7.9	104	0.34	0.04	4	.	.	.	.	.	3195	.	.	36
* WATER BODY TYPE: LAKE																												
23	LAKE SEMINOLE	145	90	92	Current	12.6	.	30	21	6.0	76	.	.	13	8.6	89	2.00	0.09	53	350	83	.	.	.	601	.	.	70
42	LAKE DAN	75	85	85	Historical	.	.	50	.	9.2	91	1.6	.	13	8.2	.	0.70	0.02	.	.	.	.	.	.	316	.	.	37
47	LAKE THOMAS	64	80	80	Historical	5.0	1.3	.	.	9.1	66	.	.	.	.	.	0.67	0.02	.	.	.	.	.	.	104	.	.	44
50	MOON LAKE	45	70	80	Historical	14.3	2.4	24	.	8.0	92	.	.	.	6.7	8	0.62	0.02	3	.	.	.	.	.	81	.	.	34
58	HUNTER LAKE	14	92	93	Current	2.0	1.6	19	2	7.9	86	.	.	10	7.6	28	0.84	0.02	3	.	11	.	.	.	118	.	.	38
59	LAKE IOLA	64	80	80	Historical	.	3.5	10	.	.	.	.	.	.	8.1	27	0.50	0.01	4	.	.	.	.	.	134	.	.	26
* WATER BODY TYPE: SPRING																												
2	CEDAR COVE SPRING	7	89	90	Current	.	.	.	.	3.9	44	.	.	.	7.8	81	.	0.03	.	.	.	.	.	.	293	.	51	.
3	HUNTERS BAY SPRING	5	89	89	Current	.	.	.	.	5.7	64	.	.	.	7.9	72	.	0.03	.	.	.	.	.	.	177	.	37	.
4	AMERICAN LEGION SPRG	7	89	90	Current	.	.	.	.	6.3	71	.	.	.	7.9	78	.	0.06	.	.	.	.	.	.	330	.	41	.
5	CRYSTAL SPRING	5	89	89	Current	.	.	.	.	.	.	.	.	.	7.9	90	.	0.05	.	.	.	.	.	.	374	.	32	.
6	IDIOTS DELIGHT SPRING	7	89	90	Current	.	.	.	.	4.1	47	.	.	.	7.9	91	.	0.04	.	.	.	.	.	.	282	.	50	.
7	TARPON SPRING	6	89	89	Current	.	.	.	.	.	.	.	.	.	7.8	110	.	0.04	.	.	.	.	.	.	1368	.	23	.
8	CRESCENT DRIVE SPRING	5	89	89	Current	.	.	.	.	3.8	43	.	.	.	7.7	124	.	0.02	.	.	.	.	.	.	3660	.	45	.
36	HEALTH SPRING	6	89	92	Current	.	.	3	.	.	.	0.2	17	.	7.3	198	9.31	0.22	.	89	1	.	.	.	2463	.	30	.
57	MAGNOLIA SPRING	3	88	88	Historical	.	.	.	.	1.0	11	.	.	.	7.8	104	.	0.02	.	.	.	.	.	.	375	.	53	.
62	WEEKIWATCHEE SPRING	9	89	92	Current	.	.	3	.	2.4	27	.	.	1	7.5	.	0.46	0.02	.	.	.	.	.	.	288	161	43	.
72	HOMOSASSA SPRING	146	70	88	Historical	1.0	.	5	.	6.0	67	0.3	6	2	7.7	107	0.27	0.03	.	13000	.	.	.	.	1629	85	27	.
* WATER BODY TYPE: STREAM																												
1	CRYSTAL RIVER	34	89	91	Current	.	.	.	.	6.2	68	.	.	.	8.1	86	.	0.03	.	.	.	.	.	.	403	.	32	.
9	Homosassa River	34	92	93	Current	2.2	1.4	25	5	7.2	81	.	.	3	7.7	117	0.49	0.01	10	.	29	.	.	.	6314	.	19	.
10	Chassahawitzka River	15	92	93	Current	1.3	1.2	10	3	7.9	91	.	.	1	7.4	138	0.46	0.01	1	.	265	.	.	.	4354	.	21	.
14	BEAR CREEK	29	74	80	Historical	6.0	.	22	26	6.0	68	2.5	38	11	6.3	66	1.22	0.11	.	19000	5700	.	.	.	271	26	56	.
17	ST JOE CREEK	99	89	91	Current	.	.	.	10	6.3	72	2.6	26	.	7.3	80	0.88	0.10	.	.	.	.	.	.	238	13	51	.
28	STEVENSON CREEK	16	70	71	Historical	.	.	.	.	9.9	121	.	.	11	.	.	.	.	.	.	.	.	.	.	578	3	28	.
33	CURLEW CREEK	16	70	71	Historical	.	.	.	.	7.0	86	.	.	76	.	.	.	.	.	.	.	.	.	.	288	3	64	.
37	KLOSTERMAN BAYOU RUN	40	75	82	Historical	9.8	.	80	.	.	.	5.9	70	18	6.5	75	4.29	0.39	.	669	3	.	.	.	854	0	59	.
41	HOLLIN CREEK	32	89	92	Current	.	.	.	.	3.1	35	.	.	7	6.6	.	.	.	.	.	.	.	.	.	553	2	55	.

LEGEND:

ALK-ALKALINITY MG/L
ART-ARTIFICIAL SUBSTRATE DI
BEG YR-BEGINNING SAMPLING YEAR
BECK-BECK'S BIOTIC INDEX
BOD-BIOCHEMICAL OXYGEN DEMAND MG/L
CHLA-CHLOROPHYLL UG/L
COD-CHEMICAL OXYGEN DEMAND MG/L
COLOR-COLOR PCU
COND-CONDUCTIVITY UMHOS
DO-DISSOLVED OXYGEN MG/L
DOSAT-DO % SATURATION
END YR-ENDING YEAR
FECL-FECAL COLIFORM MPN/100ML
FLOW-FLOW CFS
MAX #OBS-MAXIMUM NUMBER OF SAMPLES
NAT-NATURAL SUBSTRATE DIVERSITY
NITRO-TOTAL NITROGEN MG/L
PH-PH STANDARD UNITS
PHOS-TOTAL PHOSPHORUS MG/L
SD-SECCHI DISC METERS
TOC-TOTAL ORGANIC CARBON MG/L
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WATERSHED ID	NAME	WATERSHED DATA RECORD				WATER CLARITY				DISSOLVED OXYGEN		OXYGEN DEMAND			PH	ALKALINITY	TROPHIC STATUS				COLIFORM		BIOLOGICAL SPECIES DIVERSITY			COND	FLOW	WATER QUALITY INDICES	
		MAX #OBS	BEG YR	END YR	DATA PERIOD	TURB	SD	COLOR	TSS	DO	DOSAT	BOD	COD	TOC	PH	ALK	NITRO	PHOS	CHLA	TOTAL	FECL	NAT	ART	BECK	COND	FLOW	WQI	TSI
43	SOUTH BRANCH	23	89	93	Current	2.3	0.3	225	2	3.3	37	.	.	29	5.7	7	1.57	0.05	.	.	364	.	.	.	102	1	75	.
44	DUCK SLOUGH	2	71	71	Historical	4.0	.	60	.	.	.	.	.	.	7.7	47	0.63	0.03	.	.	.	.	.	.	1405	0	23	.
46	ANCLOTE RIVER	29	89	92	Current	.	.	198	.	4.1	43	.	.	13	7.0	.	0.79	0.08	.	.	.	.	.	.	388	11	53	.
48	PITHLACHASCOTEE RIVER	63	89	92	Current	.	.	186	.	5.1	56	.	.	19	6.6	.	0.90	0.04	.	.	.	.	.	.	147	5	50	.
53	BEAR CREEK	100	71	85	Historical	.	.	38	.	5.4	61	1.1	.	19	6.2	.	.	0.10	.	645	177	.	.	.	264	3	48	.
56	JUMPING GULLY	61	70	86	Historical	1.8	.	95	.	6.3	72	1.3	.	22	6.5	10	0.82	0.02	.	.	.	.	.	.	63	4	48	.
63	PECKS SINK OVERFLOW	60	74	77	Historical	.	.	.	.	6.8	77	2.0	.	16	.	.	.	.	.	.	.	.	.	.	118	0	43	.
66	WEEKIWATCHEE RIVER	152	73	88	Historical	1.2	2.4	6	2	6.0	67	.	2	0	7.8	137	0.38	0.04	2	280	22	.	.	.	701	.	32	.

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TSS-TOTAL SUSPENDED SOLIDS MG/L
TURB-TURBIDITY MG/L
WQI-WATER QUALITY INDEX

SURFACE WATER QUALITY DATA SCREENING REPORT ** USGS HYDROLOGIC UNIT: 03100207 CRYSTAL RIVER TO ST. PETE
MEDIAN VALUES FOR EACH WATERSHED SCREENED

'x'=EXCEEDS SCREENING CRITERIA
'0'=WITHIN SCREENING CRITERIA
'.'=MISSING DATA

WATERSHED ID	NAME	RANK WQI OR TSI	DATA RECORD CURRENT OR HISTORICAL	SCREENING VARIABLES AND CRITERIA: TN TN>2.0	STREAM TP TP>.46	LAKE TP TP>.12	PH PH>8.8 PH<5.2	ALK ALK<20	TURB & TSS TURB>16.5 TSS>18	COND COND>1275	OXYGEN DEMAND BOD>3.3 COD>102 TOC>27.5	DO DO<4	COLIFORM BACTI TOT>3700 FECAL>470	BIOL DIV DIART<1.95 DINAT<1.5 BECK<5.5	CHLA CHLA>40	SECCHI DISC SD<.7
* WATER BODY TYPE: ESTUARY																
12	Boca Ciega Bay	GOOD	Current	0	.	0	0	0	x	x	0	0	0	.	0	0
15	Boca Ciega Bay	GOOD	Historical	0	.	x	0	0	0	x	0	0	0	.	0	.
18	Boca Ciega Bay	FAIR	Current	0	.	0	0	0	x	x	0	0	0	.	0	x
19	Bonn Creek	FAIR	Historical	0	.	x	0	.	x	x	0	0	x	.	0	.
22	CROSS CANAL (SOUTH)	POOR	Historical	x	.	x	0	.	x	x	x	x	x	.	x	.
27	DIRECT RUNOFF TO GULF	FAIR	Current	0	.	0	0	.	x	x	.	0	0	.	0	0
64	WEEKIWATCHEE RIVER	GOOD	Historical	0	.	0	0	0	0	x	.	0	.	.	0	0
73	CRYSTAL RIVER	GOOD	Historical	0	.	0	0	0	0	x	0	0	.	.	0	0
* WATER BODY TYPE: LAKE																
23	LAKE SEMINOLE	POOR	Current	0	.	0	0	0	x	.	0	0	0	.	x	.
42	LAKE DAN	GOOD	Historical	0	.	0	0	.	.	.	0	0	.	.	.	.
47	LAKE THOMAS	GOOD	Historical	0	.	0	.	.	0	.	.	0	.	.	.	0
50	MOON LAKE	GOOD	Historical	0	.	0	0	x	0	.	.	0	.	.	0	0
58	HUNTER LAKE	GOOD	Current	0	.	0	0	0	0	.	0	0	0	.	0	0
59	LAKE IOLA	GOOD	Historical	0	.	0	0	0	.	.	.	.	.	.	0	0
* WATER BODY TYPE: SPRING																
2	CEDAR COVE SPRING	FAIR	Current	.	0	.	0	0	.	.	.	x	.	.	.	.
3	HUNTERS BAY SPRING	GOOD	Current	.	0	.	0	0	.	.	.	0	.	.	.	.
4	AMERICAN LEGION SPRG	GOOD	Current	.	0	.	0	0	.	.	.	0	.	.	.	.
5	CRYSTAL SPRING	GOOD	Current	.	0	.	0	0	.	.	.	.	.	.	.	.
6	IDIOTS DELIGHT SPRING	FAIR	Current	.	0	.	0	0	.	.	.	0	.	.	.	.
7	TARPON SPRING	GOOD	Current	.	0	.	0	0	.	x	.	.	.	.	.	.
8	CRESCENT DRIVE SPRING	FAIR	Current	.	0	.	0	0	.	x	.	x	.	.	.	.
36	HEALTH SPRING	GOOD	Current	x	0	.	0	0	.	x	0	.	0	.	.	.
57	MAGNOLIA SPRING	FAIR	Historical	.	0	.	0	0	.	.	.	x	.	.	.	.
62	WESKIWATCHEE SPRING	GOOD	Current	0	0	.	0	.	.	.	0	x	.	.	.	.
72	HOMOSASSA SPRING	GOOD	Historical	0	0	.	0	0	0	x	0	0	x	.	.	.
* WATER BODY TYPE: STREAM																
1	CRYSTAL RIVER	GOOD	Current	.	0	.	0	0	.	.	.	0	.	.	.	.
9	Homosassa River	GOOD	Current	0	0	.	0	0	0	x	0	0	0	.	0	0
10	Chassahawitzka River	GOOD	Current	0	0	.	0	0	0	x	0	0	0	.	0	0
14	BEAR CREEK	FAIR	Historical	0	0	.	0	0	x	.	0	0	x	.	.	.
17	ST JOE CREEK	FAIR	Current	0	0	.	0	0	0	.	0	0	.	.	.	.
28	STEVENSON CREEK	GOOD	Historical	.	.	.	.	.	.	.	0	0	.	.	.	.
33	CURLEW CREEK	UNKN	Historical	.	.	.	.	.	.	.	x	0	.	.	.	.
37	KLOSTERMAN BAYOU RUN	FAIR	Historical	x	0	.	0	0	0	.	x	.	0	.	.	.
41	HOLLIN CREEK	FAIR	Current	.	.	.	0	.	.	.	0	x	.	.	.	.

LEGEND:
ALK-ALKALINITY
BECK-BECK'S BIOTIC INDEX
BIOL DIV-BIOLOGICAL DIVERSITY
CHLA-CHLOROPHYLL
COND-CONDUCTIVITY
DO-DISSOLVED OXYGEN
CURRENT-1989 TO 1993
DIART-ARTIFICIAL SUBSTRATE DIVERSITY
DINAT-NATURAL SUBSTRATE DIVERSITY
FECAL-FECAL COLIFORM BACTERIA
HISTORICAL-1970 TO 1988
OXYGEN DEMAND-BOD,COD,TOC
PH-PH
TN-NITROGEN
TP-PHOSPHORUS
TOT-TOTAL COLIFORM BACTERIA
TSS-TOTAL SUSPENDED SOLIDS
TURB-TURBIDITY
SD-SECCHI DISC METERS
WQI OR TSI-WATER QUALITY INDEX RATING WHICH INDEX USED, WQI OR TSI, IS BASED ON WATERBODY TYPE

SURFACE WATER QUALITY DATA SCREENING REPORT
MEDIAN VALUES FOR EACH WATERSHED SCREENED

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WATERSHED ID	NAME	RANK WQI OR TSI	DATA RECORD CURRENT OR HISTORICAL	SCREENING VARIABLES AND CRITERIA												
				TN	STREAM TP	LAKE TP	PH	ALK	TURB & TSS	COND	OXYGEN DEMAND	DO	COLIFORM BACTI	BIOL DIV	CHLA	SECCHI DISC
				TN>2.0	TP>.46	TP>.12	PH>8.8 PH<5.2	ALK<20	TURB>16.5 TSS>18	COND>1275	BOD>3.3 COD>102 TOC>27.5	DO<4	TOT>3700 FECAL>470	DIART<1.95 DINAT<1.5 BECK<5.5	CHLA>40	SD<.7
43	SOUTH BRANCH	UNKN	Current	0	0	.	0	x	0	.	x	x	0	.	.	x
44	DUCK SLOUGH	GOOD	Historical	0	0	.	0	0	0	x	.	.	.	.	.	.
46	ANCLOTE RIVER	FAIR	Current	0	0	.	0	.	.	.	0	0	.	.	.	.
48	PITHLACHASCOTEE RIVER	FAIR	Current	0	0	.	0	.	.	.	0	0	.	.	.	.
53	BEAR CREEK	FAIR	Historical	.	0	.	0	.	.	.	0	0	0	.	.	.
56	JUMPING GULLY	FAIR	Historical	0	0	.	0	x	0	.	0	0	.	.	.	.
63	PECKS SINK OVERFLOW	GOOD	Historical	.	.	.	.	.	.	.	0	0	.	.	.	.
66	WEEKIWATCHEE RIVER	GOOD	Historical	0	0	.	0	0	0	0	0	0	0	.	0	0

LEGEND:
ALK-ALKALINITY
BECK-BECK'S BIOTIC INDEX
BIOL DIV-BIOLOGICAL DIVERSITY
CHLA-CHLOROPHYLL
COND-CONDUCTIVITY
DO-DISSOLVED OXYGEN
CURRENT-1989 TO 1993
DIART-ARTIFICIAL SUBSTRATE DIVERSITY
DINAT-NATURAL SUBSTRATE DIVERSITY
FECAL-FECAL COLIFORM BACTERIA
HISTORICAL-1970 TO 1988
OXYGEN DEMAND-BOD,COD,TOC
PH-PH
TN-NITROGEN
TP-PHOSPHORUS
TOT-TOTAL COLIFORM BACTERIA
TSS-TOTAL SUSPENDED SOLIDS
TURB-TURBIDITY
SD-SECCHI DISC METERS
WQI OR TSI-WATER QUALITY INDEX RATING WHICH INDEX USED, WQI OR TSI, IS BASED ON WATERBODY TYPE

SURFACE WATER QUALITY ASSESSMENT REPORT
TRENDS-SOURCES-CLEANUP

** USGS HYDROLOGIC UNIT: 03100207 CRYSTAL RIVER TO ST. PETE

'x'=DEGRADING TREND
'0'=STABLE TREND
'+'=IMPROVING TREND
'.'=MISSING DATA

WATERSHED ID	NAME	MEETS USE ?	QUALITY RANK WQI OR TSI	OVER-ALL TREND	WQ or TSI	1984 - 1993 TRENDS: TN	TP	TCOLI	SD	PH	ALK	TURB	TSS	BOD	TOC	DO	DOSAT	FCOLI	TEMP	FLOW	CHLA	TN	TP	<--- PLEASE READ THESE COLUMNS VERTICALLY: DEGRADATION SOURCES, PRESENT CONDITIONS AND CLEANUP EFFORTS
* WATER BODY TYPE: ESTUARY																								
12	Boca Ciega Bay	YES	GOOD	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
15	Boca Ciega Bay	YES	GOOD																					
18	Boca Ciega Bay	PARTIAL	FAIR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
19	Bonn Creek	PARTIAL	FAIR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
22	CROSS CANAL (SOUTH)	NO	POOR																					
27	DIRECT RUNOFF TO GULF	PARTIAL	FAIR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
64	WEEKIWATCHEE RIVER	YES	GOOD	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
73	CRYSTAL RIVER	YES	GOOD	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
* WATER BODY TYPE: LAKE																								
23	LAKE SEMINOLE	NO	POOR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
42	LAKE DAN	YES	GOOD	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
47	LAKE THOMAS	YES	GOOD																					
50	MOON LAKE	YES	GOOD																					
58	HUNTER LAKE	YES	GOOD	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
59	LAKE IOLA	YES	GOOD																					
* WATER BODY TYPE: SPRING																								
2	CEDAR COVE SPRING	PARTIAL	FAIR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
3	HUNTERS BAY SPRING	YES	GOOD	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
4	AMERICAN LEGION SPRG	YES	GOOD	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
5	CRYSTAL SPRING	YES	GOOD	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
6	IDIOTS DELIGHT SPRING	PARTIAL	FAIR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
7	TARPON SPRING	YES	GOOD	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
8	CRESCENT DRIVE SPRING	PARTIAL	FAIR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
36	HEALTH SPRING	YES	GOOD	0	0	0	0	.	0	.	.	.	+	.	.	x	0	0	.	.	.	0	.	.
57	MAGNOLIA SPRING	PARTIAL	FAIR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
62	WEEKIWATCHEE SPRING	YES	GOOD	0	0	0	0	.	0	.	.	.	.	0	0	0	.	.	.	.	.	0	0	+
72	HOMOSASSA SPRING	YES	GOOD	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
* WATER BODY TYPE: STREAM																								
1	CRYSTAL RIVER	YES	GOOD	0	x	.	0	.	0	.	.	.	.	0	x	.	.	.	.	.	.	0	.	.
9	Homosassa River	YES	GOOD	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
10	Chassahawitzka River	YES	GOOD	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
14	BEAR CREEK	PARTIAL	FAIR																					
17	ST JOE CREEK	PARTIAL	FAIR	0	+	0	0	.	0	0	.	0	0	.	0	0	0	.	.	.	.	0	+	
28	STEVENSON CREEK	YES	GOOD																					
33	CURLEW CREEK	NO	UNKN																					
37	KLOSTERMAN BAYOU RUN	PARTIAL	FAIR																					

LEGEND:

ALK-ALKALINITY
BOD-BIOCHEM. OXYGEN DEMAND
CHLA-CHLOROPHYLL
DO-DISSOLVED OXYGEN
DOSAT-DO SATURATION
FCOLI-FECAL COLIFORM
FLOW-FLOW
MEETS USE-MEETS DESIGNATED USE
PH-PH
SD-SECCHI DISC METERS
TCOLI-TOTAL COLIFORM
TEMP-TEMPERATURE
TN-NITROGEN
TOC-T.ORGANIC CARBON
TP-PHOSPHORUS
TSS-TOTAL SUSPENDED SOLIDS
TURB-TURBIDITY
TSI-TROPHIC STATE INDEX FOR LAKES AND ESTUARIES
WQI-WATER QULAITY INDEX FOR STREAMS AND SPRINGS

SURFACE WATER QUALITY ASSESSMENT REPORT ** USGS HYDROLOGIC UNIT: 03100207 CRYSTAL RIVER TO ST. PETE
TRENDS-SOURCES-CLEANUP

'x'=DEGRADING TREND
'0'=STABLE TREND
'+'=IMPROVING TREND
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WATERSHED ID	NAME	QUALITY RANK MEETS USE ?	WQI OR TSI	OVER-ALL TREND	WQ I	WT SI	TN	TP	TC HL A	SD	PH	AI LK	TU RB	SS	BO D	TO C	DO SI	DO AI	TC OL TI	FC OL I	FE CL I	TE MP	FL OW	DEGRADATION SOURCES, PRESENT CONDITIONS AND CLEANUP EFFORTS <--- PLEASE READ THESE COLUMNS VERTICALLY
41	HOLLIN CREEK	PARTIAL	FAIR	0	0		.	.	.	.	0	.	.	.	.	0	0	0	.	.	0	x	
43	SOUTH BRANCH	NO	UNKN	0	0		.	.	.	.	0	.	.	.	.	0	0	0	.	.	0	x	
44	DUCK SLOUGH	YES	GOOD																				
46	ANCLOTE RIVER	PARTIAL	FAIR	0	0		0	0	.	.	x	.	.	.	.	0	0	0	.	.	0	0	
48	PITHLACHASCOTEE RIVER	PARTIAL	FAIR	0	x		0	+	.	.	x	.	.	.	.	0	0	0	.	.	0	0	
53	BEAR CREEK	PARTIAL	FAIR	.	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
56	JUMPING GULLY	PARTIAL	FAIR	.	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
63	PECKS SINK OVERFLOW	YES	GOOD																				
66	WEEKIWATCHEE RIVER	YES	GOOD	.	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	

LEGEND:

ALK-ALKALINITY
BOD-BIOCHEM. OXYGEN DEMAND
CHLA-CHLOROPHYLL
DO-DISSOLVED OXYGEN
DOSAT-DO SATURATION
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FLOW-FLOW
MEETS USE-MEETS DESIGNATED USE
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SD-SECCHI DISC METERS
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TSI-TROPHIC STATE INDEX FOR LAKES AND ESTUARIES
WQI-WATER QULAITY INDEX FOR STREAMS AND SPRINGS

NPS QUALITATIVE SURVEY RESULTS
AN "X" INDICATES A PROBLEM WITH POLLUTANT OR SOURCE
THE * ON MAPID INDICATES NO STORET INFORMATION AVAILABLE FOR THIS WATERSHED
-SEE PAGE 11 FOR LEGEND FOR THIS TABLE-

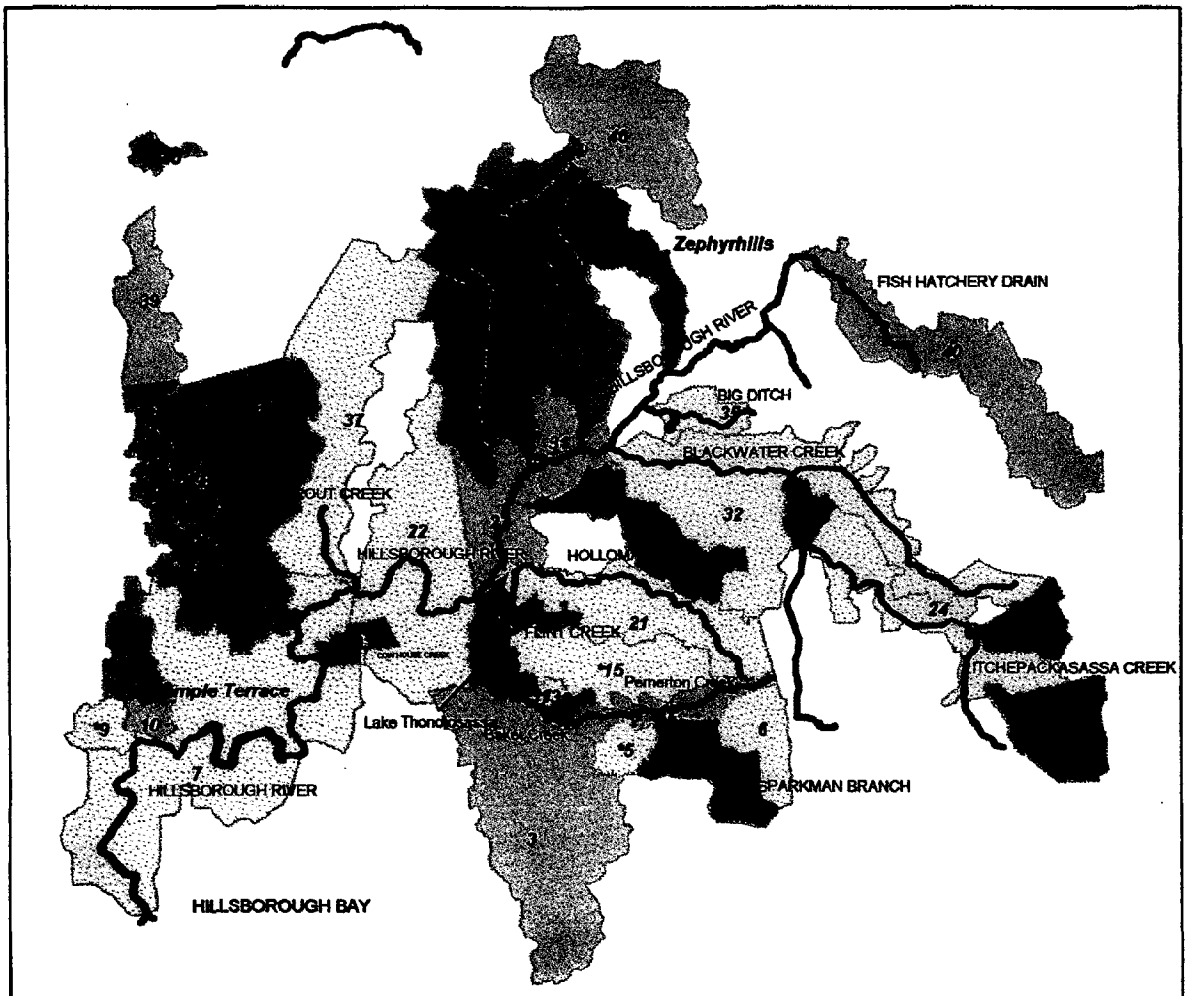
CATNAME=CRYSTAL RIVER TO ST. PETE HUC=03100207

MAP ID	WBID	BASIN	WQ3 05	WQNPS	NUTRIENTS	BACTERIA	SEDIMENT	OIL	PESTICIDE ID	OTHER	DEBRIS	OXYGEN	SALINITY	PH	METAL	HABITAT	FLOW	THERMAL	OTHER	FISH KILL	ALGAL	WEED	TURBIDITY	ODOR	FISH HAB	NOSWIM	NOFISH	OTHER	IND	STP	AG	RE	SL	LD	UR	CN	HM	OT
1	1341A	CRYSTAL RIVER	GOOD	THREAT	X	X	X	X						X	X						X	X	X	X		X		X						X	X	X	X	X
2	1341B	CEDAR COVE SPRING	FAIR	THREAT	X	X	X	X						X	X						X	X	X	X		X		X						X	X	X	X	X
3	1341C	HUNTERS BAY SPRING	GOOD	THREAT	X	X	X	X						X	X						X	X	X	X		X		X						X	X	X	X	X
4	1341D	AMERICAN LEGION SPRG	GOOD	THREAT	X	X	X	X						X	X						X	X	X	X		X		X						X	X	X	X	X
5	1341E	CRYSTAL SPRING	GOOD	THREAT	X	X	X	X						X	X						X	X	X	X		X		X						X	X	X	X	X
6	1341F	IDIOTS DELIGHT SPRING	FAIR	THREAT	X	X	X	X						X	X						X	X	X	X		X		X						X	X	X	X	X
7	1341G	TARPON SPRING	GOOD	THREAT	X	X	X	X						X	X						X	X	X	X		X		X						X	X	X	X	X
8	1341H	CRESCENT DRIVE SPRING	FAIR	THREAT	X	X	X	X						X	X						X	X	X	X		X		X						X	X	X	X	X
10	1348	Chassahawitzka River	GOOD	THREAT	X	X	X	X						X	X						X	X	X			X		X				X		X	X	X		X
11*	1392B	NEFF LAKE		THREAT	X	X														X		X			X						X			X		X		X
12	1694A	Boca Ciega Bay	GOOD	THREAT				X						X	X				X								X		X	X								
13*	1716	CLAM BAYOU DRAIN		FAIR	X	X	X	X	X	X	X	X	X		X	X	X		X		X	X	X		X		X							X	X	X	X	X
14	1701	BEAR CREEK	FAIR	FAIR	X	X	X	X		X	X				X	X	X						X				X	X							X	X	X	X
15	1694B	Boca Ciega Bay	GOOD	THREAT				X						X	X				X								X											
16*	1694C	Boca Ciega Bay		THREAT				X						X	X				X								X											
17	1668A	ST JOE CREEK	FAIR	POOR	X	X	X	X		X	X	X	X		X	X	X			X	X	X	X	X	X			X	X	X				X	X	X	X	X
18	1694D	Boca Ciega Bay	FAIR	THREAT				X						X	X				X								X											
19	1668B	Bonn Creek	FAIR	POOR	X	X	X	X		X	X	X	X		X	X	X			X	X	X	X	X	X			X						X	X	X	X	X
20*	1662	PINELLAS PARK DITCH		FAIR	X	X	X	X		X	X	X	X			X	X			X	X	X	X	X	X	X								X	X	X	X	X
21*	1650	WALSINGHAM RESERVOIR		FAIR	X	X	X	X				X	X	X		X	X	X		X		X	X												X	X	X	X	X
22	1641	CROSS CANAL (SOUTH)	POOR	POOR	X	X	X	X		X	X	X	X		X	X	X			X	X	X	X	X	X		X	X	X	X				X	X	X	X	X
23	1618	LAKE SEMINOLE	POOR	FAIR	X	X	X	X		X	X	X	X		X	X	X			X	X	X	X		X	X		X						X	X	X	X	X
24*	1643	CHURCH CREEK		FAIR	X	X	X					X	X			X	X			X		X	X												X	X	X	X	X
25*	1633	MCKAY CREEK		FAIR	X	X	X	X				X	X			X	X			X		X	X					X							X	X	X	X	X
26*	1614	BELLEAIR GOLFCLUB RUN		THREAT	X	X	X	X	X		X	X	X		X	X	X			X		X	X	X	X	X		X							X	X	X	X	X
27	1528	DIRECT RUNOFF TO GULF	FAIR	FAIR	X	X	X	X		X	X	X	X		X	X	X			X		X	X	X	X	X		X							X	X	X	X	X
28	1567	STEVENSON CREEK	GOOD	FAIR	X	X	X	X		X	X	X	X		X	X	X			X	X	X	X	X	X	X		X							X	X	X	X	X
29*	1550	JERRY BRANCH		THREAT	X	X	X	X		X	X	X	X		X	X	X						X	X	X			X							X	X	X	X	X
30*	1562	DIRECT RUNOFF TO GULF		THREAT		X		X			X	X	X	X	X	X						X		X											X	X	X	X	X
31*	1556	CEDAR CREEK		FAIR	X	X	X	X			X	X	X	X	X	X				X	X		X												X	X		X	X
32*	1554	DIRECT RUNOFF TO GULF		THREAT	X	X		X			X	X	X	X	X	X	X						X	X												X	X	X	X	X
33	1538	CURLEW CREEK	POOR	THREAT	X	X					X	X	X		X	X							X	X												X	X	X	X	X
34*	1535	DIRECT RUNOFF TO GULF		THREAT		X	X	X			X	X	X	X	X	X							X													X	X	X	X	X
35*	1527	SUTHERLAND BAYOU		FAIR		X	X	X			X	X	X	X	X	X				X			X													X	X	X	X	X
36	1512	HEALTH SPRING	GOOD	FAIR		X	X				X	X	X		X					X			X													X	X	X	X	X
37	1508	KLOSTERMAN BAYOU RUN	FAIR	FAIR	X	X	X	X			X	X	X	X	X	X	X				X		X	X					X							X	X	X	X	X
38*	1440A	SPRING BAYOU		THREAT	X	X	X	X			X	X	X	X	X	X	X	X		X			X			X	X			X					X	X	X	X	X
39*	1479	DIRECT RUNOFF TO GULF		THREAT	X	X	X	X			X	X	X	X	X	X				X			X							X					X	X	X	X	X
40*	1481	SALT LAKE		THREAT	X	X	X	X			X	X	X	X	X	X	X	X		X			X			X	X			X					X	X	X	X	X
41	1475	HOLLIN CREEK	FAIR	THREAT	X	X	X	X			X	X	X	X	X	X	X	X		X			X			X	X			X					X	X	X	X	X
42	1475A	LAKE DAN	GOOD	THREAT	X	X	X	X			X	X	X	X	X	X	X	X		X			X			X	X			X					X	X	X	X	X
43	1456	SOUTH BRANCH	POOR	THREAT				X							X			X					X			X	X			X					X		X		
44	1461	DUCK SLOUGH	GOOD	THREAT	X											X						X		X												X	X			
45*	1450	DIRECT RUNOFF TO GULF		THREAT				X						X	X	X	X	X								X	X	X			X				X		X		
46	1440	ANCLOTE RIVER	FAIR	THREAT	X	X	X	X			X	X	X	X	X	X	X	X		X			X			X	X			X					X	X	X	X	X
47	1456A	LAKE THOMAS	GOOD	THREAT				X							X			X					X			X	X			X					X		X		
48	1409	PITHLACHASCOTEE RIVER	FAIR	THREAT	X	X	X	X	X		X			X	X	X	X						X		X	X	X	X			X					X	X	X		X
49*	1441	CROSS CYPRESS BRANCH		THREAT				X							X			X					X			X	X			X					X		X		
50	1409A	MOON LAKE	GOOD	THREAT	X	X	X	X	X		X			X	X	X	X						X		X	X	X	X			X					X	X	X		X

NPS QUALITATIVE SURVEY RESULTS
AN "X" INDICATES A PROBLEM WITH POLLUTANT OR SOURCE
THE * ON MAPID INDICATES NO STORET INFORMATION AVAILABLE FOR THIS WATERSHED
-SEE PAGE 11 FOR LEGEND FOR THIS TABLE-

CATNAME=CRYSTAL RIVER TO ST. PETE HUC=03100207
(continued)

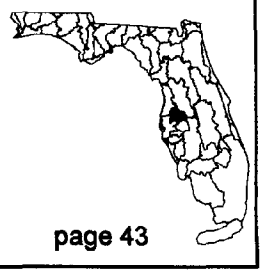
MAP ID	WBID	BASIN	WQ3 05	WQNPS	NUTRIENT	BACTERIA	SEDIMENT	OIL	PESTICIDES	OTHER CHEMICAL	DEBRIS	OXYGEN	SALINITY	PH	METAL	HABITAT	FLOW	THERMAL	OTHER PROBLEMS	FISHKILL	ALGAL	WEED	TURBIDITY	ODOR	FISHDECL	NOSWIM	NOFISH	OTHERSYM	IND	STP	AG	RE	SL	LD	UR	CN	HM	OT
51*	1432	DOUBLE HAMMOCK CREEK		THREAT	X	X																									X			X		X		
52*	1434	FIVE MILE CREEK		THREAT				X						X	X	X										X	X				X					X		
53	1420	BEAR CREEK	FAIR	THREAT	X			X	X					X	X	X										X	X				X			X		X		
54*	1423	GOWERS CORNER SLOUGH		THREAT											X											X	X				X				X	X		
55*	1407	BUCKHORN CREEK		THREAT																											X				X	X		
56	1401	JUMPING GULLY	FAIR	THREAT																											X							X
57	1400	MAGNOLIA SPRING	FAIR	THREAT	X		X		X							X																		X		X		
58	1391	HUNTER LAKE	GOOD	THREAT								X	X	X	X								X					X				X						
59	1392A	LAKE IOLA	GOOD	THREAT	X	X														X		X				X					X			X		X		X
60*	1392	CREWS LAKE OUTLET		THREAT	X	X														X		X				X					X			X		X		X
61*	1389	JENKINS SPRING		THREAT																						X						X	X		X	X		
62	1382B	WEEKIWATCHEE SPRING	GOOD	THREAT	X	X	X				X			X	X		X	X				X				X		X						X		X		
63	1387	PECKS SINK OVERFLOW	GOOD	THREAT	X		X		X							X																		X		X		
64	1382	WEEKIWATCHEE RIVER	GOOD	THREAT	X	X	X				X			X	X		X	X				X				X		X						X		X		
65*	1380	INTERNALLY DRAINED		THREAT	X		X		X							X																		X		X		
66	1382A	WEEKIWATCHEE RIVER	GOOD	THREAT	X	X	X				X			X	X		X	X				X				X		X						X		X		
67*	1384	PECKS SINK		THREAT										X	X	X	X						X					X			X			X	X	X		
68*	1373	DIRECT RUNOFF TO GULF		THREAT	X		X		X							X																		X		X		
69*	1361	Weekiwachee River		THREAT	X																X	X	X					X						X	X	X		X
70*	1348B	Blind Creek		THREAT	X	X	X	X						X	X						X	X	X			X		X			X			X	X	X		X
71*	1348C	Crawford Creek		THREAT	X	X	X	X						X	X						X	X	X			X		X			X			X	X	X		X
73	1341	CRYSTAL RIVER	GOOD	THREAT	X	X	X	X						X	X						X	X	X	X		X		X						X	X	X	X	X



HILLSBOROUGH RIVER BASIN
03100205

AVERAGE WATER QUALITY
1984-1993 STORET DATA
WATERSHED ID NUMBERS LINK MAP TO TABLES
* INDICATES QUALITATIVE ASSESSMENT

WATER QUALITY
- GOOD
- THREATENED
- FAIR
- POOR
- UNKNOWN



HILLSBOROUGH RIVER BASIN

Basic Facts

Drainage Area: 650 square miles
Major Land Uses: agriculture, rangeland, urban development
Population Density: moderate, except in southern basin (Tampa, Plant City, Zephyrhills)
Major Pollution Sources: several WWTPs and industrial sources
Best Water Quality Areas: middle Hillsborough River, Fish Hatchery Drain
Worst Water Quality Areas: Lake Thonotosassa, Itchepachasassa Creek
Water Quality Trends: stable quality at 8 sites, Lake Thonotosassa degrading, Baker Creek and Blackwater Creek improving
OFW Waterbodies: Hillsborough River State Park
SWIM Waterbodies: Lake Thonotosassa
Reference Reports:
Florida Rivers Assessment, DEP/FREAC/NPS, 1989
Florida Nonpoint Source Assessment, DEP (Tallahassee), 1988
Lake Thonotosassa SWIM Plan, SWFWMD
Basin Water Quality Experts:
Sid Flannery, SWFWMD, 904/796-7211
Peter Clark, TBRPC 813/577-5151
Doug Farrell, DEP, (Tampa), 813/744-6100
Roger Stewart, Hillsborough County EPC, 813/272-5960
Ken Romie, SWFWMD, (Brookesville), 813/796-7211

In the News

* Tampa has applied to the SWFWMD to increase the consumptive use of the river. A major study of the lower river (estuary) will accompany the permit review.
* Health advisories recommending limited consumption of largemouth bass due to mercury content have been issued for the Hillsborough River drainage system.
* A large fish kill occurred on the Hillsborough River between Sligh and Osborne Avenues in Tampa, June, 1990. Approximately 10,000 sardines were killed.
* The City of Plant City is under consent order to go to zero discharge by 1997.

Ecological Characterization

The Hillsborough River originates in the Green Swamp near the origin of the Withlacoochee (South) River. The two rivers actually have a swamp connection called the Overflow, which is important to their hydrologic cycles. Flowing southwesterly, the river channel becomes defined and flow is supplemented by

the discharge from Crystal Springs to form a swift, clear stream. Aside from the wetlands, land use in this upper basin includes rangeland, orchards, and some urban drainage from the City of Zephyrhills and its airport.

Below Crystal Springs, a major drainage, Blackwater Creek, joins the river before it enters the Hillsborough River State Park. Within the park is a 150 yard stretch of shoals and additional inflow of relatively good quality streams. The upper Blackwater Creek drainage also has urban, citrus and rangeland runoff.

Past the park, several tributaries enter from the northern, less-developed portion of the basin. Also, the Pemberton-Baker Creek/Lake Thonotosassa drainage enters from the south. This drainage also has urban, citrus and livestock utilization. Further downstream, just before entering Tampa, is a flood control structure which can divert flow through the Tampa Bypass Canal to Tampa Bay. The next feature of the river is a 4 mile long reservoir from which Tampa draws about 75% of its drinking water.

From the dam to the bay, about 10 miles, the river flows through the heart of urban Tampa, and the channel is highly modified with seawalls, riprap and bridges. It receives freshwater inflow (at about 20 MGD) from Sulfur Springs, but is otherwise brackish. Little remains of native vegetation along this stretch of the river.

Anthropogenic Impacts

This basin is difficult to assess in that professional opinions vary and there is limited monitoring data in STORET for such a highly utilized area. In general, dissolved oxygen in the Hillsborough River is low except where the river flows off the central highlands to the coastal lowlands. Most of the tributaries are sluggish, blackwater streams which are commonly low in DO. In addition to being located in a phosphate rich area, inputs to the river of both phosphorus and nitrogen are generally further increased due to both point and nonpoint sources.

The upper Hillsborough River, near Zephyrhills and Crystal Springs, is apparently undergoing rapid urban development and construction. The Nonpoint Source Assessment rates it as severely impaired with high sedimentation and nutrients and exhibiting algal and weed problems, declining fisheries and fish kills. Water quality parameters indicate fair conditions for the REACH. An improvement to water quality is Crystal Spring's contribution of about 58 cfs of high quality ground water, particularly in the dry season.

Other northern tributaries, upstream of the park, include Big Ditch, which has historically had poor ratings due to mining and rangeland runoff, but has not been assessed recently. The Blackwater Creek basin has several pollution problems, especially in the upper basin. Itchepackasassa Creek (a tributary of Blackwater Creek) has historically had high nutrient, bacteria and toxics levels, as well as low DO concentrations and several fish kills. The source of the problem may have been discharges from two citrus processing companies and runoff from a pesticide packing and shipping company. The latter company has undergone significant cleanup and drainage improvements. There are several other small dischargers to the creek as well as runoff from rangeland and dairy operations. DEP's Point Source Evaluation Section conducted an intensive survey of the Creek during September, 1991. Blackwater Creek also suffers from range and agricultural runoff. Despite these problems, the upgrades at the pesticide company and at other industrial dischargers have led to optimistic reports of water quality in this basin. The lower Blackwater Creek drainage has more vegetation and less intense land use and thus has a cleansing effect on the creek.

Both the Nonpoint Source Assessment and water chemistry data indicate improved conditions in the river in its middle segments, especially in Hillsborough River State Park. These segments retain much of the natural bank vegetation; there is input of some relatively good water quality tributaries; and flow is more rapid which increases DO and habitat diversity. Nonetheless, high coliform counts prevent swimming in the river at Hillsborough River State Park.

Lake Thonotosassa and its tributaries (Baker Creek and Pemberton Creek) receive excessive nutrient loads averaging 0.7 - 1.9 mg/l phosphorus in streams entering the lake. The loading results in algae blooms, fish kills and eutrophic conditions in the lake. There were also high bacterial counts in the creeks. Dischargers into this system appear to account for much of the pollution. The Plant City WWTP, which also receives industrial wastes, contributes significant loading of phosphorus (over 40,000 lb. a year), but its discharge is not directly to the creek or lake. Plant City will cease discharging to the Lake Thonotosassa watershed by 1997. Waters leaving eutrophic Lake Thonotosassa flow to the Hillsborough River through Flint Creek. Because of the lake outflow, waters in this creek carry high phytoplankton loads which are conspicuous at the confluence with the blackwater Hillsborough River. Nonpoint sources include urban and rangeland runoff. Lake Thonotosassa is a priority SWIM waterbody.

The southern basin tributaries are mostly rated as good with few pollution sources. However, the lower Cypress Creek, which roughly parallels Interstate Highway 275, appears to be more severely impaired by urban construction activities. The upper Cypress Creek basin is undergoing some residential land development and has low DO and high nutrients typical in the basin.

The lower section of Hillsborough River, up to the reservoir, although affected by the upstream pollution sources, has improved water quality. At the reservoir, however, nutrient loads from upstream Hillsborough River, some residential drainage, and recreational use have caused severe aquatic weed problems and some algae bloom problems. These problems are of particular concern as the reservoir is a drinking water source of Tampa. Below the dam, the river is tidal and brackish. It receives a large sediment load with metals and other typical runoff pollutants from Tampa. Its banks are lined with seawalls, buildings, and stormwater outfalls. Portions of the river bed are under investigation to determine if they can be restored.

** USGS HYDROLOGIC UNIT: 03100205 HILLSBOROUGH RIVER

SURFACE WATER QUALITY DATA FOR 1970-1993
MEDIAN VALUES FOR EACH WATERSHED
CURRENT PERIOD OF RECORD (1989-1993) USED WHERE AVAILABLE
PERIOD PRIOR TO 1989 IS EVALUATED AS HISTORICAL INFORMATION

INDEX	GOOD	FAIR	POOR
WQI-RIVER	0-44	45-59	60-90
TSI-ESTUARY	0-49	50-59	60-100
TSI-LAKE	0-59	60-69	70-100

WATERSHED ID	NAME	WATERSHED DATA RECORD				WATER CLARITY				DISSOLVED OXYGEN		OXYGEN DEMAND			PH	ALKALINITY	TROPHIC STATUS			COLIFORM		BIOLOGICAL SPECIES DIVERSITY			COND	FLOW	WATER QUALITY INDICES	
		MAX #OBS	BEG YR	END YR	DATA PERIOD	TURB	SD	COLOR	TSS	DO	DOSAT	BOD	COD	TOC	PH	ALK	NITRO	PHOS	CHLA	TOTAL	FECL	NAT	ART	BECK	COND	FLOW	WQI	TSI
* WATER BODY TYPE: LAKE																												
8	LAKE HUNTER	102	81	85	Historical	11.0	0.6	42	.	9.7	106	.	.	.	8.0	45	1.51	0.23	46	.	.	.	.	.	235	.	.	70
17	Lake Thonotosassa	336	89	93	Current	14.3	0.5	51	19	8.4	92	6.0	.	.	9.1	.	1.87	0.68	67	113	75	.	.	.	412	.	.	76
39	LAKE PADGETT	2	92	92	Current	.	.	13	.	5.9	75	.	.	.	7.3	.	0.82	0.03	.	.	.	.	.	.	199	.	.	48
46	LAK PASADENA	3	80	80	Historical	.	1.2	60	.	.	.	.	.	.	6.4	6	0.84	0.03	9	.	.	.	.	.	94	.	.	49
* WATER BODY TYPE: SPRING																												
10	SULPHUR SPRINGS	691	90	92	Current	0.7	.	.	.	.	.	.	.	.	7.2	.	0.90	0.06	.	150	40	.	.	.	2030	.	19	.
* WATER BODY TYPE: STREAM																												
1	CYPRESS CREEK	176	89	93	Current	3.5	0.8	180	.	2.6	26	1.2	.	34	6.9	.	1.64	0.07	1	700	250	.	.	.	301	7	73	.
2	HILLSBOROUGH RIVER	75	89	93	Current	4.1	1.1	56	3	4.6	51	.	.	4	7.4	125	1.90	0.10	0	.	254	.	.	.	374	27	45	.
3	SEFFNER CANAL	24	77	80	Historical	1.5	.	.	.	.	.	0.2	4	.	7.3	.	3.22	0.05	.	1	1	.	.	.	337	.	23	.
4	SPARKMAN BRANCH	8	92	93	Current	8.2	0.6	175	8	5.1	54	.	.	25	6.2	21	1.22	0.76	.	.	295	.	.	.	166	.	65	.
6	MILL CREEK	99	90	93	Current	5.5	0.2	12	2	6.0	68	1.5	.	8	7.4	166	1.07	0.28	2	9500	4875	.	.	.	664	.	54	.
7	HILLSBOROUGH RIVER	591	89	93	Current	4.0	1.4	40	2	4.0	45	1.4	.	8	7.2	.	1.01	0.28	7	550	200	.	.	.	378	33	54	.
11	Baker Creek	106	89	93	Current	5.5	0.6	42	.	4.7	54	1.1	.	.	7.3	.	1.54	0.66	2	1800	750	.	.	.	567	.	60	.
12	PEMBERTON CREEK	21	89	92	Current	.	.	133	.	7.5	83	.	.	8	7.9	.	1.25	0.73	.	.	.	.	.	.	600	7	37	.
16	EAST CANAL	9	73	73	Historical	.	.	.	.	1.8	20	2.0	.	.	7.5	180	1.14	.	.	16500	325	.	.	.	.	.	72	.
18	COW HOUSE CREEK	10	92	93	Current	8.6	0.8	120	13	5.4	52	.	.	18	6.7	76	1.08	0.40	0	.	1087	.	.	.	281	.	60	.
19	CHANNELZED STREAM	25	70	76	Historical	.	.	.	5	4.3	51	2.6	28	.	7.7	111	2.85	.	.	11000	0	.	.	.	.	.	69	.
20	FLINT CREEK	149	89	93	Current	16.0	0.5	51	.	5.5	65	3.4	.	14	8.0	.	2.64	0.77	39	1150	500	.	.	.	417	12	66	.
21	HOLLOMANS BRANCH	27	76	77	Historical	5.5	0.2	78	20	8.9	97	2.8	.	13	7.0	.	0.74	0.41	8	14050	1100	.	.	.	177	.	56	.
22	HILLSBOROUGH RIVER	25	92	93	Current	4.9	0.8	90	2	5.4	63	.	.	14	7.1	104	1.40	0.26	0	.	373	.	.	.	318	89	55	.
24	ITCHEPACKASASSA CREEK	151	70	83	Historical	.	.	.	15	6.5	75	4.7	30	.	7.6	122	2.75	.	.	34000	700	.	.	.	303	4	45	.
25	TWO HOLE BRANCH	30	76	77	Historical	9.0	0.3	105	24	6.5	65	4.2	.	16	7.1	.	0.47	0.50	7	15350	175	.	.	.	239	.	61	.
26	ITCHEPACKASASSA CREEK	37	76	77	Historical	5.5	0.3	57	13	7.0	83	4.6	.	15	7.7	.	1.26	2.31	11	21100	613	.	.	.	717	.	61	.
27	HILLSBOROUGH RIVER	2	78	78	Historical	.	.	.	.	.	.	.	.	3	.	.	1.47	.	.	640	30	.	.	.	.	.	36	.
31	HILLSBOROUGH RIVER	189	89	93	Current	2.5	1.3	23	.	6.5	72	1.0	.	3	7.6	.	1.73	0.20	1	650	200	.	.	.	363	82	37	.
32	BLACKWATER CREEK	253	89	93	Current	8.0	0.6	128	1	6.3	70	1.9	.	20	7.4	64	1.24	0.57	8	360	160	.	.	.	337	19	56	.
35	BIG DITCH	17	92	93	Current	6.3	0.5	210	3	6.0	68	.	.	19	7.2	101	1.41	0.85	0	.	156	.	.	.	303	.	57	.
37	TROUT CREEK	63	89	93	Current	4.0	0.7	106	.	3.9	42	1.4	.	.	7.2	.	0.95	0.43	2	800	300	.	.	.	350	7	56	.
40	FISH HATCHERY DRAIN	92	70	87	Historical	.	.	.	.	9.4	98	1.1	.	12	7.2	.	.	.	.	.	.	.	.	.	271	2	25	.
42	NEW RIVER	9	92	93	Current	11.3	0.4	220	5	4.1	44	.	.	31	7.0	24	1.54	0.44	.	.	525	.	.	.	166	.	70	.

LEGEND:
ALK-ALKALINITY MG/L
ART-ARTIFICIAL SUBSTRATE DI
BEG YR-BEGINNING SAMPLING YEAR
BECK-BECK'S BIOTIC INDEX
BOD-BIOCHEMICAL OXYGEN DEMAND MG/L
CHLA-CHLOROPHYLL UG/L
COD-CHEMICAL OXYGEN DEMAND MG/L
COLOR-COLOR PCU
COND-CONDUCTIVITY UMHOS
DO-DISSOLVED OXYGEN MG/L
DOSAT-DO % SATURATION
END YR-ENDING YEAR
FECL-FECAL COLIFORM MPN/100ML
FLOW-FLOW CFS
MAX #OBS-MAXIMUM NUMBER OF SAMPLES
NAT-NATURAL SUBSTRATE DIVERSITY
NITRO-TOTAL NITROGEN MG/L
PH-PH STANDARD UNITS
PHOS-TOTAL PHOSPHORUS MG/L
SD-SECCHI DISC METERS
TOC-TOTAL ORGANIC CARBON MG/L
TOTAL-TOTAL COLIFORM MPN/100ML
TSI-TROPHIC STATE INDEX
TSS-TOTAL SUSPENDED SOLIDS MG/L
TURB-TURBIDITY MG/L
WQI-WATER QUALITY INDEX

SURFACE WATER QUALITY DATA SCREENING REPORT
MEDIAN VALUES FOR EACH WATERSHED SCREENED

** USGS HYDROLOGIC UNIT: 03100205 HILLSBOROUGH RIVER

'x'=EXCEEDS SCREENING CRITERIA
'0'=WITHIN SCREENING CRITERIA
'.'=MISSING DATA

WATERSHED ID	NAME	RANK WQI OR TSI	DATA RECORD CURRENT OR HISTORICAL	SCREENING VARIABLES AND CRITERIA: TN TN>2.0	STREAM TP TP>.46	LAKE TP TP>.12	PH PH>8.8 PH<5.2	ALK ALK<20	TURB & TSS TURB>16.5 TSS>18	COND COND>1275	OXYGEN DEMAND BOD>3.3 COD>102 TOC>27.5	DO DO<4	COLIFORM BACTI TOT>3700 FECAL>470	BIOL DIV DIART<1.95 DINAT<1.5 BECK<5.5	CHLA CHLA>40	SECCHI DISC SD<.7
* WATER BODY TYPE: LAKE																
8	LAKE HUNTER	POOR	Historical	0	.	x	0	0	0	.	.	0	.	.	x	x
17	Lake Thonotosassa	POOR	Current	0	.	x	x	.	x	0	x	0	0	.	x	x
39	LAKE PADGETT	GOOD	Current	0	.	0	0	.	.	.	.	0	.	.	.	.
46	LAK PASADENA	GOOD	Historical	0	.	0	0	x	.	.	.	.	.	.	0	0
* WATER BODY TYPE: SPRING																
10	SULPHUR SPRINGS	GOOD	Current	0	0	.	0	.	0	x	.	.	0	.	.	.
* WATER BODY TYPE: STREAM																
1	CYPRESS CREEK	POOR	Current	0	0	.	0	.	0	0	x	x	0	.	0	0
2	HILLSBOROUGH RIVER	FAIR	Current	0	0	.	0	0	0	.	0	0	0	.	0	0
3	SEFFNER CANAL	GOOD	Historical	x	0	.	0	.	0	.	0	.	0	.	.	.
4	SPARKMAN BRANCH	POOR	Current	0	x	.	0	0	0	.	0	0	0	.	.	x
6	MILL CREEK	FAIR	Current	0	0	.	0	0	0	0	0	0	x	.	0	x
7	HILLSBOROUGH RIVER	FAIR	Current	0	0	.	0	.	0	0	0	0	0	.	0	0
11	Baker Creek	POOR	Current	0	x	.	0	.	0	0	0	0	x	.	0	x
12	PEMBERTON CREEK	GOOD	Current	0	x	.	0	.	.	.	0	0	.	.	.	.
16	EAST CANAL	UNKN	Historical	0	0	.	0	0	.	.	0	x	x	.	.	.
18	COW HOUSE CREEK	POOR	Current	0	0	.	0	0	0	.	0	0	x	.	0	0
19	CHANNELZED STREAM	POOR	Historical	x	0	.	0	0	0	.	0	0	x	.	.	.
20	FLINT CREEK	POOR	Current	x	x	.	0	.	0	0	x	0	x	.	0	x
21	HOLLOMANS BRANCH	FAIR	Historical	0	0	.	0	.	x	0	0	0	x	.	0	x
22	HILLSBOROUGH RIVER	FAIR	Current	0	0	.	0	0	0	.	0	0	0	.	0	0
24	ITCHEPACKASASSA CREEK	FAIR	Historical	x	0	.	0	0	0	.	x	0	x	.	.	.
25	TWO HOLE BRANCH	POOR	Historical	0	x	.	0	.	x	0	x	0	x	.	0	x
26	ITCHEPACKASASSA CREEK	POOR	Historical	0	x	.	0	.	0	0	x	0	x	.	0	x
27	HILLSBOROUGH RIVER	GOOD	Historical	0	0	.	.	.	.	.	0	.	0	.	.	.
31	HILLSBOROUGH RIVER	GOOD	Current	0	0	.	0	.	0	0	0	0	0	.	0	0
32	BLACKWATER CREEK	FAIR	Current	0	x	.	0	0	0	0	0	0	0	.	0	x
35	BIG DITCH	FAIR	Current	0	x	.	0	0	0	.	0	0	0	.	0	x
37	TROUT CREEK	FAIR	Current	0	0	.	0	.	0	0	0	x	0	.	0	x
40	FISH HATCHERY DRAIN	GOOD	Historical	.	.	.	0	.	.	.	0	0	.	.	.	.
42	NEW RIVER	POOR	Current	0	0	.	0	0	0	.	x	0	x	.	.	x

LEGEND:
ALK-ALKALINITY
BECK-BECK'S BIOTIC INDEX
BIOL DIV-BIOLOGICAL DIVERSITY
CHLA-CHLOROPHYLL
COND-CONDUCTIVITY
DO-DISSOLVED OXYGEN
CURRENT-1989 TO 1993
DIART-ARTIFICIAL SUBSTRATE DIVERSITY
DINAT-NATURAL SUBSTRATE DIVERSITY
FECAL-FECAL COLIFORM BACTERIA
HISTORICAL-1970 TO 1988
OXYGEN DEMAND-BOD,COD,TOC
PH-PH
TN-NITROGEN
TP-PHOSPHORUS
TOT-TOTAL COLIFORM BACTERIA
TSS-TOTAL SUSPENDED SOLIDS
TURB-TURBIDITY
SD-SECCHI DISC METERS
WQI OR TSI-WATER QUALITY INDEX RATING WHICH INDEX USED, WQI OR TSI, IS BASED ON WATERBODY TYPE

SURFACE WATER QUALITY ASSESSMENT REPORT
TRENDS-SOURCES-CLEANUP

** USGS HYDROLOGIC UNIT: 03100205 HILLSBOROUGH RIVER

'x'=DEGRADING TREND
'0'=STABLE TREND
'+'=IMPROVING TREND
'.'=MISSING DATA

1984 - 1993 TRENDS

WATERSHED ID	NAME	MEETS USE ?	QUALITY RANK WQI OR TSI	OVER-ALL TREND	WQI or TSI	TN	TP	TCHL	SD	PH	ALK	TURB	TSS	BOD	TOC	DO SAT	DO	TEMP	FCOLI	TCOLI	FLOW	TN TP NO
WATER BODY TYPE: LAKE																						
8	LAKE HUNTER	NO	POOR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
17	Lake Thonotosassa	NO	POOR	x	x	0	0	0	x	0	.	x	x	x	.	x	x	0	0	0	.	0
39	LAKE PADGETT	YES	GOOD	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
46	LAK PASADENA	YES	GOOD																			
WATER BODY TYPE: SPRING																						
10	SULPHUR SPRINGS	YES	GOOD	0	+	.	.	.	.	0	.	.	.	.	.	.	.	.	0	.	.	
WATER BODY TYPE: STREAM																						
1	CYPRESS CREEK	NO	POOR	0	0	x	0	0	0	0	.	0	.	0	0	0	0	0	0	0	0	0
2	HILLSBOROUGH RIVER	PARTIAL	FAIR	0	0	0	x	.	.	0	.	.	.	.	x	0	0	.	.	0	0	0
3	SEFFNER CANAL	YES	GOOD																			
4	SPARKMAN BRANCH	NO	POOR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
6	MILL CREEK	PARTIAL	FAIR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
7	HILLSBOROUGH RIVER	PARTIAL	FAIR	0	0	0	0	0	0	0	.	x	.	0	0	0	0	0	0	0	0	.
11	Baker Creek	NO	POOR	+	0	+	0	0	0	0	.	0	.	+	.	0	0	0	0	0	0	.
12	PEMBERTON CREEK	YES	GOOD	0	0	+	0	.	.	+	.	.	.	.	0	0	0	.	.	0	0	.
16	EAST CANAL	NO	UNKN																			
18	COW HOUSE CREEK	NO	POOR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
19	CHANNELIZED STREAM	NO	POOR																			
20	FLINT CREEK	NO	POOR	0	x	0	0	0	0	0	.	+	.	+	+	x	x	0	0	0	0	0
21	HOLLOMANS BRANCH	PARTIAL	FAIR																			
22	HILLSBOROUGH RIVER	PARTIAL	FAIR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
24	ITCHEPACKASASSA CREEK	PARTIAL	FAIR																			
25	TWO HOLE BRANCH	NO	POOR																			
26	ITCHEPACKASASSA CREEK	NO	POOR																			
27	HILLSBOROUGH RIVER	YES	GOOD																			
31	HILLSBOROUGH RIVER	YES	GOOD	0	0	+	0	0	0	0	.	x	.	0	0	0	0	0	x	0	0	0
32	BLACKWATER CREEK	PARTIAL	FAIR	+	0	+	+	0	0	0	.	0	.	0	x	0	0	0	0	0	0	0
35	BIG DITCH	PARTIAL	FAIR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
37	TROUT CREEK	PARTIAL	FAIR	0	0	0	0	0	.	0	.	0	.	0	.	0	0	0	0	0	0	.
40	FISH HATCHERY DRAIN	YES	GOOD	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
42	NEW RIVER	NO	POOR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.

<--- PLEASE READ THESE COLUMNS VERTICALLY

DEGRADATION SOURCES, PRESENT CONDITIONS AND CLEANUP EFFORTS

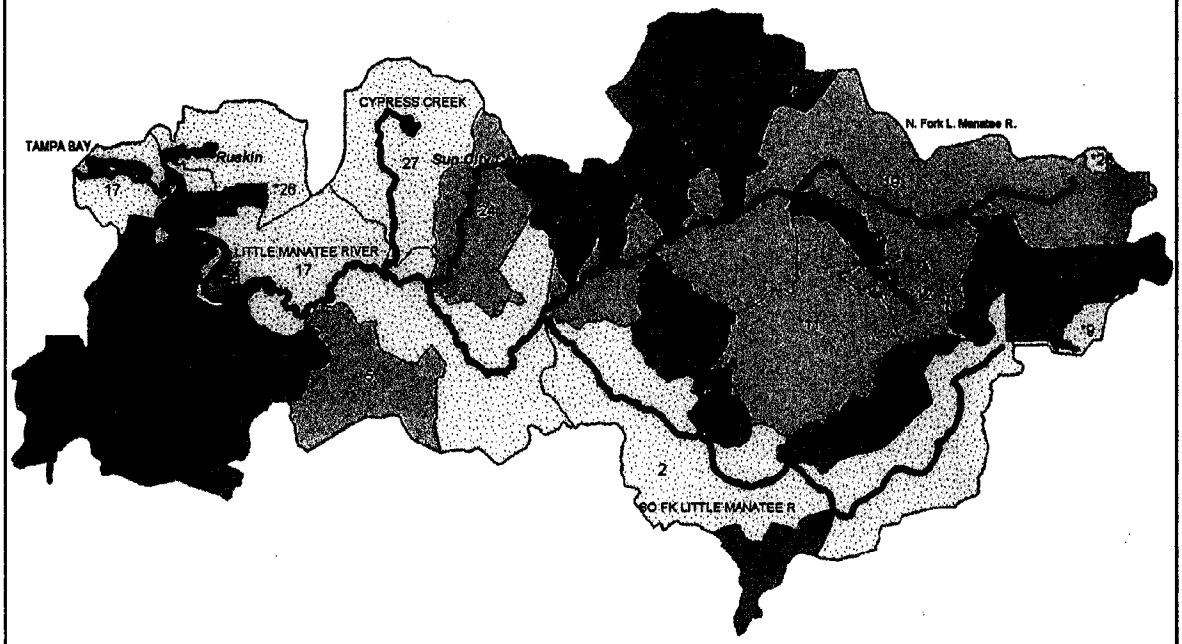
LEGEND:

ALK-ALKALINITY
BOD-BIOCHEM. OXYGEN DEMAND
CHLA-CHLOROPHYLL
DO-DISSOLVED OXYGEN
DOSAT-DO SATURATION
FCOLI-FECAL COLIFORM
FLOW-FLOW
MEETS USE-MEETS DESIGNATED USE
PH-PH
SD-SECCHI DISC METERS
TCOLI-TOTAL COLIFORM
TEMP-TEMPERATURE
TN-NITROGEN
TOC-T.ORGANIC CARBON
TP-PHOSPHORUS
TSS-TOTAL SUSPENDED SOLIDS
TURB-TURBIDITY
TSI-TROPHIC STATE INDEX FOR LAKES AND ESTUARIES
WQI-WATER QULAITY INDEX FOR STREAMS AND SPRINGS

NPS QUALITATIVE SURVEY RESULTS
AN "X" INDICATES A PROBLEM WITH POLLUTANT OR SOURCE
THE * ON MAPID INDICATES NO STORET INFORMATION AVAILABLE FOR THIS WATERSHED
-SEE PAGE 11 FOR LEGEND FOR THIS TABLE-

CATNAME=HILLSBOROUGH RIVER HUC=03100205

MAP ID	WBID	BASIN	WQ3 05	WQNPS	NUTRIENT	BACTERIA	SEDIMENT	OIL	PESTICID	OTHERCHE	DEBRIS	OXYGEN	SALINITY	PH	METAL	HABITAT	FLOW	THERMAL	OTHERPOL	FISHKILL	ALGAE	WEED	TURBIDOD	OOR	FISHDEC	NOSWIM	NOFISH	OTHERSYM	IND	STP	AG	RE	SL	LD	UR	CN	HM	OT
1	1402	CYPRESS CREEK	POOR	THREAT	X		X	X		X	X					X					X	X	X		X						X			X	X	X	X	
2	1443E	HILLSBOROUGH RIVER	FAIR	FAIR	X	X	X	X	X	X	X	X	X		X	X	X			X	X	X	X		X	X					X	X		X	X	X	X	X
3	1547	SEFFNER CANAL	GOOD	FAIR	X	X	X	X		X	X	X	X			X	X			X	X	X	X	X	X						X	X		X	X	X	X	X
4	1561	SPARKMAN BRANCH	POOR	FAIR	X	X	X					X	X			X	X			X	X		X	X	X						X	X		X	X	X	X	X
5*	1565	MOORE LAKE DRAIN		FAIR	X	X	X					X	X			X	X			X	X		X	X	X						X	X		X	X	X	X	X
6	1542A	MILL CREEK	FAIR	FAIR	X	X	X	X		X	X	X	X			X	X			X	X	X	X	X	X						X	X		X	X	X	X	X
7	1443A	HILLSBOROUGH RIVER	FAIR	FAIR	X	X	X	X	X	X	X	X	X		X	X	X			X	X	X	X		X	X			X		X	X		X	X	X	X	X
9*	1553	TWIN LAKE OUTLET		FAIR	X	X	X	X		X	X	X	X		X	X	X			X	X	X	X		X	X					X	X		X		X	X	
10	1555	SULPHUR SPRINGS	GOOD	THREAT																						X									X			
11	1522C	Baker Creek	POOR	FAIR	X	X	X					X	X			X	X			X	X		X	X	X						X	X		X	X	X	X	X
12	1542	PEMBERTON CREEK	GOOD	FAIR	X	X	X	X		X	X	X	X			X	X			X	X	X	X	X	X				X	X	X	X		X	X	X	X	X
13*	1544	BAKER CREEK TRIBUTARY		FAIR	X	X	X					X	X			X	X			X	X		X	X	X						X	X		X	X	X	X	X
14*	1523	CURIOSITY CREEK		THREAT			X	X		X	X					X							X		X													
15*	1533	CAMPBELL BRANCH		FAIR	X	X	X					X	X			X	X			X	X		X	X	X						X	X		X	X	X	X	X
16	1518	EAST CANAL	POOR	THREAT	X		X		X	X	X	X	X			X	X			X			X		X						X	X		X	X	X	X	
17	1522B	Lake Thonotosassa	POOR	FAIR	X	X	X					X	X			X	X			X	X		X	X	X				X	X	X	X		X	X	X	X	X
18	1534	COW HOUSE CREEK	POOR	FAIR	X	X	X	X	X	X	X	X	X		X	X	X			X	X	X	X		X	X					X	X		X	X	X	X	X
20	1522A	FLINT CREEK	POOR	FAIR	X	X	X					X	X			X	X			X	X		X	X	X				X	X	X	X		X	X	X	X	X
22	1443B	HILLSBOROUGH RIVER	FAIR	FAIR	X	X	X	X	X	X	X	X	X		X	X	X			X	X	X	X		X	X			X	X	X	X		X	X	X	X	X
23*	1499	THIRTEEN MILE CREEK		THREAT			X	X		X	X					X							X		X													
27	1443C	HILLSBOROUGH RIVER	GOOD	FAIR	X	X	X	X	X	X	X	X	X		X	X	X			X	X	X	X		X	X					X	X		X	X	X	X	X
28*	1451	LAKE HANNA OUTLET		THREAT	X		X	X		X	X					X					X	X	X		X									X			X	
29*	1451A	LAKE STEMPER		THREAT	X		X	X		X	X					X					X	X	X		X									X			X	
30*	1487	SHERRYS BROOK		THREAT			X	X		X	X					X							X		X						X							
31	1443D	HILLSBOROUGH RIVER	GOOD	FAIR	X	X	X	X	X	X	X	X	X		X	X	X			X	X	X	X		X	X					X	X		X	X	X	X	X
32	1482	BLACKWATER CREEK	FAIR	THREAT	X		X		X	X	X	X	X			X	X			X			X		X									X	X	X	X	
33*	1451B	KEENE LAKE		THREAT	X		X	X		X	X					X					X	X	X		X									X			X	
34*	1402A	DEANE LAKE		THREAT	X		X	X		X	X					X					X	X	X		X						X			X	X	X	X	
35	1469	BIG DITCH	FAIR	GOOD																																			
36*	1451C	LAKE KELL		THREAT	X		X	X		X	X					X					X	X	X		X									X			X	
37	1455	TROUT CREEK	FAIR	THREAT																											X				X			
38*	1455	BASSET BRANCH		POOR	X		X	X			X	X	X		X	X	X			X	X	X	X		X						X	X		X	X	X	X	
39	1455	LAKE PADGETT	GOOD	THREAT	X		X	X		X	X					X					X	X	X		X						X			X			X	
41*	1453	INDIAN CREEK		THREAT	X		X									X																			X			X	
42	1442	NEW RIVER	POOR	POOR	X		X	X			X	X	X		X	X	X			X	X	X	X		X									X	X	X	X	
43*	1446	SOUTHSIDE BRANCH		POOR	X		X	X			X	X	X		X	X	X			X	X	X	X		X									X	X	X	X	
44*	1438	BAYOU LAKE OUTLET		THREAT																											X							
45*	1437	DRAIN		THREAT																											X							



LITTLE MANATEE RIVER BASIN
03100203

AVERAGE WATER QUALITY
1984-1993 STORET DATA
WATERSHED ID NUMBERS LINK MAP TO TABLES
* INDICATES QUALITATIVE ASSESSMENT

WATER QUALITY
GOOD
THREATENED
FAIR
POOR
UNKNOWN

LITTLE MANATEE RIVER BASIN

Basic Facts

Drainage Area: 222 square miles
Major Land Uses: agriculture, rangeland, urban, power generation, aquaculture
Population Density: low (Ruskin)
Major Pollution Sources: rangeland and agricultural runoff
Best Water Quality Areas: Dug Creek, North Fork Little Manatee river
Worst Water Quality Areas: Ruskin Inlet
Water Quality Trends: stable water quality at 2 reaches, improving in Little Manatee, degrading at North Fork Little Manatee
OFW Waterbodies: Little Manatee River
SWIM Waterbodies: none
Reference Reports:
Florida Rivers Assessment, DEP/FREAC/NPS, 1989
Florida Nonpoint Source Assessment, DEP (Tallahassee), 1988
Basis II Symposium Proceedings, TBRPC, 1991, 813/577-5151
Basin Water Quality Experts:
Peter Clark, TBRPC 813/577-5151
Sid Flannery, SWFWMD, 904/796-7211
Doug Farrell, 813/744-6100

In the News

* IMC Fertilizer has proposed an 18,290 acre expansion of its phosphate mining operation in southeastern Hillsborough County, which may affect the North Prong of the Little Manatee River.
* A major area of Hillsborough County north of the Little Manatee River was rezoned from agriculture to residential several years ago.

Ecological Characterization

The Little Manatee River Basin is a small (222 square miles) basin located between the Alafia and Manatee River Basins discharging into middle Tampa Bay on its eastern shore. Among the principal creeks and rivers flowing into Tampa Bay, it is considered to be in the best condition. The Little Manatee River is formed by the confluence of the North and South Forks. Both are fairly natural with no large commercial or residential developments near them. The banks of the Little Manatee retain natural vegetation throughout most of the river course, but intensive agricultural land use is occurring close to the river channel in areas. River flow fluctuates widely so that at low flow there are steep banks, and at high flow, the water will almost reach the canopy of overhanging trees. However, average flow of 170 cfs was measured at Highway 301, about 15 miles upstream of the river mouth. The river channel in both prongs

and the mainstream is narrow and sharply meandering until it reaches the tidal and estuarine and portion near the Interstate Highway 75 crossing.

Land use in the basin is predominantly agriculture and rangeland. There is one urban center, Ruskin, near the river mouth at Tampa Bay. However, with the recent completion of the I-75 interstate highway, population is expected to increase by as much as 40% in as little as two years.

Anthropogenic Impacts

The Little Manatee River has historically had good water quality and aesthetic and recreational value. The main river channel (excluding the South Fork and upstream portions of the North Fork) was declared an Outstanding Florida Water. There are no major water quality problems in this basin; however, the reaches in this basin have elevated bacteria and nutrient levels. These problems are likely due to runoff from rangeland (bacteria and nutrients) and agricultural areas (pesticides and nutrients). Streamflow and water quality data from six gaged sub-basins monitored by the SWFWMD indicate that substantial amounts of excess crop irrigation water enters the river along sections of the North Fork. Nutrient enrichment and flow supplementation have increased significantly enough to be considered threats to the continued quality of this river. Water is pumped from the upper river into a 4000 acre off-stream reservoir which stores cooling water for a major power plant. Florida Power and Light has two point source discharges into the South Fork of the Little Manatee River consisting of seepage from Lake Parrish (their cooling reservoir), with mixing zones for iron and pH in the river.

In the lower river, the Ruskin area is still serviced by septic tanks and package plants, and there are numerous tropical fish farms in the watershed at present. Water quality data does not indicate any serious problems in this area. The Southwest Florida Water Management District is studying the river and a report is pending. The lower river and nearby bays at its mouth are some of the last areas in Tampa Bay where mangrove forests and seagrass beds are still abundant. The Hillsborough County Endangered Land Program is trying to buy islands in this area.

** USGS HYDROLOGIC UNIT: 03100203 LITTLE MANATEE RIVER

SURFACE WATER QUALITY DATA FOR 1970-1993
MEDIAN VALUES FOR EACH WATERSHED
CURRENT PERIOD OF RECORD (1989-1993) USED WHERE AVAILABLE
PERIOD PRIOR TO 1989 IS EVALUATED AS HISTORICAL INFORMATION

INDEX	GOOD	FAIR	POOR
WQI-RIVER	0-44	45-59	60-90
TSI-ESTUARY	0-49	50-59	60-100
TSI-LAKE	0-59	60-69	70-100

WATERSHED ID	NAME	WATERSHED DATA RECORD				WATER CLARITY				DISSOLVED OXYGEN		OXYGEN DEMAND			PH	ALKALINITY	TROPHIC STATUS				COLIFORM		BIOLOGICAL SPECIES DIVERSITY			COND	FLOW	WATER QUALITY INDICES	
		MAX #OBS	BEG YR	END YR	DATA PERIOD	TURB	SD	COLOR	TSS	DO	DOSAT	BOD	COD	TOC	PH	ALK	NITRO	PHOS	CHLA	TOTAL	FECL	NAT	ART	BECK	COND	FLOW	WQI	TSI
* WATER BODY TYPE: STREAM																													
2	SO FK LITTLE MANATEE R	24	89	92	Current	.	.	80	.	4.8	54	1.1	.	10	6.5	.	0.68	0.47	.	.	.	.	.	.	189	0	49	.
5	UNNAMED SLOUGH	338	73	87	Historical	2.6	.	80	.	7.1	78	1.3	.	.	7.0	.	.	.	.	2	5	.	.	.	422	.	26	.
17	LITTLE MANATEE RIVER	313	89	93	Current	4.7	0.9	49	3	6.2	72	1.3	.	.	7.0	.	1.11	0.36	3	705	225	.	.	.	9137	158	47	.
19	N. Fork L. Manatee R.	267	89	93	Current	4.5	0.6	63	3	6.9	77	0.9	.	11	6.8	.	1.07	0.57	1	1650	400	.	.	.	275	6	43	.
24	DUG CREEK	56	81	85	Historical	.	.	.	.	7.5	83	.	.	.	7.0	.	.	.	.	.	.	.	.	.	437	1	27	.
27	CYPRESS CREEK	18	89	91	Current	.	.	90	5	4.8	57	1.1	.	13	6.7	.	1.12	0.07	.	847	149	.	.	.	430	7	49	.

LEGEND:
ALK-ALKALINITY MG/L
ART-ARTIFICIAL SUBSTRATE DI
BEG YR-BEGINNING SAMPLING YEAR
BECK-BECK'S BIOTIC INDEX
BOD-BIOCHEMICAL OXYGEN DEMAND MG/L
CHLA-CHLOROPHYLL UG/L
COD-CHEMICAL OXYGEN DEMAND MG/L
COLOR-COLOR PCU
COND-CONDUCTIVITY UMHOS
DO-DISSOLVED OXYGEN MG/L
DOSAT-DO % SATURATION
END YR-ENDING YEAR
FECL-FECAL COLIFORM MPN/100ML
FLOW-FLOW CFS
MAX #OBS-MAXIMUM NUMBER OF SAMPLES
NAT-NATURAL SUBSTRATE DIVERSITY
NITRO-TOTAL NITROGEN MG/L
PH-PH STANDARD UNITS
PHOS-TOTAL PHOSPHORUS MG/L
SD-SECCHI DISC METERS
TOC-TOTAL ORGANIC CARBON MG/L
TOTAL-TOTAL COLIFORM MPN/100ML
TSI-TROPHIC STATE INDEX
TSS-TOTAL SUSPENDED SOLIDS MG/L
TURB-TURBIDITY MG/L
WQI-WATER QUALITY INDEX

SURFACE WATER QUALITY DATA SCREENING REPORT
MEDIAN VALUES FOR EACH WATERSHED SCREENED

** USGS HYDROLOGIC UNIT: 03100203 LITTLE MANATEE RIVER

'x'=EXCEEDS SCREENING CRITERIA
'0'=WITHIN SCREENING CRITERIA
'.'=MISSING DATA

WATERSHED ID	NAME	RANK WQI OR TSI	DATA RECORD CURRENT OR HISTORICAL	SCREENING VARIABLES AND CRITERIA: TN TN>2.0	STREAM TP TP>.46	LAKE TP TP>.12	PH PH>8.8 PH<5.2	ALK ALK<20	TURB & TSS TURB>16.5 TSS>18	COND COND>1275	OXYGEN DEMAND BOD>3.3 COD>102 TOC>27.5	DO DO<4	COLIFORM BACTI TOT>3700 FECAL>470	BIOL DIV DIART<1.95 DINAT<1.5 BECK<5.5	CHLA CHLA>40	SECCHI DISC SD<.7
* WATER BODY TYPE: STREAM																
2	SO FK LITTLE MANATEE R	FAIR	Current	0	x	.	0	.	.	.	0	0	.	.	.	.
5	UNNAMED SLOUGH	GOOD	Historical	.	.	.	0	.	0	0	0	0	0	.	.	.
17	LITTLE MANATEE RIVER	FAIR	Current	0	0	.	0	.	0	x	0	0	0	.	0	0
19	N. Fork L. Manatee R.	GOOD	Current	0	x	.	0	.	0	0	0	0	0	.	0	x
24	DUG CREEK	GOOD	Historical	.	.	.	0	.	.	.	.	0	.	.	.	.
27	CYPRESS CREEK	FAIR	Current	0	0	.	0	.	0	.	0	0	0	.	.	.

LEGEND:
ALK-ALKALINITY
BECK-BECK'S BIOTIC INDEX
BIOL DIV-BIOLOGICAL DIVERSITY
CHLA-CHLOROPHYLL
COND-CONDUCTIVITY
DO-DISSOLVED OXYGEN
CURRENT-1989 TO 1993
DIART-ARTIFICIAL SUBSTRATE DIVERSITY
DINAT-NATURAL SUBSTRATE DIVERSITY
FECAL-FECAL COLIFORM BACTERIA
HISTORICAL-1970 TO 1988
OXYGEN DEMAND-BOD,COD,TOC
PH-PH
TN-NITROGEN
TP-PHOSPHORUS
TOT-TOTAL COLIFORM BACTERIA
TSS-TOTAL SUSPENDED SOLIDS
TURB-TURBIDITY
SD-SECCHI DISC METERS
WQI OR TSI-WATER QUALITY INDEX RATING WHICH INDEX USED, WQI OR TSI, IS BASED ON WATERBODY TYPE

SURFACE WATER QUALITY ASSESSMENT REPORT
TRENDS-SOURCES-CLEANUP

** USGS HYDROLOGIC UNIT: 03100203 LITTLE MANATEE RIVER

'x'=DEGRADING TREND
'0'=STABLE TREND
'+'=IMPROVING TREND
'.'=MISSING DATA

1984 - 1993 TRENDS

WATERSHED ID	NAME	QUALITY RANK: MEETS USE ?	QUALITY RANK: OR WQI TSI	OVER-ALL TREND	WQ or TSI	TN	TP	TCOLI	SD	PH	ALK	TSS	TURB	DOSAT	DO	FCOLI	FLOW	TEMP	PH	CHLA	TOC	BOD	DOSAT	DO	FCOLI	TEMP	TURB	FLOW	TN	TP	MEETS USE	WQI
* WATER BODY TYPE: STREAM																															
2	SO FK LITTLE MANATEE R	PARTIAL	FAIR	0	x	0	0	.	.	0	.	.	.	0	0	0	0	.	.	0	0											
5	UNNAMED SLOUGH	YES	GOOD	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.											
17	LITTLE MANATEE RIVER	PARTIAL	FAIR	+	0	0	0	+	0	x	.	0	+	+	.	0	0	0	0	0	.											
19	N. Fork L. Manatee R.	YES	GOOD	x	0	0	x	0	0	0	.	x	0	0	0	0	0	0	x	0	0											
24	DUG CREEK	YES	GOOD	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.											
27	CYPRESS CREEK	PARTIAL	FAIR	0	0	.	.	.	.	0	.	.	.	.	.	x	0	.	.	0	0											

<--- PLEASE READ THESE COLUMNS VERTICALLY

DEGRADATION SOURCES, PRESENT CONDITIONS AND CLEANUP EFFORTS

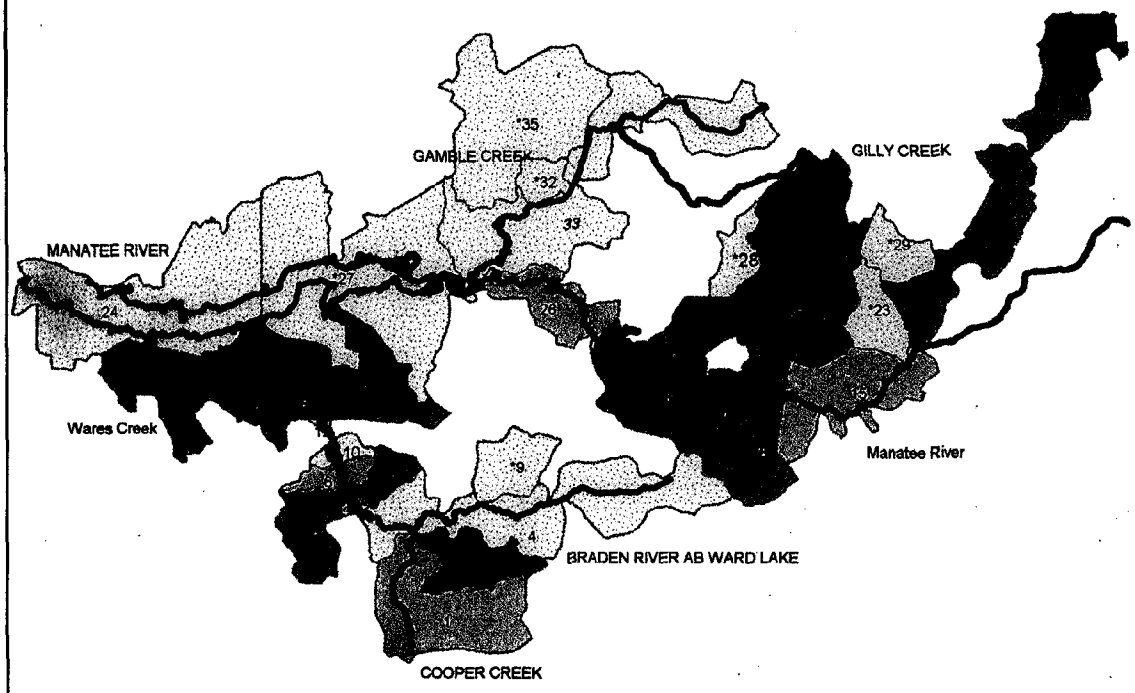
LEGEND:

ALK-ALKALINITY
BOD-BIOCHEM. OXYGEN DEMAND
CHLA-CHLOROPHYLL
DO-DISSOLVED OXYGEN
DOSAT-DO SATURATION
FCOLI-FECAL COLIFORM
FLOW-FLOW
MEETS USE-MEETS DESIGNATED USE
PH-PH
SD-SECCHI DISC METERS
TCOLI-TOTAL COLIFORM
TEMP-TEMPERATURE
TN-NITROGEN
TOC-T.ORGANIC CARBON
TP-PHOSPHORUS
TSS-TOTAL SUSPENDED SOLIDS
TURB-TURBIDITY
TSI-TROPHIC STATE INDEX FOR LAKES AND ESTUARIES
WQI-WATER QULAITY INDEX FOR STREAMS AND SPRINGS

NPS QUALITATIVE SURVEY RESULTS
AN "X" INDICATES A PROBLEM WITH POLLUTANT OR SOURCE
THE * ON MAPID INDICATES NO STORET INFORMATION AVAILABLE FOR THIS WATERSHED
-SEE PAGE 11 FOR LEGEND FOR THIS TABLE-

CATNAME=LITTLE MANATEE RIVER HUC=03100203

MAP ID	WBID	BASIN	WQ30S	WQNPS	NUTRIENT	BACTERIA	SEDIMENT	OIL	PESTICID	OTHERCHE	DEBRIS	OXYGEN	SALINITY	PH	METAL	HABITAT	FLOW	THERMAL	OTHERPOL	FISHKILL	ALGAL	WEED	TURBIDITY	ODOR	FISHDEC	NOSWIM	NOFISH	OTHERSYM	IND	ST	AG	RE	SL	LD	UR	CN	HM	OT
1*	1832	KEEN BRANCH		THREAT	X				X	X						X			X		X	X	X							X							
2	1790	SO FK LITTLE MANATEE R	FAIR	THREAT	X		X		X	X						X					X	X	X							X				X			
3*	1809	BAKER BRANCH		THREAT	X				X	X											X	X								X				X			
4*	1800	LONG BRANCH		THREAT	X		X		X	X						X					X	X	X							X				X			
5	1793	UNNAMED SLOUGH	GOOD	THREAT	X				X																					X				X			
6*	1806	MOODY BRANCH		THREAT	X				X																					X							
7*	1792	UNNAMED DRAINAGE DITCH		THREAT	X		X		X	X						X					X	X	X		X					X				X			
8*	1798	CURIOSITY CREEK		THREAT	X				X		X	X	X		X	X	X								X			X		X				X	X	X	X
9*	1785	MINED AREA		FAIR	X														X						X			X			X						
10*	1782	UNNAMED STREAM		THREAT	X				X																					X							
11*	1770	UNNAMED DRAIN		GOOD	X																									X							
12*	1783	HOWARD PRAIRIE BRANCH		GOOD																																	
13*	1780	WILDCAT CREEK		THREAT	X											X					X				X					X				X			
14*	1784	BOLSTER BAYOU		GOOD	X																									X							
15*	1768	ALDERMANN CREEK		THREAT	X					X						X	X		X		X				X			X			X			X			
16*	1771	SUN CITY SLOUGH		THREAT	X											X					X				X					X				X			
17	1742A	LITTLE MANATEE RIVER	FAIR	THREAT	X	X	X	X	X	X						X	X		X		X	X	X		X			X		X	X		X	X	X	X	X
18*	1779	HAYNES BAYOU		THREAT	X					X									X											X				X			X
19	1742B	N. Fork L. Manatee R.	GOOD	THREAT	X	K	K	X	X	X						X	X		X		X	X	X		X			X		X	X		X	X	X	X	X
20*	1762	HOWARD PRAIRIE BRANCH		THREAT																	X													X			
21*	1754	LAKE WIMAUMA DRAIN		THREAT	X																				X					X				X			
22*	1755	GULLY BRANCH		THREAT	X											X									X					X				X			
23*	1760	MILL BAYOU		THREAT	X											X					X									X				X			X
24	1749	DUG CREEK	GOOD	THREAT	X											X	X								X					X			X	X	X	X	
25*	1753	MINED AREA		FAIR	X											X	X		X									X				X					
26*	1747	RUSKIN INLET MARSH BR		FAIR	X	X	X	X	X			X	X			X					X		X					X		X			X	X			X
27	1739	CYPRESS CREEK	FAIR	THREAT	X			X			X	X	X			X	X		X						X			X		X				X	X	X	X
28*	1732	PIERCE BRANCH		THREAT	X																X									X				X			
29*	1724	CARLTON BRANCH		THREAT	X		X	X	X	X	X	X	X			X	X				X		X		X					X						X	



MANATEE RIVER BASIN
03100202

AVERAGE WATER QUALITY
1984-1993 STORET DATA
WATERSHED ID NUMBERS LINK MAP TO TABLES
* INDICATES QUALITATIVE ASSESSMENT

WATER QUALITY
- GOOD
- THREATENED
- FAIR
- POOR
- UNKNOWN

MANATEE RIVER BASIN

Basic Facts

Drainage Area: 375 square miles
Major Land Uses: rangeland, orchards, urban development, two WWTP
Population Density: moderate (Bradenton, Palmetto)
Major Pollution Sources: agricultural, citrus processing
Best Water Quality Areas: upper Manatee River
Worst Water Quality Areas: Gilly Creek
Water Quality Trends: stable quality at 4 sites
OFW Waterbodies: Lake Manatee State Recreation Area
SWIM Waterbodies: none
Reference Reports:
Braden River Water Quality Study, TBRPC/DEP, 1986
Lake Manatee General Information, Manatee County Public Works
Manatee River Wasteload Allocation Document, DEP, 1985
Florida Rivers Assessment, DEP/FREAC/NPS, 1989
Basin Water Quality Experts:
Peter Clark, TBRPC, 813/577-5151
Doug Farrell, DEP (Tampa), 813/744-6100
Bruce DeGrove, DEP (Tallahassee), 904/488-0780
Mike Heyl, Camp, Dresser, and McGee, 813/351-7100

In the News

* Permits for withdrawal of drinking water from Lake Manatee Reservoir are being reviewed and are still pending.
* Efforts are underway to purchase land for preservation along the Manat River. Other similarly located areas are being converted from agriculture to residential use.
*Draft reports on the freshwater inflow and salinity characteristics of the lower Manatee river are nearly completed. These reports will be used to assess future water supply demands from the Manatee River system. The first report has been produced by Camp Dresser and McKee for Manatee County as part of their SWFWMD water use permit, while the second report is being produced by Dames and Moore for the Tampa Bay National Estuary program.

Ecological Characterization

The headwaters of the Manatee River originate in the northeastern corner of Manatee County. The river flows approximately 33 miles southwesterly to Tampa Bay and drains 375 square miles. The river is impounded at Lake Manatee to provide the drinking water supply for Manatee County. Downstream, west of Fort Homer, the Manatee River forms a wide, tidally influenced estuary. Principal tributaries of the

Manatee include Gamble Creek and the Braden River, which is also impounded to provide drinking water for the City of Bradenton. The Manatee River has several distinct habitat types. The upstream portion is a blackwater steam meandering through a canopied corridor. Rangeland and agriculture are the predominate land use in this part of the basin. Lake Manatee provides a lacustrine habitat near the middle of the basin. Citrus orchards are common here. Downstream of the lake, the river is again a meandering stream and is a recognized canoe trail. Finally, the mouth of the river is a mangrove lined estuary which has been extensively urbanized by the towns of Bradenton, Palmetto and Ellenton.

Anthropogenic Impacts

Generally, this basin has good water quality. The major problem in the fresh water portion of the basin is increased nutrient levels in the Manatee River Reservoir. There are no point sources in the area to account for these values, but the lake receives excessive nonpoint source nutrient loading from orange groves and rangeland. Some phosphate mining operations occur near the North and East Forks. The high nutrient levels in the reservoir promote algae and weed growth. The lake has nearly year-round algal bloom problems which are treated with frequent applications of copper sulfate (though a reduction in amount has taken place in recent years). Lake data collected by the Manatee County Public Works Department (PWD) indicated nutrient values in the "poor" TSI range, but chlorophyll levels were held artificially low because of the copper treatments. Consequently, copper levels were relatively high (above state criteria for surface waters and potable water supplies) both within and downstream of the lake. PWD is acting to improve the conditions in the lake by: 1. developing a pilot project to determine the effectiveness of requiring best management practices (BMP) of agricultural operations; 2. instigating aeration projects in Gilley Creek and Boggy Creek; and 3. starting a watershed land acquisition project. EPA will also be investigating BMPs in this drainage.

Gamble Creek has not been sampled recently, but has historically had nutrient and DO problems from agriculture and construction runoff. A major fish kill was reported in the summer of 1989.

During the rainy season of the year, nutrient and organic nitrogen loading from runoff cause periods of high chlorophyll and low DO values in the estuarine areas downstream of the reservoirs. Although STORET data are limited, an intensive survey of the lower Manatee and Braden Rivers for a wasteload allocation survey showed that these areas had fair water quality predominantly because of DO problems. The point source loading in the estuary should have decreased with the recent upgrading of the Bradenton WWTP which was required by special legislation which makes advanced treatment mandatory for discharges going to Tampa Bay. However, Manatee County consumes most or all of the dry season flow coming into the lake, thus decreasing flushing downstream and leading to a more saline estuary. Currently, the major source of pollution to the estuary appears to be runoff from upstream agricultural sources (and Lake Manatee) and urban runoff from Bradenton. The Braden River Reservoir has high nutrient and bacteria problems. Potential sources of these problems are rangeland runoff and septic tank leachate. Upstream of the impoundment, the river has good water quality.

Tropicana has constructed a new wastewater treatment system to improve the quality of their effluent. The City of Palmetto is reviewing the potential of either going to total reuse with their wastewater, or hooking up to Manatee County's wastewater system.

** USGS HYDROLOGIC UNIT: 03100202 MANATEE RIVER

SURFACE WATER QUALITY DATA FOR 1970-1993
MEDIAN VALUES FOR EACH WATERSHED
CURRENT PERIOD OF RECORD (1989-1993) USED WHERE AVAILABLE
PERIOD PRIOR TO 1989 IS EVALUATED AS HISTORICAL INFORMATION

INDEX	GOOD	FAIR	POOR
WQI-RIVER	0-44	45-59	60-90
TSI-ESTUARY	0-49	50-59	60-100
TSI-LAKE	0-59	60-69	70-100

WATERSHED ID	NAME	WATERSHED DATA RECORD				WATER CLARITY				DISSOLVED OXYGEN		OXYGEN DEMAND			PH	ALKALINITY	TROPHIC STATUS			COLIFORM		BIOLOGICAL SPECIES DIVERSITY			COND	FLOW	WATER QUALITY INDICES	
		MAX #OBS	BEG YR	END YR	DATA PERIOD	TURB	SD	COLOR	TSS	DO	DOSAT	BOD	COD	TOC	PH	ALK	NITRO	PHOS	CHLA	TOTAL	FECL	NAT	ART	BECK	COND	FLOW	WQI	TSI
* WATER BODY TYPE: ESTUARY																												
24	MANATEE RIVER BL DAM	4081	71	79	Historical	4.5	0.9	28	.	4.6	56	1.9	.	25	8.0	.	0.91	0.48	.	451	135	1.9	.	.	29750	.	.	58
* WATER BODY TYPE: LAKE																												
1	MACASPHALT INC LAKE	2	82	82	Historical	.	.	10	.	.	.	.	.	.	8.1	.	0.61	0.02	.	120	44	.	.	.	373	.	.	37
6	WARD LAKE	4	89	89	Current	.	.	.	.	7.7	87	1.0	.	11	8.1	.	0.97	0.30	.	.	.	.	.	.	700	.	.	56
* WATER BODY TYPE: STREAM																												
4	BRADEN RIVER AB WARD L	399	70	87	Historical	9.0	.	51	7	5.2	65	1.9	50	16	7.0	70	0.92	0.22	.	820	78	.	.	.	260	0	55	.
5	GAP CREEK	626	70	87	Historical	.	.	.	.	.	.	.	.	.	7.2	.	.	.	.	4200	800	.	.	.	.	.	62	.
10	BRADEN R NR ELLWOOD PK	422	70	87	Historical	.	.	.	.	6.7	85	.	.	.	7.4	.	.	.	.	540	150	.	.	.	8480	.	57	.
11	WILLIAMS CREEK	410	70	87	Historical	.	.	.	.	.	.	.	.	.	7.1	.	.	.	.	4700	920	.	.	.	.	.	89	.
12	BRADEN R NR GS CAMP	398	70	87	Historical	5.0	.	80	.	3.0	36	3.0	.	.	7.4	.	.	.	.	495	170	.	.	.	16000	.	56	.
15	Manatee River	17	89	92	Current	.	.	130	.	7.4	78	1.3	.	13	7.0	.	0.75	0.68	.	.	.	.	.	.	193	10	36	.
16	POLEY BRANCH	154	70	76	Historical	8.5	.	35	.	6.4	67	3.9	.	.	6.7	26	1.30	.	.	1010	230	.	.	.	45500	.	63	.
17	MILL CREEK	320	72	87	Historical	.	.	.	.	.	.	.	.	.	7.2	.	.	.	.	3725	909	.	.	.	.	.	81	.
19	WARES CREEK	1380	70	87	Historical	2.9	.	40	.	5.6	63	2.1	.	.	7.3	366	.	0.44	.	1600	920	.	.	.	821	.	76	.
22	GATES CREEK	118	72	76	Historical	.	.	.	.	.	.	.	.	.	7.2	.	.	.	.	1260	540	.	.	.	.	.	70	.
26	Manatee River	10	89	89	Current	1.1	.	60	0	7.9	88	.	.	.	6.4	.	0.33	0.68	1	103	84	.	.	.	155	.	23	.
30	GILLY CREEK	456	70	87	Historical	2.6	.	100	7	3.6	41	2.0	45	18	6.5	15	2.35	0.25	.	1000	125	.	.	.	157	.	60	.
31	UNNAMED DRAIN	118	72	76	Historical	.	.	.	.	.	.	.	.	.	7.2	.	.	.	.	11650	920	.	.	.	.	.	89	.
33	GAMBLE CREEK	7	92	93	Current	6.2	0.3	95	5	7.2	80	.	.	13	7.2	68	1.44	0.46	0	.	538	.	.	.	409	.	56	.

LEGEND:
ALK-ALKALINITY MG/L
ART-ARTIFICIAL SUBSTRATE DI
BEG YR-BEGINNING SAMPLING YEAR
BECK-BECK'S BIOTIC INDEX
BOD-BIOCHEMICAL OXYGEN DEMAND MG/L
CHLA-CHLOROPHYLL UG/L
COD-CHEMICAL OXYGEN DEMAND MG/L
COLOR-COLOR PCU
COND-CONDUCTIVITY UMHOS
DO-DISSOLVED OXYGEN MG/L
DOSAT-DO % SATURATION
END YR-ENDING YEAR
FECL-FECAL COLIFORM MPN/100ML
FLOW-FLOW CFS
MAX #OBS-MAXIMUM NUMBER OF SAMPLES
NAT-NATURAL SUBSTRATE DIVERSITY
NITRO-TOTAL NITROGEN MG/L
PH-PH STANDARD UNITS
PHOS-TOTAL PHOSPHORUS MG/L
SD-SECCHI DISC METERS
TOC-TOTAL ORGANIC CARBON MG/L
TOTAL-TOTAL COLIFORM MPN/100ML
TSI-TROPHIC STATE INDEX
TSS-TOTAL SUSPENDED SOLIDS MG/L
TURB-TURBIDITY MG/L
WQI-WATER QUALITY INDEX

SURFACE WATER QUALITY DATA SCREENING REPORT
MEDIAN VALUES FOR EACH WATERSHED SCREENED

** USGS HYDROLOGIC UNIT: 03100202 MANATEE RIVER

'x'=EXCEEDS SCREENING CRITERIA
'0'=WITHIN SCREENING CRITERIA
'.'=MISSING DATA

WATERSHED ID	NAME	RANK WQI OR TSI	DATA RECORD CURRENT OR HISTORICAL	SCREENING VARIABLES AND CRITERIA: TN TN>2.0	STREAM TP TP>.46	LAKE TP TP>.12	PH PH>8.8 PH<5.2	ALK ALK<20	TURB & TSS TURB>16.5 TSS>18	COND COND>1275	OXYGEN DEMAND BOD>3.3 COD>102 TOC>27.5	DO DO<4	COLIFORM BACTI TOT>3700 FECAL>470	BIOL DIV DIART<1.95 DINAT<1.5 BECK<5.5	CHLA CHLA>40	SECCHI DISC SD<.7
* WATER BODY TYPE: ESTUARY																
24	MANATEE RIVER BL DAM	FAIR	Historical	0	.	x	0	.	0	x	0	0	0	0	.	0
* WATER BODY TYPE: LAKE																
1	MACASPHALT INC LAKE	GOOD	Historical	0	.	0	0	.	.	.	.	.	0	.	.	.
6	WARD LAKE	GOOD	Current	0	.	x	0	.	.	.	0	0	.	.	.	.
* WATER BODY TYPE: STREAM																
4	BRADEN RIVER AB WARD L	FAIR	Historical	0	0	.	0	0	0	.	0	0	0	.	.	.
5	GAP CREEK	UNKN	Historical	.	.	.	0	.	.	.	.	.	x	.	.	.
10	BRADEN R NR ELLWOOD PK	FAIR	Historical	.	.	.	0	.	.	x	.	0	0	.	.	.
11	WILLIAMS CREEK	UNKN	Historical	.	.	.	0	.	.	.	.	.	x	.	.	.
12	BRADEN R NR GS CAMP	FAIR	Historical	.	.	.	0	.	0	x	0	x	0	.	.	.
15	Manatee River	GOOD	Current	0	x	.	0	.	.	.	0	0	.	.	.	.
16	POLEY BRANCH	POOR	Historical	0	0	.	0	0	0	x	x	0	0	.	.	.
17	MILL CREEK	UNKN	Historical	.	.	.	0	.	.	.	.	.	x	.	.	.
19	WARES CREEK	POOR	Historical	.	0	.	0	0	0	0	0	0	x	.	.	.
22	GATES CREEK	UNKN	Historical	.	.	.	0	.	.	.	.	.	x	.	.	.
26	Manatee River	GOOD	Current	0	x	.	0	.	0	.	.	0	0	.	0	.
30	GILLY CREEK	POOR	Historical	x	0	.	0	x	0	0	0	x	0	.	.	.
31	UNNAMED DRAIN	UNKN	Historical	.	.	.	0	.	.	.	.	.	x	.	.	.
33	GAMBLE CREEK	FAIR	Current	0	0	.	0	0	0	.	0	0	x	.	0	x

LEGEND:
ALK-ALKALINITY
BECK-BECK'S BIOTIC INDEX
BIOL DIV-BIOLOGICAL DIVERSITY
CHLA-CHLOROPHYLL
COND-CONDUCTIVITY
DO-DISSOLVED OXYGEN
CURRENT-1989 TO 1993
DIART-ARTIFICIAL SUBSTRATE DIVERSITY
DINAT-NATURAL SUBSTRATE DIVERSITY
FECAL-FECAL COLIFORM BACTERIA
HISTORICAL-1970 TO 1988
OXYGEN DEMAND-BOD,COD,TOC
PH-PH
TN-NITROGEN
TP-PHOSPHORUS
TOT-TOTAL COLIFORM BACTERIA
TSS-TOTAL SUSPENDED SOLIDS
TURB-TURBIDITY
SD-SECCHI DISC METERS
WQI OR TSI-WATER QUALITY INDEX RATING WHICH INDEX USED, WQI OR TSI, IS BASED ON WATERBODY TYPE

SURFACE WATER QUALITY ASSESSMENT REPORT
TRENDS-SOURCES-CLEANUP

** USGS HYDROLOGIC UNIT: 03100202 MANATEE RIVER

'x'=DEGRADING TREND
'0'=STABLE TREND
'+'=IMPROVING TREND
'.'=MISSING DATA

WATERSHED ID	NAME	QUALITY RANK: MEETS USE ?	OR WQI	OVER-ALL TREND	W Q I	or TSI	1984 - 1993 TRENDS: T N	T P	T C H L A	S D	P H	A L K	T U R B	T S S	B O D	T C	D O	D O S A T	D I C O L I	T C O L I	F C O L I	T E M P	T F L O W	<--- PLEASE READ THESE COLUMNS VERTICALLY: DEGRADATION SOURCES, PRESENT CONDITIONS AND CLEANUP EFFORTS
* WATER BODY TYPE: ESTUARY																								
24	MANATEE RIVER BL DAM	PARTIAL	FAIR																					
* WATER BODY TYPE: LAKE																								
1	MACASPHALT INC LAKE	YES	GOOD																					
6	WARD LAKE	YES	GOOD	0		0	0	0	.	.	0	.	.	.	0	0	0	0	.	.	0	.		
* WATER BODY TYPE: STREAM																								
4	BRADEN RIVER AB WARD L	PARTIAL	FAIR	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
5	GAP CREEK	NO	UNKN	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
10	BRADEN R NR ELLWOOD PK	PARTIAL	FAIR	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
11	WILLIAMS CREEK	NO	UNKN	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
12	BRADEN R NR GS CAMP	PARTIAL	FAIR	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
15	Manatee River	YES	GOOD	0		0	0	0	.	.	0	.	.	.	0	0	0	0	0	.	.	0	0		
16	POLEY BRANCH	NO	POOR																					
17	MILL CREEK	NO	UNKN	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
19	WARES CREEK	NO	POOR	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
22	GATES CREEK	NO	UNKN																					
26	Manatee River	YES	GOOD	0		0	.	.	.	.	x	.	0	.	.	.	0	0	0	0	0	0	.		
30	GILLY CREEK	NO	POOR	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
31	UNNAMED DRAIN	NO	UNKN																					
33	GAMBLE CREEK	PARTIAL	FAIR	0		+	.	.	.	.	0	.	.	.	.	.	.	.	0	0	0	.		

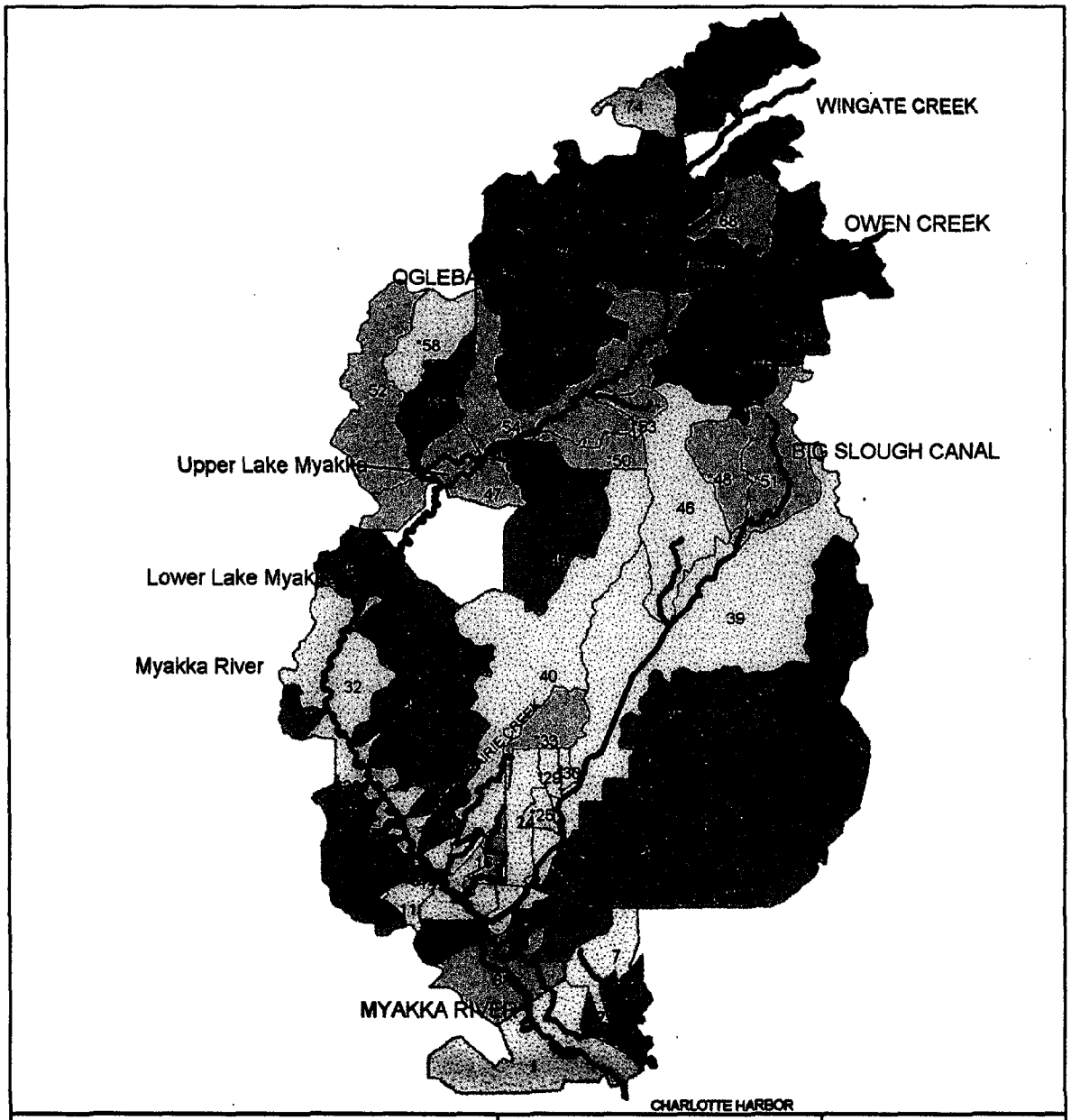
LEGEND:

ALK-ALKALINITY
BOD-BIOCHEM. OXYGEN DEMAND
CHLA-CHLOROPHYLL
DO-DISSOLVED OXYGEN
DOSAT-DO SATURATION
FCOLI-FECAL COLIFORM
FLOW-FLOW
MEETS USE-MEETS DESIGNATED USE
PH-PH
SD-SECCHI DISC METERS
TCOLI-TOTAL COLIFORM
TEMP-TEMPERATURE
TN-NITROGEN
TOC-T.ORGANIC CARBON
TP-PHOSPHORUS
TSS-TOTAL SUSPENDED SOLIDS
TURB-TURBIDITY
TSI-TROPHIC STATE INDEX FOR LAKES AND ESTUARIES
WQI-WATER QULAITY INDEX FOR STREAMS AND SPRINGS

NPS QUALITATIVE SURVEY RESULTS
AN "X" INDICATES A PROBLEM WITH POLLUTANT OR SOURCE
THE * ON MAPID INDICATES NO STORET INFORMATION AVAILABLE FOR THIS WATERSHED
-SEE PAGE 11 FOR LEGEND FOR THIS TABLE-

CATNAME=MANATEE RIVER HUC=03100202

MAP ID	WBID	BASIN	WQ3 05	WQNPS	NUTRIENT	BACTERIA	SEDIMENT	OIL	PESTICIDE	OTHER	DEBRIS	OXYGEN	SALINITY	PH	METAL	HABITAT	FLOW	THERMAL	OTHER	FISHKILL	ALGAE	WEED	TURBID	OODOR	FISHDEC	NOSWIM	NOFISH	OTHERSYM	IND	STP	AG	RE	SL	LD	UR	CN	HM	OT
1	1930	MACASPHALT INC LAKE	GOOD	THREAT	X	X	X	X	X	X						X	X		X		X	X	X		X						X	X	X	X	X	X	X	X
2*	1929	UNNAMED STREAM		POOR	X		X		X			X	X			X					X	X	X	X								X			X				
3*	1923	RATTLESNAKE SLOUGH		THREAT	X				X	X											X	X									X				X				
4	1914	BRADEN RIVER AB WARD L	FAIR	THREAT	X	X	X	X	X	X		X	X		X	X	X			X	X	X	X	X	X						X	X		X		X	X	X
5	1899	GAP CREEK	POOR	THREAT	X	X	X	X							X	X	X					X	X								X			X			X	
6	1914A	WARD LAKE	GOOD	THREAT	X	X	X	X	X	X		X	X		X	X	X			X	X	X	X	X	X						X	X		X		X	X	X
7*	1913	UNNAMED STREAM		THREAT	X	X	X	X	X	X		X	X		X	X	X			X	X	X	X	X	X						X			X		X	X	
8*	1895	FISHER BRANCH		THREAT	X	X	X	X	X	X	X	X	X	X		X	X			X	X	X	X	X	X			X			X	X			X		X	
9*	1909	WOLF SLOUGH		FAIR	X	X	X		X	X		X	X			X					X	X		X							X				X	X		X
10	1876B	BRADEN R NR ELLWOOD PK	FAIR	THREAT	X	X	X	X	X		X	X	X		X	X	X				X	X	X	X	X	X		X			X			X		X	X	
12	1876A	BRADEN R NR GS CAMP	FAIR	THREAT	X	X	X	X	X		X	X	X		X	X	X				X	X	X	X	X	X		X			X			X		X	X	
13*	1892	CORBIT BRANCH		THREAT	X	X	X	X	X	X	X	X	X	X		X	X			X	X	X	X	X	X						X	X			X		X	
14*	1887	SUGERHOUSE CREEK		THREAT	X	X	X	X							X	X	X					X	X								X			X			X	
15	1807C	Manatee River	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X	X	X	X		X			X	X		X		X	X	
16	1899	POLEY BRANCH	POOR	THREAT	X	X	X	X	X	X	X	X	X	X		X	X			X	X	X	X	X	X						X	X			X		X	
17	1872	MILL CREEK	POOR	THREAT	X	X	X	X	X	X	X	X	X		X	X	X				X	X	X	X	X	X					X			X		X	X	X
18*	1876	BRADEN RIVER BL WARD L		THREAT	X	X	X	X	X		X	X	X		X	X	X				X	X	X	X	X	X		X			X			X		X	X	
19	1848C	WARES CREEK	POOR	FAIR	X	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X			X			X	X		X	X	X	X	X
20*	1807B	Lake Manatee Reservoir		THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X	X	X	X	X	X			X	X		X		X	X	
21*	1875	CYPRESS STRAND		THREAT	X	X	X	X	X		X	X	X		X	X	X				X	X	X	X	X	X					X			X		X	X	X
22	1874	GATES CREEK	POOR	THREAT	X	X	X	X	X	X	X	X	X	X		X	X			X	X	X	X	X	X						X	X			X		X	
23*	1864	UNNAMED STREAM		FAIR	X																		X	X							X				X			
24	1848A	MANATEE RIVER BL DAM	FAIR	FAIR	X	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X			X			X	X		X	X	X	X	X
25*	1865	UNNAMED STREAM		THREAT	X		X		X			X	X								X		X	X							X				X			
26	1807A	Manatee River	GOOD	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X	X	X	X		X			X	X		X		X	X	
27*	1848B	MANATEE RIVER BL DAM		FAIR	X	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X			X			X	X		X	X	X	X	X
28*	1853	UNNAMED STREAM		FAIR	X				X												X		X	X							X				X			
29*	1855	UNNAMED STREAM		FAIR	X	X	X	X			X					X					X		X		X						X				X			
30	1840	GILLY CREEK	POOR	THREAT	X	X	X	X	X	X	X	X	X	X		X	X			X	X	X	X	X	X						X	X			X		X	
31	1850	UNNAMED DRAIN	POOR	THREAT	X	X	X	X	X		X	X	X		X	X	X				X	X	X	X	X	X	X				X			X		X	X	X
32*	1843	GAMBLE SINK OVERFLOW		FAIR	X	X			X	X				X							X	X		X	X						X				X			
33	1819	GAMBLE CREEK	FAIR	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X	X					X			X		X	X	X
34*	1807D	Manatee R. north fork		THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X	X	X	X		X			X	X		X		X	X	
35*	1810	GAMBLE CREEK SINK		FAIR	X	X			X	X				X							X	X		X	X						X				X			



MYAKKA RIVER BASIN
03100102

AVERAGE WATER QUALITY
1984-1993 STORET DATA
WATERSHED ID NUMBERS LINK MAP TO TABLES
* INDICATES QUALITATIVE ASSESSMENT

WATER QUALITY
- GOOD
- THREATENED
- FAIR
- POOR
- UNKNOWN

MYAKKA RIVER BASIN

Basic Facts

Drainage Area: 540 square miles
Major Land Uses: rangeland, agriculture, mining
Population Density: low (West Port Charlotte, North Port)
Major Pollution Sources: mining operations, rangeland runoff
Best Water Quality Areas: upper Myakka River
Worst Water Quality Areas: Owen Creek, Wingate Creek
Water Quality Trends: stable quality at 10 sites
OFW Waterbodies:
Lower Myakka River
Myakka River State Park
Myakka Florida Wild and Scenic River Segment
SWIM Waterbodies: none
Reference Reports:
Sarasota County Ambient Water Quality Report, Sarasota County, 1988
Myakka and Peace Rivers, BAS, DEP, (Punta Gorda), 1984
Florida Rivers Assessment, DEP/FREAC/NPS, 1989
Florida Nonpoint Source Assessment, DEP (Tallahassee), 1988
Basin Water Quality Experts:
Ernest Estevez, Mote Marine Lab, Sarasota, 813/388-4441
Kathi Hammett, USGS (Tampa), 813/228-2124

In the News

* A proposal by Sarasota County to divert water from the Myakka River for a potable supply and replace the volume with treated WWTP discharge is being discouraged by DEP because of the OFW status of the Myakka.

Ecological Characterization

The Myakka Basin is located in a transitional area between temperate and subtropical habitats. The upper basin is in a flat, marshy area with a small fringing cypress floodplain. This upper portion of the basin is very sparsely populated or developed. It is used mostly for pasture land and some citrus groves. The blackwater river then enters two successive impoundments, upper and lower Lakes Myakka. The latter is only partially impounded. This portion of the basin is also sparsely populated and is mostly included in the 45 square mile Myakka River State Park. It is interesting to note that the river receives some ground water flow from a 150 foot deep sinkhole at the base of lower Lake Myakka. Below the park, the river winds its very crooked course through undeveloped marsh and swamp prairies until it begins to widen into the estuarine portion of the river. This area receives flow from the river's two main tributaries, Deer

Prairie Creek and Big Slough Canal. The North Port and Port Charlotte development lie just east of the Myakka estuary.

Because the Myakka Basin is relatively undeveloped, and because it contains so many habitats (marsh, swamp, prairie, flatwoods, hammocks and estuary), many species of endangered wildlife have been found there. It is also a popular recreation area. Much of the river has been designated as a State Wild and Scenic River and as an Outstanding Florida Water.

The headwaters of the Myakka River arise from marshes in Hardee County in southwestern Florida. The river traverses approximately 54 miles, draining roughly 540 square miles prior to discharging to Charlotte Harbor. The average flow of the Myakka River is estimated at 600 cfs near its mouth at Charlotte Harbor.

Anthropogenic Impacts

This basin generally has very good water quality and supports both productive freshwater and estuarine habitats. The river originates from swamp drainage and is very sluggish, often with zero net flow during the dry spring seasons. DO values are typically low. Tidal influence on flows and salinity can extend approximately 20 miles upstream. Part of the upper basin drains phosphate rich areas which, combined with agricultural and rangeland runoff, causes the river to have elevated nutrient levels. Upper Lake Myakka is eutrophic with dense hydrilla and hyacinth growth and depressed dissolved oxygen concentrations. The lake provides habitat and feeding areas for abundant wildlife.

In the lower basin, Deer Prairie Creek and Big Slough Canal both drain rangeland. The latter has been channelized in its upper reaches to enhance this drainage. In its lower reaches, it traverses some urbanized areas and receives drainage from residential canals. Big Slough shows elevated coliform and nutrient levels presumably due to pasture and urban development area runoff. There is relatively little development along the estuary which maintains much of its pristine, mangrove vegetated shoreline. The estuary is threatened by encroaching growth from developments to the east.

** USGS HYDROLOGIC UNIT: 03100102 MYAKKA RIVER

SURFACE WATER QUALITY DATA FOR 1970-1993
MEDIAN VALUES FOR EACH WATERSHED
CURRENT PERIOD OF RECORD (1989-1993) USED WHERE AVAILABLE
PERIOD PRIOR TO 1989 IS EVALUATED AS HISTORICAL INFORMATION

INDEX	GOOD	FAIR	POOR
WQI-RIVER	0-44	45-59	60-90
TSI-ESTUARY	0-49	50-59	60-100
TSI-LAKE	0-59	60-69	70-100

WATERSHED ID	NAME	WATERSHED DATA RECORD				WATER CLARITY				DISSOLVED OXYGEN		OXYGEN DEMAND			PH	ALKALINITY	TROPHIC STATUS				COLIFORM		BIOLOGICAL SPECIES DIVERSITY			COND	FLOW	WATER QUALITY INDICES	
		MAX #OBS	BEG YR	END YR	DATA PERIOD	TURB	SD	COLOR	TSS	DO	DOSAT	BOD	COD	TOC	PH	ALK	NITRO	PHOS	CHLA	TOTAL	FECL	NAT	ART	BECK	COND	FLOW	WQI	TSI
* WATER BODY TYPE: ESTUARY																													
1	MYAKKA RIVER	24	90	92	Current	2.9	0.9	60	12	6.5	73	2.2	.	12	7.5	91	1.00	0.16	11	.	2	.	.	.	25127	.	.	55
6	MYAKKA RIVER	9	92	93	Current	4.1	0.9	80	8	6.3	75	.	.	14	7.8	86	0.95	0.20	3	.	5	.	.	.	24407	.	.	47
8	MYAKKA RIVER	12	85	85	Historical	1.9	0.9	38	11	5.4	66	.	.	10	.	.	1.20	0.30	.	.	.	.	.	.	30350	.	.	61
11	UNNAMED CREEK	5	89	89	Current	2.8	.	40	.	6.0	73	.	.	.	7.7	.	0.78	0.14	.	200	50	.	.	.	20100	.	.	51
* WATER BODY TYPE: LAKE																													
47	Upper Lake Myakka	10	77	80	Historical	2.1	1.1	184	.	0.6	7	.	.	23	7.5	37	1.19	0.41	8	.	.	1.1	.	3	90	.	.	57
* WATER BODY TYPE: SPRING																													
16	WARM MINERAL SPRING	11	72	85	Historical	1.0	.	6	.	1.0	13	.	.	3	7.4	132	0.45	0.02	.	22	1	.	.	.	26825	9	20	.
* WATER BODY TYPE: STREAM																													
7	SAM KNIGHT CREEK	5	91	91	Current	2.1	.	60	.	4.9	53	2.0	.	.	7.3	.	1.13	0.12	5	.	44	.	.	.	19500	.	46	.
24	DEER PRAIRIE SLOUGH	14	89	92	Current	.	.	140	.	5.8	68	1.7	.	13	6.6	.	1.36	0.08	.	260	23	.	.	.	260	6	47	.
32	Myakka River	75	89	93	Current	1.6	1.3	100	3	6.1	70	1.6	.	.	7.0	36	1.16	0.27	4	255	80	.	.	.	299	146	45	.
39	BIG SLOUGH CANAL	24	89	92	Current	3.0	.	75	.	5.8	66	1.3	.	16	6.8	.	1.18	0.32	5	729	158	.	.	.	697	9	51	.
40	DEER PRAIRIE CREEK	14	89	93	Current	10.4	0.5	140	4	7.0	74	1.4	.	22	5.8	157	1.20	0.42	.	120	200	.	.	.	258	14	57	.
44	MYAKKA RIVER	11	89	92	Current	1.1	.	105	.	4.1	52	.	.	16	7.0	.	0.96	0.29	.	500	5	.	.	.	324	154	61	.
46	MUD LAKE SLOUGH	17	90	93	Current	14.5	0.5	200	13	5.5	61	1.5	.	21	6.6	107	1.42	0.44	.	510	219	.	.	.	241	3	60	.
52	HOWARD CREEK	9	89	91	Current	3.0	.	60	.	6.4	70	.	.	.	7.1	.	0.88	0.66	.	900	200	.	.	.	644	7	39	.
54	MYAKKA RIVER (UPPER)	35	89	93	Current	2.1	1.1	105	1	6.3	65	0.8	.	20	6.8	38	0.78	0.22	.	400	266	.	.	.	323	86	43	.
60	OWEN CREEK	4	93	93	Current	20.7	0.2	95	9	3.5	39	.	.	11	6.0	37	1.68	0.34	.	.	35000	.	.	.	763	.	71	.
68	LONG CREEK	9	92	93	Current	1.9	1.0	50	2	6.8	69	.	.	11	6.8	15	1.04	0.06	.	.	340	.	.	.	322	.	38	.
69	WINGATE CREEK	11	92	93	Current	9.2	0.8	113	16	3.4	38	.	.	20	6.7	43	1.36	0.35	.	.	69	.	.	.	290	.	63	.
73	WINGATE CREEK	7	76	76	Historical	.	.	80	15	.	.	1.3	87	34	7.3	58	1.32	0.40	.	.	.	.	.	.	273	.	69	.
74	JOHNSON CREEK	35	76	76	Historical	.	.	40	5	4.0	49	2.3	86	24	6.0	8	1.39	0.07	.	.	.	.	.	.	100	23	60	.

LEGEND:
ALK-ALKALINITY MG/L
ART-ARTIFICIAL SUBSTRATE DI
BEG YR-BEGINNING SAMPLING YEAR
BECK-BECK'S BIOTIC INDEX
BOD-BIOCHEMICAL OXYGEN DEMAND MG/L
CHLA-CHLOROPHYLL UG/L
COD-CHEMICAL OXYGEN DEMAND MG/L
COLOR-COLOR PCU
COND-CONDUCTIVITY UMHOS
DO-DISSOLVED OXYGEN MG/L
DOSAT-DO % SATURATION
END YR-ENDING YEAR
FECL-FECAL COLIFORM MPN/100ML
FLOW-FLOW CFS
MAX #OBS-MAXIMUM NUMBER OF SAMPLES
NAT-NATURAL SUBSTRATE DIVERSITY
NITRO-TOTAL NITROGEN MG/L
PH-PH STANDARD UNITS
PHOS-TOTAL PHOSPHORUS MG/L
SD-SECCHI DISC METERS
TOC-TOTAL ORGANIC CARBON MG/L
TOTAL-TOTAL COLIFORM MPN/100ML
TSI-TROPHIC STATE INDEX
TSS-TOTAL SUSPENDED SOLIDS MG/L
TURB-TURBIDITY MG/L
WQI-WATER QUALITY INDEX

SURFACE WATER QUALITY DATA SCREENING REPORT
MEDIAN VALUES FOR EACH WATERSHED SCREENED

** USGS HYDROLOGIC UNIT: 03100102 MYAKKA RIVER

'x'=EXCEEDS SCREENING CRITERIA
'0'=WITHIN SCREENING CRITERIA
'.'=MISSING DATA

WATERSHED ID	NAME	RANK WQI OR TSI	DATA RECORD CURRENT OR HISTORICAL	SCREENING VARIABLES AND CRITERIA: TN TN>2.0	STREAM TP TP>.46	LAKE TP TP>.12	PH PH>8.8 PH<5.2	ALK ALK<20	TURB & TSS TURB>16.5 TSS>18	COND COND>1275	OXYGEN DEMAND BOD>3.3 COD>102 TOC>27.5	DO DO<4	COLIFORM BACTI TOT>3700 FECAL>470	BIOL DIV DIART<1.95 DINAT<1.5 BECK<5.5	CHLA CHLA>40	SECCHI DISC SD<.7
* WATER BODY TYPE: ESTUARY																
1	MYAKKA RIVER	FAIR	Current	0	.	x	0	0	0	x	0	0	0	.	0	0
6	MYAKKA RIVER	GOOD	Current	0	.	x	0	0	0	x	0	0	0	.	0	0
8	MYAKKA RIVER	POOR	Historical	0	.	x	.	.	0	x	0	0	.	.	.	0
11	UNNAMED CREEK	FAIR	Current	0	.	x	0	.	0	x	.	0	0	.	.	.
* WATER BODY TYPE: LAKE																
47	Upper Lake Myakka	GOOD	Historical	0	.	x	0	0	0	.	0	x	.	x	0	0
* WATER BODY TYPE: SPRING																
16	WARM MINERAL SPRING	GOOD	Historical	0	0	.	0	0	0	x	0	x	0	.	.	.
* WATER BODY TYPE: STREAM																
7	SAM KNIGHT CREEK	FAIR	Current	0	0	.	0	.	0	x	0	0	0	.	0	.
24	DEER PRAIRIE SLOUGH	FAIR	Current	0	0	.	0	.	.	.	0	0	0	.	.	.
32	Myakka River	FAIR	Current	0	0	.	0	0	0	0	0	0	0	.	0	0
39	BIG SLOUGH CANAL	FAIR	Current	0	0	.	0	.	0	0	0	0	0	.	0	.
40	DEER PRAIRIE CREEK	FAIR	Current	0	0	.	0	0	0	.	0	0	0	.	.	x
44	MYAKKA RIVER	UNKN	Current	0	0	.	0	.	0	0	0	0	0	.	.	.
46	MUD LAKE SLOUGH	FAIR	Current	0	0	.	0	0	0	.	0	0	0	.	.	x
52	HOWARD CREEK	GOOD	Current	0	x	.	0	.	0	0	.	0	0	.	.	.
54	MYAKKA RIVER (UPPER)	GOOD	Current	0	0	.	0	0	0	0	0	0	0	.	.	0
60	OWEN CREEK	POOR	Current	0	0	.	0	0	x	.	0	x	x	.	.	x
68	LONG CREEK	GOOD	Current	0	0	.	0	x	0	.	0	0	0	.	.	0
69	WINGATE CREEK	POOR	Current	0	0	.	0	0	0	.	0	x	0	.	.	0
73	WINGATE CREEK	UNKN	Historical	0	0	.	0	0	0	.	x	.	.	.	.	.
74	JOHNSON CREEK	FAIR	Historical	0	0	.	0	x	0	.	0	0	.	.	.	.

LEGEND:
ALK-ALKALINITY
BECK-BECK'S BIOTIC INDEX
BIOL DIV-BIOLOGICAL DIVERSITY
CHLA-CHLOROPHYLL
COND-CONDUCTIVITY
DO-DISSOLVED OXYGEN
CURRENT-1989 TO 1993
DIART-ARTIFICIAL SUBSTRATE DIVERSITY
DINAT-NATURAL SUBSTRATE DIVERSITY
FECAL-FECAL COLIFORM BACTERIA
HISTORICAL-1970 TO 1988
OXYGEN DEMAND-BOD, COD, TOC
PH-PH
TN-NITROGEN
TP-PHOSPHORUS
TOT-TOTAL COLIFORM BACTERIA
TSS-TOTAL SUSPENDED SOLIDS
TURB-TURBIDITY
SD-SECCHI DISC METERS
WQI OR TSI-WATER QUALITY INDEX RATING WHICH INDEX USED, WQI OR TSI, IS BASED ON WATERBODY TYPE

SURFACE WATER QUALITY ASSESSMENT REPORT
TRENDS-SOURCES-CLEANUP

** USGS HYDROLOGIC UNIT: 03100102 MYAKKA RIVER

'x'=DEGRADING TREND
'0'=STABLE TREND
'+'=IMPROVING TREND
'.'=MISSING DATA

1984 - 1993 TRENDS

WATERSHED ID	NAME	QUALITY RANK: MEETS USE ?	QUALITY RANK: OR WQI	OVER-ALL TREND	WQ or TSI	TN	TP	TOC	SD	PH	PAL	TUR	TSS	BOD	TCO	DOS	DFC	TEM	CHL	TOL	FCO	TEM	ELE	MOW	PW
* WATER BODY TYPE: ESTUARY																									
1	MYAKKA RIVER	PARTIAL	FAIR	0	0	0	0	.	.	.	.	0	.	.	.	0	0	.	.	.	0	.
6	MYAKKA RIVER	YES	GOOD	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
8	MYAKKA RIVER	NO	POOR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
11	UNNAMED CREEK	PARTIAL	FAIR	0	0	0	0	.	.	0	.	0	.	.	.	0	0	0	0	.	0	.
* WATER BODY TYPE: LAKE																									
47	Upper Lake Myakka	YES	GOOD																						
* WATER BODY TYPE: SPRING																									
16	WARM MINERAL SPRING	YES	GOOD	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
* WATER BODY TYPE: STREAM																									
7	SAM KNIGHT CREEK	PARTIAL	FAIR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
24	DEER PRAIRIE SLOUGH	PARTIAL	FAIR	0	0	0	0	.	+	.	.	0	0	0	0	0	0	0	0	0	0	0
32	Myakka River	PARTIAL	FAIR	0	x	0	0	0	x	.	0	.	0	.	0	0	0	0	x	0	0	.
39	BIG SLOUGH CANAL	PARTIAL	FAIR	0	x	0	0	.	0	.	0	.	0	0	0	0	0	0	0	0	0	0
40	DEER PRAIRIE CREEK	PARTIAL	FAIR	0	0	x	.	.	0	.	.	.	0	0	0	0	0	0	0	0	0	0
44	MYAKKA RIVER	NO	UNKN	0	x	0	+	.	0	.	0	.	.	0	0	0	0	x	0	0	0	0
46	MUD LAKE SLOUGH	NO	FAIR	0	0	0	0	.	0	.	.	.	0	0	0	0	0	0	+	0	0	0
52	HOWARD CREEK	YES	GOOD	0	0	0	0	.	0	.	0	.	.	.	0	0	0	0	x	0	0	.
54	MYAKKA RIVER (UPPER)	YES	GOOD	0	+	+	0	.	0	.	0	.	.	.	0	0	0	0	x	0	0	.
60	OWEN CREEK	NO	POOR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
68	LONG CREEK	YES	GOOD	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
69	WINGATE CREEK	NO	POOR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
73	WINGATE CREEK	NO	UNKN																			
74	JOHNSON CREEK	NO	FAIR																			

<--- PLEASE READ THESE COLUMNS VERTICALLY

DEGRADATION SOURCES, PRESENT CONDITIONS AND CLEANUP EFFORTS

LEGEND:

ALK-ALKALINITY
BOD-BIOCHEM. OXYGEN DEMAND
CHLA-CHLOROPHYLL
DO-DISSOLVED OXYGEN
DOSAT-DO SATURATION
FCOLI-FECAL COLIFORM
FLOW-FLOW
MEETS USE-MEETS DESIGNATED USE
PH-PH
SD-SECCHI DISC METERS
TCOLI-TOTAL COLIFORM
TEMP-TEMPERATURE
TN-NITROGEN
TOC-T.ORGANIC CARBON
TP-PHOSPHORUS
TSS-TOTAL SUSPENDED SOLIDS
TURB-TURBIDITY
TSI-TROPHIC STATE INDEX FOR LAKES AND ESTUARIES
WQI-WATER QULAITY INDEX FOR STREAMS AND SPRINGS

NPS QUALITATIVE SURVEY RESULTS
AN "X" INDICATES A PROBLEM WITH POLLUTANT OR SOURCE
THE * ON MAPID INDICATES NO STORET INFORMATION AVAILABLE FOR THIS WATERSHED
-SEE PAGE 11 FOR LEGEND FOR THIS TABLE-

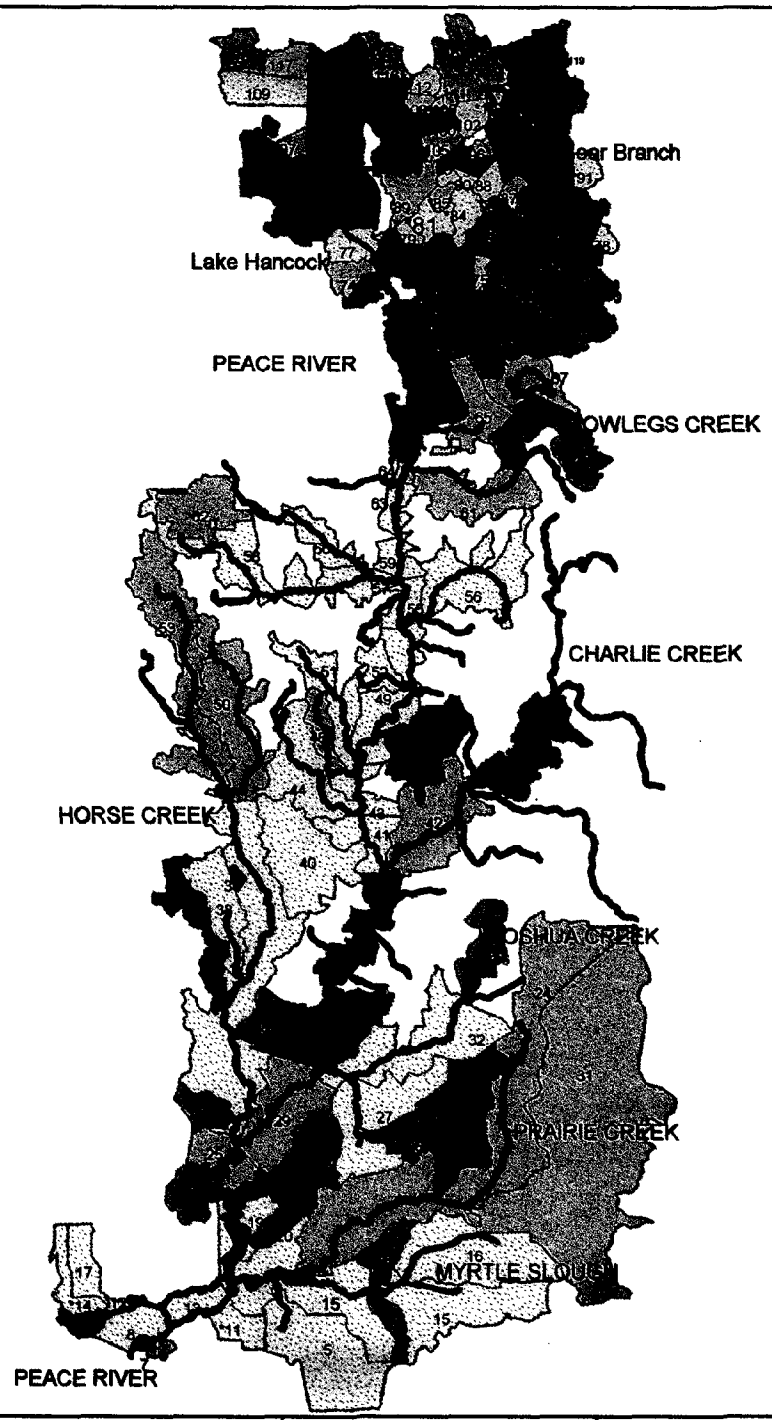
CATNAME=MYAKKA RIVER HUC=03100102

MAP ID	WBID	BASIN	WQ 305	WQNPS	NUTRIENT	BACTERIA	SEDIMENT	OIL	PESTICIDE	OTHER CHEM	DEBRIS	OXYGEN	SALINITY	PH	METAL	HABITAT	FLOW	THERMAL	OTHER POL	FISHKILL	ALGAL	WEED	TURBIDITY	ODOR	FISHDEC	NOSWIM	NOFISH	OTHERSYM	IND	STP	AG	RE	SL	LD	UR	CN	HM	OT
1	1991A	MYAKKA RIVER	FAIR	THREAT	X	X	X	X	X	X	X	X	X			X	X		X		X	X	X		X			X			X	X	X	X	X	X	X	X
2*	2053	TRAILER PARK CANAL		THREAT	X	X	X	X	X	X	X	X	X			X			X			X	X	X	X			X			X	X	X	X	X	X		X
3*	2055	TIPPECANOE BAY		THREAT	X	X	X	X	X	X	X	X	X			X					X	X	X		X		X				X	X	X	X		X		X
4*	2048C	Flopbuck Creek		THREAT	X	X	X	X	X	X	X	X	X			X					X	X	X		X		X				X	X	X	X		X		X
5*	2048B	Huckaby Creek		THREAT	X	X	X	X	X	X	X	X	X			X					X	X	X		X		X				X	X	X	X		X		X
6	1991B	MYAKKA RIVER	GOOD	THREAT	X	X	X	X	X	X	X	X	X			X	X		X		X	X	X		X			X			X	X	X	X	X	X	X	X
7	2048A	SAM KNIGHT CREEK	FAIR	THREAT	X	X	X	X	X	X	X	X	X			X					X	X	X		X		X				X	X	X	X		X		X
8	1991C	MYAKKA RIVER	POOR	THREAT	X	X	X	X	X	X	X	X	X			X	X		X		X	X	X		X			X			X	X	X	X	X	X	X	X
9*	2045	ROCK CREEK		THREAT	X	X	X	X				X	X			X						X			X						X	X	X	X	X	X	X	X
10*	2043	UNNAMED CANAL		THREAT		X						X	X									X									X	X	X	X		X		X
11	2038	UNNAMED CREEK	FAIR	THREAT	X	X	X	X	X		X	X	X		X	X	X			X	X	X	X		X						X	X	X	X	X	X	X	X
12*	2034	UNNAMED CREEK		THREAT	X	X	X	X			X	X	X		X	X	X					X	X		X						X	X	X	X	X	X	X	X
13*	2032	UNNAMED DITCH SYSTEM		THREAT	X	X	X	X			X	X	X									X	X		X						X	X	X	X	X	X	X	X
14*	2037	UNNAMED CREEK		THREAT		X		X			X	X	X		X	X	X					X	X								X	X	X	X		X	X	X
15*	2036	UNNAMED CREEK		THREAT		X					X	X	X		X	X	X					X	X								X	X	X	X		X	X	X
16	2026	WARM MINERAL SPRING	GOOD	THREAT	X	X	X	X	X		X	X	X		X						X	X	X		X						X	X	X	X	X	X	X	X
17*	2031	UNNAMED CREEK		THREAT	X	X	X	X			X	X	X		X	X	X					X	X		X						X	X	X	X	X	X	X	X
18*	2010	UNNAMED DITCH SYSTEM		THREAT	X	X	X	X	X		X	X	X		X	X	X			X	X	X	X	X	X						X	X	X	X	X	X	X	X
19*	2027	UNNAMED CANAL SYSTEM		THREAT	X	X	X	X	X		X	X	X		X	X	X			X	X	X	X	X	X						X	X	X	X	X	X	X	X
20*	2025	UNNAMED CANAL SYSTEM		THREAT	X	X	X	X	X		X	X	X		X	X	X			X	X	X	X	X	X						X	X	X	X	X	X	X	X
21*	2023	UNNAMED CANAL SYSTEM		THREAT	X	X	X	X	X		X	X	X		X	X	X			X	X	X	X	X	X						X	X	X	X	X	X	X	X
22*	2029	UNNAMED CREEK		THREAT	X	X	X	X			X	X	X		X	X	X					X	X		X						X	X	X	X	X	X	X	X
23*	2006	UNNAMED CREEK		THREAT	X	X	X	X				X	X			X	X					X	X		X						X	X	X	X	X	X	X	X
24	2014	DEER PRAIRIE SLOUGH	FAIR	FAIR	X	X	X	X	X		X	X	X		X	X	X			X	X	X	X	X	X						X		X	X	X	X	X	X
25*	2024	UNNAMED DITCH		FAIR	X	X	X	X	X		X	X	X		X	X	X			X	X	X	X	X	X						X		X	X	X	X	X	X
26*	2022	UNNAMED CREEK		THREAT	X	X	X	X	X		X	X	X		X	X	X			X	X	X	X	X	X						X	X	X	X	X	X	X	X
27*	2011	UNNAMED CREEK		THREAT		X						X	X									X									X	X	X	X		X		X
28*	2019	UNNAMED CREEK		THREAT		X						X	X									X									X	X	X	X		X		X
29*	2013	UNNAMED DITCH SYSTEM		FAIR	X	X	X	X	X		X	X	X		X	X	X			X	X	X	X	X	X						X		X	X	X	X	X	X
30*	2012	UNNAMED DITCH SYSTEM		FAIR	X	X	X	X	X		X	X	X		X	X	X			X	X	X	X	X	X						X		X	X	X	X	X	X
31*	2007	UNNAMED CREEK		THREAT		X						X	X									X									X	X	X	X		X		X
32	1991D	Myakka River	FAIR	THREAT	X	X	X	X	X	X	X	X	X			X	X		X		X	X	X		X			X			X	X	X	X	X	X	X	X
33*	2005	UNNAMED DITCH		GOOD																																			
34*	1998	UNNAMED CREEK		THREAT		X						X	X									X									X	X	X	X		X		X
35*	2000	UNNAMED CANAL SYSTEM		THREAT	X	X			X			X	X			X	X				X	X	X								X		X	X	X		X	X
36*	2004	UNN DITCH		THREAT		X						X	X									X									X	X	X	X		X		X
37*	1989	UNNAMED DITCH SYSTEM		THREAT	X	X	X	X	X		X	X	X		X	X	X			X	X	X	X	X	X						X		X	X	X		X	X
38*	1999	UNN DRAIN		THREAT		X						X	X									X									X	X	X	X		X		X
39	1976	BIG SLOUGH CANAL	FAIR	THREAT	X	X	X	X	X		X	X	X		X	X	X			X	X	X	X	X	X						X	X	X	X	X	X	X	X
40	1978	DEER PRAIRIE CREEK	FAIR	THREAT	X	X	X	X				X	X				X					X			X						X	X		X	X	X	X	
41*	1990	SHINEY TOWN SLOUGH		THREAT		X						X	X									X									X	X	X	X		X		X
42*	1981A	Lower Lake Myakka		THREAT	X	X	X	X		X	X	X	X								X	X			X						X	X	X	X	X	X	X	X
43*	1988	FISH CAMP DRAIN		THREAT	X	X	X		X		X	X	X				X			X	X	X			X						X		X				X	X
44	1981B	MYAKKA RIVER	POOR	THREAT	X	X	X	X		X	X	X	X								X	X			X						X	X	X	X	X	X	X	X
45*	1973	MOSSY ISLAND SLOUGH		THREAT						X		X	X									X									X		X	X				X
46	1958	MUD LAKE SLOUGH	POOR	GOOD																																			
47	1981C	Upper Lake Myakka	GOOD	THREAT	X	X	X	X		X	X	X	X									X	X			X						X	X	X	X	X	X	X	X
48*	1967	BUD SLOUGH		GOOD																																			
49*	1972	Myakka River		THREAT						X		X	X									X									X		X	X				X

NPS QUALITATIVE SURVEY RESULTS
AN "X" INDICATES A PROBLEM WITH POLLUTANT OR SOURCE
THE * ON MAPID INDICATES NO STORET INFORMATION AVAILABLE FOR THIS WATERSHED
-SEE PAGE 11 FOR LEGEND FOR THIS TABLE-

CATNAME=MYAKKA RIVER HUC=03100102 (continued)

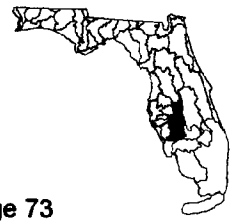
MAP_ID	WBID	BASIN	WQ305	WQNPS	NUTRIENT	BACTERIA	SEDIMENT	OIL	PESTICIDE	OTHER CHEM	DEBRIS	OXYGEN	SALINITY	PH	METAL	HABITAT	FLOW	THERMAL	OTHER POL	FISH KILL	ALGAE	WEED	TURBIDITY	ODOR	FISH DEC L	NOSWIM	NOFISH	OTHER SYM	IND	STP	AG	RE	SL	LD	UR	CN	HM	OT
50*	1970	SARDIS BRANCH		GOOD																																		
51*	1955	WILDCAT SLOUGH		GOOD																																		
52	1940	HOWARD CREEK	GOOD	FAIR	X	X	X	X	X		X	X	X		X	X	X			X	X	X	X		X						X		X	X	X	X	X	X
53*	1960	UNN DITCH		GOOD																																		
54	1877A	MYAKKA RIVER (UPPER)	GOOD	THREAT	X	X	X	X	X	X	X	X	X			X	X			X	X	X			X						X	X	X	X	X	X	X	X
55*	1949	UNNAMED CREEK		THREAT	X	X	X	X	X	X	X	X	X		X	X	X			X	X	X	X		X						X		X	X	X	X	X	X
56*	1952	SAND BRANCH		THREAT																											X	X						
57*	1942	TATUM SAWGRASS SLOUGH		THREAT	X	X	X	X	X	X		X	X								X	X			X						X	X		X	X	X	X	
58*	1943	INDIAN CREEK		FAIR	X	X	X	X	X	X	X	X	X		X	X	X			X	X	X	X	X	X						X		X	X			X	X
59*	1946	UNN DRAIN		THREAT																											X	X						
60	1933	OWEN CREEK	POOR	THREAT																											X	X						
61*	1935	MAPLE CREEK		THREAT																											X	X						
62*	1927	OGLEBAY CREEK		THREAT																											X	X						
63*	1877B	Myakka River (upper)		THREAT	X	X	X	X	X	X	X	X	X			X	X			X	X	X			X						X	X	X	X	X	X	X	X
64*	1920	OWEN BRANCH		THREAT																											X	X						
65*	1918	UNNAMED DITCH		THREAT																											X	X						
66*	1922	BOGGY CREEK		THREAT	X				X	X											X	X									X	X			X			
67*	1919	SAND SLOUGH		THREAT																											X	X						
68	1917	LONG CREEK	GOOD	THREAT																											X	X						
69	1869B	WINGATE CREEK	POOR	THREAT																											X	X						
70*	1908	COKER CREEK		THREAT																											X	X						
71*	1902	TAYLOR CREEK		THREAT																											X	X						
72*	1894	YOUNG CREEK		THREAT																											X	X						
73	1869C	WINGATE CREEK	POOR	THREAT																											X	X						
74	1882	JOHNSON CREEK	POOR	THREAT																											X	X						
75*	1869A	Johnson Creek		THREAT																											X	X						
76*	1867	UNNAMED CREEK		THREAT																											X	X						



PEACE RIVER BASIN
03100101

AVERAGE WATER QUALITY
1984-1993 STORET DATA
WATERSHED ID NUMBERS LINK MAP TO TABLES
* INDICATES QUALITATIVE ASSESSMENT

WATER QUALITY
- GOOD
- THREATENED
- FAIR
- POOR
- UNKNOWN



PEACE RIVER BASIN

Basic Facts

Drainage Area: 2,300 square miles
Major Land Uses: agriculture, mining, rangeland
Population Density: moderate (Winter Haven, Bartow, Lakeland, Port Charlotte)
Major Pollution Sources: mining and fertilizer production, agriculture, WWTP, rangeland
Best Water Quality Areas: Peace River tributaries in the southern portion of the basin
Worst Water Quality Areas: Lake Hancock and tributaries, Lake Effie, Banana Lake, Upper Peace River
Water Quality Trends: stable quality at 8 sites, improvement in several reaches of Upper Peace River and Banana Lake, degradation in Horse Creek
OFW Waterbodies: Highlands Hammock State Park
Payne Creek State Historic Site
SWIM Waterbodies:
Banana Lake
Winter Haven Chain of Lakes
Reference Reports:
1990 Lake Water Quality Report, Polk County, Florida, Polk County Water Resources Division, 1990
Myakka and Peace River BAS, DEP (Punta Gorda), 1984
Polk County Lakes Water Quality Report, Polk County, 1988
Myrtle Slough BAS, DEP (Punta Gorda), 1986
Florida Rivers Assessment, DEP/FREAC/NPS, 1989
Basin Water Quality Experts:
Jeff Spence, Russell Forrest, Michele Medani, Polk County, 813/533-2151
Ford Walton, DEP (Punta Gorda), 813/639-4967
Doug Farrell, DEP (Tampa), 813/744-6100
Steve Palmer, DEP (Tallahassee), 904/488-0780
Kathi Hammett, USGS, 813/228-2124
Tom Fraser, Dexter Bender and Associates, 813/334-3680
Gerold Morrison, SWFWMD (Brooksville), 813/796-7211

In the News

* Consolidated Minerals, Inc. has proposed a 17,000 acre mining and processing complex in DeSoto County that would straddle Horse Creek, one of the last remaining good quality tributaries to the Peace River.
* Banana Lake restoration plans - SWIM hired a contractor to dredge

muck from the lake, another contractor sued and obtained an injunction. It is still pending.

* Implementation of the Polk County Surface Water Protection Code. This code has some of the most stringent setbacks for septic tanks and structures constructed adjacent to lakes and rivers in the state.
* U.S. Agri-Chemicals will face a penalty for a spill of 175 million gallons of recycled mine water into the Peace River and its tributaries.
* Mobil Mining and Minerals discharged improperly treated mine water from their Ft. Meade Mine on three separate occasions (Feb. and July 1992, and July 1993). They were fined $13,773.63 for the 1992 incident, and $4,150.04 for the 1993 incident.
* The Peace River has been identified for additional water supply development at a facility located 19 miles above the river mouth. The expansion of the water treatment plant and the extension of a regional supply pipeline to Sarasota County is called the Peace River Option. Water storage will rely on an offstream reservoir and aquifer-storage-recovery facilities. Regulatory review (including hydrologic and environmental) of the Peace River Option will occur in the summer of 1994.

Ecological Characterization

The Peace River originates in the Green Swamp and some of the numerous partially connected lakes of central Polk County. It coalesces into a defined stream near Bartow and flows generally southwest for approximately 105 miles, entering Charlotte Harbor. The drainage area encompasses over 2,300 square miles. Numerous lakes and large areas of poorly drained swamps in the headwaters of the Peace River act as important recharge areas for the Floridan Aquifer. The mean flow of the Peace River is 900 cfs, recorded at Arcadia 36 miles upstream from the river mouth.

The Peace River is a blackwater stream. The river corridor itself has little development and is mostly lined by cypress and hardwood floodplain. It is a popular canoe trail from Ft. Meade to Arcadia. Primary tributaries of the Peace River include Peace Creek, Saddle Creek, Charlie Creek, Horse Creek, and Shell Creek. Major urban areas in the upper basin include Lakeland, Winter Haven and Bartow. At the river's mouth are Port Charlotte and Punta Gorda.

Land use in the upper portion of the Peace River Basin is predominantly agricultural. An additional large percentage of barren land (about 25%) reflects the extensive phosphate mining activities that have been prevalent in the upper basin and the headwaters of many of its tributaries. In the lower portion of the Peace River Basin, land use consists primarily of agriculture and rangeland. Citrus groves are prevalent in the middle river reaches. Pollution sources in the Peace River Basin include domestic wastewater discharges, industrial discharges from phosphate mining activities, chemical and citrus processing plants, and surface runoff from urban, agricultural, rangeland and barren (mined) areas.

Anthropogenic Impacts

This basin has four major classes of pollution sources that affect different areas along the river and its tributaries. In the northern portion of the basin both domestic and industrial point sources and urban stormwater severely impact water quality. Another portion of the upper basin has been affected by phosphate mining. Most of the major tributaries throughout the basin have agricultural and rangeland runoff to a greater or lesser degree.

The worst water quality problems originate in the upper portion of the basin. Lake Parker, Banana Lake, and Lake Hancock and their tributaries (Stahl Canal, Banana Lake Canal, and Lake Lena Run) have some of the poorest water quality in the State with elevated nutrients, periodic low DO, high pH, high bacteria counts and severely depressed biological indicators. Lake Parker is also affected by thermal discharge from a power plant which raises its ambient temperature several degrees above other nearby lakes. Banana Lake has long been considered one of the most polluted lakes in the State. In August, 1990, Polk County began the dredging of almost 1,000,000 cubic yards of sediment from the lake bottom. A tributary, the Stahl Canal, historically received effluent from a Lakeland WWTP. That facility is now discharging to a former phosphate mine converted to an artificial wetland. That wetland drains to the Alafia River. Since the point sources were removed from the system, Banana Lake has shown some recovery (lower chlorophyll values), though nutrients are still elevated. Total phosphorus values greater than 0.80 mg/l were recorded in 1990.

Lake Hancock, with extremely poor water quality, is fed by three polluted streams or canals. One of these, Lake Lena Run, had one of the worst water quality index values in the State in 1983. During two sampling events in the spring of 1981, only three species of macroinvertebrates were found, which generated a diversity index of less than 0.25. Most of its flow is made up of effluent from three citrus processing companies, a chemical plant, a distillery, the Auburndale WWTP, and runoff from rangeland, a sprayfield, and a dump site for citrus waste. The City of Auburndale only has an emergency discharge to Lake Lena Run. All of their effluent is reused on citrus groves. DEP has performed several intensive surveys and wasteload allocations of this area over the last ten years. The models have indicated that the flow from the dischargers would actually be beneficial to the stream and receiving lake if the nutrients were removed; therefore, more strict loading limitations have been set. The second problem drainage to the Lake Hancock is from the Banana-Hancock Canal. Finally, upper Saddle Creek, the third Lake Hancock tributary, is degraded primarily by urban stormwater runoff.

Problems caused in Lake Hancock, as a consequence of the poor water quality in its tributaries and agricultural runoff and phosphate strip mining directly adjacent to the lake, include year-round algal blooms and frequent fish kills. Historically, discharges from Lake Hancock during the rainy season severely affected water quality downstream and caused massive die-offs of river fauna. Recently, the discharges have been timed better and the die-offs have not reoccurred. A lake restoration plan (involving mining the lake) was investigated by a Legislatively-appointed committee, but found to be not economically practical. A more recent lake restoration plan put forth by the Florida Game and Fresh Water Fish Commission involved dewatering the lake for a time. It was vetoed due to concerns over Bald Eagle nesting, and strong opposition from commercial (tilapia) fisherman.

Between Lakes Hancock and Hamilton, there are several other small loosely connected lakes, streams, and the City of Winter Haven. The lakes receive various combinations of industrial effluent, domestic discharge and urban runoff. Polk County received federal grants to clean up some of the pollution problems in several of these lakes. A 1985 205(j) report prepared by Polk County indicates that corrective actions, especially the removal of domestic dischargers, have resulted in marked improvements in the Trophic State Index (TSI). Additionally, the Winter Haven Chain-of-Lakes has been adopted as a SWIM priority. Most lakes, however, continued to be in the eutrophic range of TSI values. Lake Hamilton was not included in this study, but presumably is typical of the region's problem lakes. Peace Creek, located in the upper portion of the basin, periodically receives slugs of pollution from some of the upstream lakes (particularly Lake Effie), indirect discharge from the Winter Haven WWTP, and rangeland runoff. It appears from intensive survey sampling and a DEP district study that water quality in lower Peace Creek is often quite good but because of periodic pollution events is rated as fair. The City of Lake Wales

discharges to the Peace Creek Drainage Canal, however, the City (with Departmental encouragement) is working towards a goal of 100% effluent reuse.

The Peace River in the vicinity of Bartow, Fort Meade, and Zolfo Springs is degraded by several phosphate mining and fertilizer industries. Strip mining of phosphate rock occurs (or has occurred) within the drainage of the river and most of its tributaries (Bowlegs Creek, Whidden Creek, Little Charlie Creek and Troublesome Creek) in this stretch. Although waters flowing through phosphate strata have higher background concentrations of phosphorus, these mining operations contribute far greater nutrient loading than natural background loads. Furthermore, mining disrupts the flow regime of the small creeks and severely limits habitat for biota. The Peace River relies upon these tributaries for biological recruitment. In addition to the mining operations, this area has many citrus groves so pesticides may cause further threats to aquatic life. The mine in Bowlegs Creek is closing and some of their reclamation area may be given to Ft. Meade to use for final wetland treatment of their WWTP discharge.

The City of Bowling Green also discharges to the Peace River just upstream of it's confluence with Payne Creek. The effluent travels to the river via a small tributary that flows through the Payne Creek State Historic Site (a state park and OFW). Bowling Green is currently under a consent order to remove it's discharge from the park and go to reuse or a land application method of disposal.

South of Troublesome Creek there are few point sources, except for the City of Arcadia WWTP which has a faulty collection system. The nonpoint sources shift from mining operations to agricultural and rangeland runoff. Because of this less intensive land use and with the confluence of Horse Creek (a relatively undisturbed tributary system) the Peace River exhibits relatively good water quality. The only exception as it enters Charlotte Harbor is high phosphorous content. The Prairie Creek and Shell Creek drainage is threatened by increased urban development occurring in the area. Near its confluence with the Peace River, Shell Creek has been impounded for drinking water; however, withdrawals are relatively small (about 5 cfs).

The estuarine portion of the river is affected by the development of Port Charlotte and Punta Gorda. Construction and urban runoff add sediment and nutrients to the estuary. The Punta Gorda WWTP has converted from surface water discharge to spray irrigation. The spray fields, however, are underdrained and flow to Myrtle Slough. The plant has been directed to convert to advanced treatment.

A five year study by FGFWFC found that the upper and lower ends of the Peace River have fishery problems, but the middle section is fairly clean with plentiful fish. In the upper section of the river the composition of fish populations, largely gar and tilapia, reflects the environmental impacts of drainage from Lake Hancock and the Peace Creek Drainage Canal.

By the time the river reaches Wauchula, better quality water inputs from tributaries change the makeup of fish populations. In the middle section of the river largemouth bass, bluegill and sunfish can be found in addition to tilapia and gar. Diversity decreases near the river mouth at Punta Gorda on the Gulf of Mexico.

Charlotte Harbor, and its watershed including the Peace river, has been designated as a SWIM waterbody. Diagnostic studies of the streamflow and water quality characteristics of the Peace River are now being done as part of the SWIM plan. An important topic has been the causes of declining flows in the upper Peace River.

Technical workshops sponsored by SWFWMD this coming year will focus on management strategies for the upper Peace River.

** USGS HYDROLOGIC UNIT: 03100101 PEACE RIVER

SURFACE WATER QUALITY DATA FOR 1970-1993
MEDIAN VALUES FOR EACH WATERSHED
CURRENT PERIOD OF RECORD (1989-1993) USED WHERE AVAILABLE
PERIOD PRIOR TO 1989 IS EVALUATED AS HISTORICAL INFORMATION

INDEX	GOOD	FAIR	POOR
WQI-RIVER	0-44	45-59	60-90
TSI-ESTUARY	0-49	50-59	60-100
TSI-LAKE	0-59	60-69	70-100

WATERSHED ID	NAME	WATERSHED DATA RECORD MAX #OBS	BEG YR	END YR	DATA PERIOD	WATER CLARITY TURB	SD	COLOR	TSS	DISSOLVED OXYGEN DO	DOSAT	OXYGEN DEMAND BOD	COD	TOC	PH	ALKALINITY ALK	TROPHIC STATUS NITRO	PHOS	CHLA	COLIFORM TOTAL	FECL	BIOLOGICAL SPECIES DIVERSITY NAT	ART	BECK	COND	FLOW	WATER QUALITY INDICES WQI	TSI
* WATER BODY TYPE: ESTUARY																												
6	PUNTA GORDA ISLES 2 CA	241	76	76	Historical	.	.	.	.	0.6	7	.	.	12	.	.	0.60	0.67	.	.	.	.	.	.	.	.	.	46
7	PUNTA GORDA ISLES CA	1298	74	76	Historical	2.0	1.3	20	.	6.8	68	2.4	.	13	7.7	.	0.25	0.39	.	68	12	.	.	.	35845	.	.	40
8	PEACE R LOWER ESTUARY	20	89	93	Current	2.0	1.5	35	13	5.5	66	2.7	.	5	7.6	.	0.77	0.18	12	.	8	.	.	.	37850	.	.	51
12	ALLIGATOR BAY	2	92	92	Current	3.5	.	100	5	5.2	64	3.1	.	.	7.2	.	1.58	0.35	9	.	22	.	.	.	24730	.	.	57
13	PEACE R MID ESTUARY	22	89	93	Current	3.0	.	55	12	6.0	71	2.3	.	.	7.3	.	1.03	0.29	16	120	18	.	.	.	25000	.	.	57
15	SHELL CREEK	48	89	93	Current	3.4	0.8	89	6	6.3	73	1.8	.	.	7.3	156	1.14	0.08	1	320	103	.	.	.	918	.	.	55
19	PEACE R UPPER ESTUARY	42	92	93	Current	4.8	0.7	171	5	5.3	62	1.0	.	23	7.1	58	1.58	0.67	5	270	68	.	.	.	2417	.	.	59
25	PEACE R AB THORTON BR	6	90	90	Current	1.8	2.0	45	.	6.6	73	0.7	.	.	7.2	.	1.50	0.96	1	.	59	.	.	.	479	.	.	41
29	PEACE R AB HORSE CK	8	89	90	Current	3.3	.	145	.	6.9	83	1.3	.	.	7.0	.	1.84	1.11	4	.	227	.	.	.	354	.	.	47
34	PEACE R AB JOSHUA CK	93	89	92	Current	2.5	0.6	130	.	6.0	65	1.4	.	20	7.1	62	1.85	1.09	3	133	64	.	.	.	404	633	.	68
* WATER BODY TYPE: LAKE																												
1	LAKE HARTRIDGE	49	77	84	Historical	3.0	2.0	.	.	7.2	85	1.7	22	.	7.4	.	0.45	0.05	2	.	.	.	.	.	190	.	.	31
67	Lake Buffum	37	80	81	Historical	3.5	0.7	32	.	7.1	91	.	.	.	5.3	1	0.41	0.05	3	.	.	.	.	.	112	.	.	43
76	LAKE EFFIE OUTLET	56	70	73	Historical	33.3	0.3	41	.	2.2	38	.	.	.	7.5	157	4.94	1.63	173	.	.	.	.	.	459	.	.	91
82	Lake Hancock	120	73	83	Historical	40.0	0.3	50	49	10.2	121	6.7	.	28	9.1	78	4.40	0.75	90	.	.	1.2	.	0	278	.	.	85
86	Banana Lake	58	89	93	Current	36.0	0.3	.	.	10.6	109	.	.	.	8.8	52	3.13	0.77	96	.	.	.	.	.	200	.	.	87
87	LAKE WINTERSET	27	76	84	Historical	2.5	1.0	18	.	8.5	101	3.2	38	13	8.4	72	1.18	0.05	15	21	7	.	.	.	390	.	.	57
88	LAKE ELOISE	45	73	84	Historical	6.1	0.7	45	.	8.7	101	6.8	61	26	9.2	83	2.08	0.34	24	.	.	.	.	.	361	.	.	67
89	EAGLE LAKE	48	80	80	Historical	.	0.8	17	.	.	.	.	.	.	8.0	30	0.85	0.02	22	.	.	.	.	.	230	.	.	56
92	LAKE LULU OUTLET	37	73	84	Historical	17.5	0.4	70	.	8.5	99	12.3	183	42	9.2	77	4.21	1.19	46	9	2	.	.	.	339	.	.	80
93	LAKE SHIPP	28	76	84	Historical	17.0	0.4	48	.	9.5	110	12.1	79	24	9.5	62	3.25	0.12	32	21	2	.	.	.	270	.	.	77
95	LAKE MAY	13	76	84	Historical	19.5	0.4	50	.	9.2	113	10.0	78	25	8.5	.	2.22	0.10	56	.	.	.	.	.	226	.	.	76
96	LAKE OTIS	67	76	76	Historical	1.0	.	10	.	7.2	83	1.1	16	3	8.2	.	0.46	0.02	.	43	4	.	.	.	240	.	.	39
97	CRYSTAL LAKE	10	92	93	Current	12.3	.	.	.	6.6	80	.	.	.	7.3	79	1.04	0.33	22	.	.	.	.	.	175	.	.	58
100	LAKE MIRROR	17	76	84	Historical	6.5	0.5	29	.	7.3	92	5.2	50	17	8.2	.	1.64	0.06	26	39	9	.	.	.	259	.	.	70
101	LAKE CANNON	39	76	84	Historical	6.8	0.6	55	.	8.5	99	5.5	46	18	8.6	41	2.20	0.08	24	15	2	.	.	.	208	.	.	71
105	LAKE HOWARD	2	92	92	Current	.	.	15	.	7.0	85	.	.	.	7.2	.	1.66	0.04	.	.	.	.	.	.	239	.	.	52
106	LAKE IDYLWILD	12	76	84	Historical	8.8	0.9	32	.	8.0	94	3.0	36	12	7.4	.	0.91	0.08	31	43	43	.	.	.	188	.	.	61
108	LAKE JESSIE	26	73	84	Historical	6.0	0.7	.	.	7.6	91	3.5	28	8	8.1	42	0.96	0.09	26	.	.	.	.	.	194	.	.	61
109	LAKE PARKER	103	80	81	Historical	2.0	0.6	26	.	.	.	.	.	.	9.1	67	1.68	0.07	27	.	.	.	.	.	254	.	.	69
110	LAKE LENA	62	78	79	Historical	33.0	0.4	.	.	8.1	96	.	.	.	7.5	37	2.41	0.07	57	.	.	.	.	.	194	.	.	75
111	LAKE ECHO	10	81	81	Historical	1.0	1.7	.	.	.	.	.	.	.	.	.	0.64	0.01	.	.	.	.	.	.	160	.	.	34
113	LAKE LUCERNE	55	86	88	Historical	.	2.2	.	.	8.1	89	.	.	5	6.7	5	0.55	0.01	.	.	.	.	.	.	182	.	.	30
115	LAKE HENRY	51	80	80	Historical	1.3	0.4	240	.	8.5	96	.	.	37	7.0	.	1.55	0.13	.	.	.	.	.	.	170	.	.	78
116	LAKE ARIANNA	71	76	80	Historical	.	1.0	8	.	9.4	118	4.3	.	8	8.3	34	1.03	0.05	25	.	.	1.8	.	.	212	.	.	55
117	LAKE TENOROC	19	92	93	Current	17.0	0.9	.	.	8.7	107	.	.	.	6.6	44	1.43	0.34	31	.	.	.	.	.	113	.	.	65
118	LAKE ALFRED	83	81	81	Historical	2.0	0.7	.	.	10.2	94	.	.	.	.	.	1.97	0.02	.	.	.	.	.	.	300	.	.	54
120	LAKE GIBSON	111	70	81	Historical	14.6	0.8	65	.	8.0	84	.	.	.	6.7	13	1.00	0.29	11	.	.	.	.	.	121	.	.	58
121	LAKE ARETTA	140	80	81	Historical	1.1	2.8	12	.	9.0	93	.	.	.	6.5	4	0.49	0.02	5	.	.	.	.	.	223	.	.	34

LEGEND:
ALK-ALKALINITY MG/L
ART-ARTIFICIAL SUBSTRATE DI
BEG YR-BEGINNING SAMPLING YEAR
BECK-BECK'S BIOTIC INDEX
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CHLA-CHLOROPHYLL UG/L
COD-CHEMICAL OXYGEN DEMAND MG/L
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COND-CONDUCTIVITY UMHOS
DO-DISSOLVED OXYGEN MG/L
DOSAT-DO % SATURATION
END YR-ENDING YEAR
FECL-FECAL COLIFORM MPN/100ML
FLOW-FLOW CFS
MAX #OBS-MAXIMUM NUMBER OF SAMPLES
NAT-NATURAL SUBSTRATE DIVERSITY
NITRO-TOTAL NITROGEN MG/L
PH-PH STANDARD UNITS
PHOS-TOTAL PHOSPHORUS MG/L
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** USGS HYDROLOGIC UNIT: 03100101 PEACE RIVER

SURFACE WATER QUALITY DATA FOR 1970-1993
MEDIAN VALUES FOR EACH WATERSHED
CURRENT PERIOD OF RECORD (1989-1993) USED WHERE AVAILABLE
PERIOD PRIOR TO 1989 IS EVALUATED AS HISTORICAL INFORMATION

INDEX	GOOD	FAIR	POOR
WQI-RIVER	0-44	45-59	60-90
TSI-ESTUARY	0-49	50-59	60-100
TSI-LAKE	0-59	60-69	70-100

WATERSHED ID	NAME	WATERSHED DATA RECORD MAX #OBS	BEG YR	END YR	DATA PERIOD	WATER CLARITY TURB	SD	COLOR	TSS	DISSOLVED OXYGEN DO	DOSAT	OXYGEN DEMAND BOD	COD	TOC	PH	ALKALINITY ALK	TROPHIC STATUS NITRO	PHOS	CHLA	COLIFORM TOTAL	FECL	BIOLOGICAL SPECIES DIVERSITY NAT	ART	BECK	COND	FLOW	WATER QUALITY INDICES WQI	TSI
* WATER BODY TYPE: STREAM																												
2	BEAR BRANCH	9	92	93	Current	7.3	0.2	35	7	5.0	55	.	.	14	6.9	76	1.31	7.15	.	.	1000	.	.	.	698	.	60	.
4	SADDLE CK AB LK HANCOC	14	92	92	Current	6.5	0.7	110	8	4.7	54	.	.	20	7.1	85	1.69	0.38	.	.	378	.	.	.	266	.	67	.
5	MYRTLE SLOUGH	16	89	90	Current	4.0	1.1	80	.	5.2	59	2.1	.	.	7.1	.	1.25	0.17	26	.	583	.	.	.	2590	.	59	.
16	MYRTLE SLOUGH	3	92	92	Current	4.5	.	100	.	5.5	61	1.1	.	.	7.1	.	1.52	0.09	5	.	263	.	.	.	595	.	51	.
17	LITTLE ALLIGATOR CREEK	6	91	91	Current	4.0	.	40	.	5.9	75	3.1	.	.	7.9	.	1.32	0.17	9	.	16	.	.	.	22000	.	46	.
24	PRAIRIE CREEK	21	89	92	Current	4.6	0.8	110	.	6.1	68	1.3	.	.	7.5	.	1.38	0.11	2	.	42	.	.	.	680	54	44	.
27	HAWTHORNE CREEK	8	92	93	Current	3.7	0.8	80	4	8.7	91	.	.	17	7.6	116	1.69	0.13	.	.	1230	.	.	.	909	.	52	.
28	MYRTLE SLOUGH	3	92	92	Current	5.0	.	185	.	5.1	55	2.7	.	.	7.5	.	1.67	0.23	3	.	433	.	.	.	570	.	67	.
31	COW SLOUGH	37	72	74	Historical	4.0	.	110	.	.	.	0.8	.	14	7.1	82	0.52	0.03	.	.	.	.	.	.	640	14	27	.
32	JOSHUA CK AB PEACE R	26	90	93	Current	2.3	0.4	100	2	5.1	60	0.8	.	20	7.3	66	1.94	0.17	0	.	151	.	.	.	610	32	47	.
35	HORSE CK AB PEACE R	74	89	93	Current	2.6	0.4	160	5	6.7	76	1.8	.	18	6.9	34	1.84	0.45	1	343	140	.	.	.	234	81	48	.
37	BUZZARD ROOST BRANCH	2	72	72	Historical	6.0	.	200	.	6.4	75	3.0	.	.	7.0	.	2.35	.	.	.	.	.	.	.	.	.	63	.
38	BRANDY BRANCH	7	72	72	Historical	5.5	.	.	.	5.5	61	1.0	.	.	6.0	.	2.28	.	.	.	.	.	.	.	.	.	52	.
39	C WILL OUTFALL AT CONV	11	92	93	Current	.	.	.	.	2.5	28	.	.	.	6.6	.	.	1.00	.	.	.	.	.	.	249	.	90	.
40	LIMESTONE CREEK	8	92	93	Current	2.6	0.3	130	2	8.9	89	.	.	23	7.2	70	1.04	0.28	.	.	375	.	.	.	264	.	49	.
41	PEACE R AB CHARLIE CK	15	92	93	Current	7.8	1.0	130	9	6.7	77	.	.	19	7.2	62	2.09	1.09	.	.	74	.	.	.	323	.	57	.
42	CHARLIE CK AB PEACE R	9	90	92	Current	2.9	0.4	208	.	6.6	80	0.9	.	.	6.5	.	1.73	0.55	.	.	55	.	.	.	363	52	44	.
43	PEACE R AB OAK CK	4	82	83	Historical	5.4	.	88	15	6.6	74	1.5	.	16	7.0	.	2.30	2.33	.	.	.	.	.	.	328	954	57	.
44	OAK CREEK	4	82	83	Historical	5.2	.	149	24	7.2	80	2.0	.	30	7.2	.	1.75	0.69	.	.	.	.	.	.	320	55	57	.
45	LITTLE CHARLIE BOWLEGS	165	72	83	Historical	.	.	480	.	3.8	44	1.4	.	36	4.8	.	.	.	.	.	.	.	.	.	86	6	74	.
46	ALLIGATOR BRANCH	8	92	93	Current	3.7	0.4	145	3	6.1	60	.	.	30	6.9	49	1.52	0.71	.	.	1186	.	.	.	362	.	60	.
47	CHARLIE CK AB OAK CK	6	84	84	Historical	1.9	.	320	.	3.7	45	.	.	.	6.7	.	1.53	0.36	0	.	251	.	.	.	142	.	60	.
48	HICKORY CREEK	4	82	83	Historical	1.7	.	131	8	7.9	86	1.2	.	18	6.6	.	1.06	0.56	.	.	.	.	.	.	183	20	39	.
49	PEACE R AB TROUBLESOME	23	89	92	Current	.	.	38	.	7.4	91	.	.	8	7.3	.	1.77	1.27	.	.	.	.	.	.	446	168	46	.
50	BRUSHY CREEK	4	90	90	Current	2.1	.	100	.	5.6	61	1.4	.	.	6.8	.	0.94	0.30	.	.	53	.	.	.	300	.	41	.
51	TROUBLESOME CREEK	10	76	83	Historical	3.2	1.0	90	16	8.1	79	1.1	.	18	6.7	34	4.95	0.71	.	.	.	.	.	25	265	15	50	.
52	THOMPSON BRANCH	21	92	93	Current	4.7	0.4	86	4	7.5	84	.	.	14	7.1	48	4.92	0.46	.	.	768	.	.	.	327	.	54	.
53	HORSE CK AB BUSHY CK	11	90	92	Current	1.8	.	155	10	7.2	80	1.0	.	.	6.9	.	0.90	0.36	.	.	213	.	.	.	170	12	42	.
54	HOG BRANCH	25	71	71	Historical	.	.	.	.	3.9	41	.	.	29	.	.	.	.	.	.	.	.	.	.	152	0	81	.
55	PEACE R AB LTL CHARLIE	22	92	93	Current	8.9	0.8	123	10	6.5	78	.	.	19	7.2	63	1.90	1.14	.	.	54	.	.	.	353	.	56	.
56	LITTLE CHARLIE CREEK	17	92	93	Current	3.6	0.6	143	4	7.2	79	.	.	20	7.0	58	2.52	0.46	.	.	326	.	.	.	355	.	54	.
57	PAYNE CREEK	4	92	92	Current	.	.	70	.	7.6	92	.	.	.	7.8	.	2.02	0.51	.	.	.	.	.	.	375	45	48	.
58	PAYNE CREEK	8	93	93	Current	3.3	0.6	100	2	7.3	79	.	.	18	7.1	53	3.00	0.78	.	.	128	.	.	.	312	.	49	.
59	PEACE R AB PAYNE CK	46	89	93	Current	3.8	0.6	130	2	6.7	73	.	.	25	6.7	39	1.87	0.59	1	55	133	.	.	.	259	.	55	.
60	PAYNE CREEK	8	92	93	Current	3.5	1.0	30	6	7.1	78	.	.	11	7.4	90	1.78	0.47	.	.	298	.	.	.	374	.	48	.
61	BOWLEGS CREEK	56	74	83	Historical	4.5	0.4	90	2	7.2	73	1.0	.	19	7.0	61	1.66	0.60	0	.	.	.	.	.	300	88	41	.
62	MINED AREA	31	89	89	Current	0.8	.	80	2	.	.	.	.	.	7.1	.	1.02	0.36	.	.	.	.	.	.	314	0	21	.
63	WHIDDEN CREEK	145	70	83	Historical	6.8	0.6	21	11	4.5	52	2.0	24	8	7.2	73	2.62	8.71	11	.	.	.	.	.	520	95	72	.
64	PEACE R AB WHIDDEN CK	15	92	93	Current	3.9	0.9	30	4	6.1	70	.	.	9	7.2	88	0.68	2.30	.	.	133	.	.	.	576	.	42	.

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CHLA-CHLOROPHYLL UG/L
COD-CHEMICAL OXYGEN DEMAND MG/L
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COND-CONDUCTIVITY UMHOS
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** USGS HYDROLOGIC UNIT: 03100101 PEACE RIVER

SURFACE WATER QUALITY DATA FOR 1970-1993
MEDIAN VALUES FOR EACH WATERSHED
CURRENT PERIOD OF RECORD (1989-1993) USED WHERE AVAILABLE
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INDEX	GOOD	FAIR	POOR
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TSI-LAKE	0-59	60-69	70-100

WATERSHED ID	NAME	WATERSHED DATA RECORD MAX #OBS	BEG YR	END YR	DATA PERIOD	WATER CLARITY TURB	SD	COLOR	TSS	DISSOLVED OXYGEN DO	DOSAT	OXYGEN DEMAND BOD	COD	TOC	PH	ALKALINITY ALK	TROPHIC STATUS NITRO	PHOS	CHLA	COLIFORM TOTAL	FECL	BIOLOGICAL SPECIES DIVERSITY NAT	ART	BECK	COND	FLOW	WATER QUALITY INDICES WQI	TSI
65	SINK BRANCH	8	92	93	Current	2.4	0.2	55	1	6.7	70	.	.	8	7.0	44	1.39	0.23	.	.	255	.	.	.	213	.	40	.
68	PEACE R AB BOWLEGS CK	77	89	92	Current	10.4	0.6	120	15	5.2	58	.	.	13	7.3	64	1.72	1.23	.	.	250	.	.	.	548	24	65	.
74	BEAR BRANCH	26	74	74	Historical	.	.	.	4	7.8	82	2.0	27	.	6.0	38	1.48	.	.	.	.	.	.	.	.	.	37	.
77	SADDLE CREEK	23	89	92	Current	22.5	0.6	175	33	7.2	87	.	.	25	8.0	58	4.21	0.41	.	.	215	.	.	.	293	57	58	.
90	LAKE LULU RUN	6	71	73	Historical	.	.	.	.	9.0	111	3.2	.	28	.	.	.	.	.	.	.	.	.	.	237	0	50	.
94	BANANA LAKE CANAL	7	92	92	Current	25.4	0.3	85	32	4.7	54	.	.	14	7.7	64	2.27	0.91	37	.	475	.	.	.	188	.	75	.
98	LAKE LENA RUN	82	70	83	Historical	9.7	0.3	210	23	1.1	20	18.0	48	35	7.2	139	4.99	0.43	37	600	21E4	.	.	.	298	46	85	.
99	PEACE CREEK DR CANAL	8	92	93	Current	9.7	0.3	230	10	4.6	51	.	.	34	6.3	29	2.12	0.22	.	.	525	.	.	.	271	.	73	.
104	SADDLE CREEK	23	73	83	Historical	6.5	.	96	15	4.1	45	1.7	.	19	7.0	.	1.27	0.48	.	.	.	.	.	.	215	153	66	.

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SURFACE WATER QUALITY DATA SCREENING REPORT
MEDIAN VALUES FOR EACH WATERSHED SCREENED

** USGS HYDROLOGIC UNIT: 03100101 PEACE RIVER

'x'=EXCEEDS SCREENING CRITERIA
'0'=WITHIN SCREENING CRITERIA
'.'=MISSING DATA

WATERSHED ID	NAME	RANK WQI OR TSI	DATA RECORD CURRENT OR HISTORICAL	SCREENING VARIABLES AND CRITERIA: TN TN>2.0	STREAM TP TP>.46	LAKE TP TP>.12	PH PH>8.8 PH<5.2	ALK ALK<20	TURB & TSS TURB>16.5 TSS>18	COND COND>1275	OXYGEN DEMAND BOD>3.3 COD>102 TOC>27.5	DO DO<4	COLIFORM BACTI TOT>3700 FECAL>470	BIOL DIV DIART<1.95 DINAT<1.5 BECK<5.5	CHLA CHLA>40	SECCHI DISC SD<.7
* WATER BODY TYPE: ESTUARY																
6	PUNTA GORDA ISLES 2 CA	GOOD	Historical	0	.	x	.	.	.	0	0	x	.	.	.	.
7	PUNTA GORDA ISLES CA	GOOD	Historical	0	.	x	0	.	0	x	0	0	0	.	.	0
8	PEACE R LOWER ESTUARY	FAIR	Current	0	.	x	0	.	0	x	0	0	0	.	0	0
12	ALLIGATOR BAY	FAIR	Current	0	.	x	0	.	0	x	0	0	0	.	0	.
13	PEACE R MID ESTUARY	FAIR	Current	0	.	x	0	.	0	x	0	0	0	.	0	.
15	SHELL CREEK	FAIR	Current	0	.	0	0	0	0	.	0	0	0	.	0	0
19	PEACE R UPPER ESTUARY	FAIR	Current	0	.	x	0	0	0	x	0	0	0	.	0	0
25	PEACE R AB THORTON BR	GOOD	Current	0	.	x	0	.	0	.	0	0	0	.	0	0
29	PEACE R AB HORSE CK	GOOD	Current	0	.	x	0	.	0	.	0	0	0	.	0	.
34	PEACE R AB JOSHUA CK	POOR	Current	0	.	x	0	0	0	.	0	0	0	.	0	x
* WATER BODY TYPE: LAKE																
1	LAKE HARTRIDGE	GOOD	Historical	0	.	0	0	.	0	.	0	0	.	.	0	0
67	Lake Buffum	GOOD	Historical	0	.	0	0	x	0	.	.	0	.	.	0	0
76	LAKE EFFIE OUTLET	POOR	Historical	x	.	x	0	0	x	.	.	x	.	.	x	x
82	Lake Hancock	POOR	Historical	x	.	x	x	0	x	.	x	0	.	x	x	x
86	Banana Lake	POOR	Current	x	.	x	0	0	x	.	.	0	.	.	x	x
87	LAKE WINTERSET	GOOD	Historical	0	.	0	0	0	0	.	0	0	0	.	0	0
88	LAKE ELOISE	FAIR	Historical	x	.	x	x	0	0	.	x	0	.	.	0	0
89	EAGLE LAKE	GOOD	Historical	0	.	0	0	0	.	.	.	.	.	.	0	0
92	LAKE LULU OUTLET	POOR	Historical	x	.	x	x	0	x	.	x	0	0	.	x	x
93	LAKE SHIPP	POOR	Historical	x	.	0	x	0	x	.	x	0	0	.	0	x
95	LAKE MAY	POOR	Historical	x	.	0	0	.	x	.	x	0	.	.	x	x
96	LAKE OTIS	GOOD	Historical	0	.	0	0	.	0	.	0	0	0	.	.	.
97	CRYSTAL LAKE	GOOD	Current	0	.	x	0	0	0	.	.	0	.	.	0	.
100	LAKE MIRROR	POOR	Historical	0	.	0	0	.	0	.	x	0	0	.	0	x
101	LAKE CANNON	POOR	Historical	x	.	0	0	0	0	.	x	0	0	.	0	x
105	LAKE HOWARD	GOOD	Current	0	.	0	0	.	.	.	.	0	.	.	.	.
106	LAKE IDYLWILD	FAIR	Historical	0	.	0	0	.	0	.	0	0	0	.	0	0
108	LAKE JESSIE	FAIR	Historical	0	.	0	0	0	0	.	x	0	.	.	0	0
109	LAKE PARKER	FAIR	Historical	0	.	0	x	0	0	.	.	.	.	.	0	x
110	LAKE LENA	POOR	Historical	x	.	0	0	0	x	.	.	0	.	.	x	x
111	LAKE ECHO	GOOD	Historical	0	.	0	.	.	0	.	.	.	.	.	.	0
113	LAKE LUCERNE	GOOD	Historical	0	.	0	0	x	.	.	0	0	.	.	.	0
115	LAKE HENRY	POOR	Historical	0	.	x	0	.	0	.	x	0	.	.	.	x
116	LAKE ARIANNA	GOOD	Historical	0	.	0	0	0	.	.	x	0	.	0	0	0
117	LAKE TENOROC	FAIR	Current	0	.	x	0	0	x	.	.	0	.	.	0	0
118	LAKE ALFRED	GOOD	Historical	0	.	0	.	.	0	.	.	0	.	.	.	0
120	LAKE GIBSON	GOOD	Historical	0	.	x	0	x	0	.	.	0	.	.	0	0
121	LAKE ARETTA	GOOD	Historical	0	.	0	0	x	0	.	.	0	.	.	0	0

LEGEND:
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WQI OR TSI-WATER QUALITY INDEX RATING WHICH INDEX USED, WQI OR TSI, IS BASED ON WATERBODY TYPE

SURFACE WATER QUALITY DATA SCREENING REPORT ** USGS HYDROLOGIC UNIT: 03100101 PEACE RIVER
MEDIAN VALUES FOR EACH WATERSHED SCREENED

'X'=EXCEEDS SCREENING CRITERIA
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WATERSHED ID	NAME	RANK WQI OR TSI	DATA RECORD CURRENT OR HISTORICAL	SCREENING VARIABLES AND CRITERIA: TN TN>2.0	STREAM TP TP>.46	LAKE TP TP>.12	PH PH>8.8 PH<5.2	ALK ALK<20	TURB & TSS TURB>16.5 TSS>18	COND COND>1275	OXYGEN DEMAND BOD>3.3 COD>102 TOC>27.5	DO DO<4	COLIFORM BACTI TOT>3700 FECAL>470	BIOL DIV DIART<1.95 DINAT<1.5 BECK<5.5	CHLA CHLA>40	SECCHI DISC SD<.7
* WATER BODY TYPE: STREAM																
2	BEAR BRANCH	POOR	Current	0	x	.	0	0	0	.	0	0	x	.	.	x
4	SADDLE CK AB LK HANCOC	POOR	Current	0	0	.	0	0	0	.	0	0	0	.	.	0
5	MYRTLE SLOUGH	FAIR	Current	0	0	.	0	.	0	x	0	0	x	.	0	0
16	MYRTLE SLOUGH	FAIR	Current	0	0	.	0	.	0	.	0	0	0	.	0	.
17	LITTLE ALLIGATOR CREEK	FAIR	Current	0	0	.	0	.	0	x	0	0	0	.	0	.
24	PRAIRIE CREEK	GOOD	Current	0	0	.	0	.	0	.	0	0	0	.	0	0
27	HAWTHORNE CREEK	FAIR	Current	0	0	.	0	0	0	.	0	0	x	.	.	0
28	MYRTLE SLOUGH	POOR	Current	0	0	.	0	.	0	.	0	0	0	.	0	.
31	COW SLOUGH	GOOD	Historical	0	0	.	0	0	0	.	0	.	.	.	.	.
32	JOSHUA CK AB PEACE R	FAIR	Current	0	0	.	0	0	0	.	0	0	0	.	0	x
35	HORSE CK AB PEACE R	FAIR	Current	0	0	.	0	0	0	.	0	0	0	.	0	x
37	BUZZARD ROOST BRANCH	POOR	Historical	x	0	.	0	.	0	.	0	0	.	.	.	.
38	BRANDY BRANCH	FAIR	Historical	x	0	.	0	.	0	.	0	0	.	.	.	.
39	C WILL OUTFALL AT CONV	POOR	Current	.	x	.	0	.	.	.	.	x	.	.	.	.
40	LIMESTONE CREEK	FAIR	Current	0	0	.	0	0	0	.	0	0	0	.	.	x
41	PEACE R AB CHARLIE CK	FAIR	Current	x	x	.	0	0	0	.	0	0	0	.	.	0
42	CHARLIE CK AB PEACE R	GOOD	Current	0	x	.	0	.	0	.	0	0	0	.	.	x
43	PEACE R AB OAK CK	FAIR	Historical	x	x	.	0	.	0	.	0	0	.	.	.	.
44	OAK CREEK	FAIR	Historical	0	x	.	0	.	x	.	x	0	.	.	.	.
45	LITTLE CHARLIE BOWLEGS	UNKN	Historical	.	.	.	x	.	.	.	x	x	.	.	.	.
46	ALLIGATOR BRANCH	POOR	Current	0	x	.	0	0	0	.	x	0	x	.	.	x
47	CHARLIE CK AB OAK CK	POOR	Historical	0	0	.	0	.	0	.	.	x	0	.	0	.
48	HICKORY CREEK	GOOD	Historical	0	x	.	0	.	0	.	0	0	.	.	.	.
49	PEACE R AB TROUBLESOME	FAIR	Current	0	x	.	0	.	.	.	0	0	.	.	.	.
50	BRUSHY CREEK	GOOD	Current	0	0	.	0	.	0	.	0	0	0	.	.	.
51	TROUBLESOME CREEK	FAIR	Historical	x	x	.	0	0	0	.	0	0	.	0	.	0
52	THOMPSON BRANCH	FAIR	Current	x	0	.	0	0	0	.	0	0	x	.	.	x
53	HORSE CK AB BUSHY CK	GOOD	Current	0	0	.	0	.	0	.	0	0	0	.	.	.
54	HOG BRANCH	UNKN	Historical	.	.	.	.	.	.	.	x	x	.	.	.	.
55	PEACE R AB LTL CHARLIE	FAIR	Current	0	x	.	0	0	0	.	0	0	0	.	.	0
56	LITTLE CHARLIE CREEK	FAIR	Current	x	0	.	0	0	0	.	0	0	0	.	.	x
57	PAYNE CREEK	FAIR	Current	x	x	.	0	.	.	.	.	0	.	.	.	.
58	PAYNE CREEK	FAIR	Current	x	x	.	0	0	0	.	0	0	0	.	.	x
59	PEACE R AB PAYNE CK	FAIR	Current	0	x	.	0	0	0	.	0	0	0	.	0	x
60	PAYNE CREEK	FAIR	Current	0	x	.	0	0	0	.	0	0	0	.	.	0
61	BOWLEGS CREEK	GOOD	Historical	0	x	.	0	0	0	.	0	0	.	.	0	x
62	MINED AREA	GOOD	Current	0	0	.	0	.	0	.	.	.	.	.	.	.
63	WHIDDEN CREEK	POOR	Historical	x	x	.	0	0	0	.	0	0	.	.	0	x
64	PEACE R AB WHIDDEN CK	GOOD	Current	0	x	.	0	0	0	.	0	0	0	.	.	0

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65	SINK BRANCH	GOOD	Current	0	0	.	0	0	0	.	0	0	0	.	.	x
68	PEACE R AB BOWLEGS CK	POOR	Current	0	x	.	0	0	0	.	0	0	0	.	.	x
74	BEAR BRANCH	GOOD	Historical	0	0	.	0	0	0	.	0	0	.	.	.	.
77	SADDLE CREEK	FAIR	Current	x	0	.	0	0	x	.	0	0	0	.	.	x
90	LAKE LULU RUN	FAIR	Historical	.	.	.	.	.	.	.	0	0	.	.	.	.
94	BANANA LAKE CANAL	POOR	Current	x	x	.	0	0	x	.	0	0	x	.	0	x
98	LAKE LENA RUN	POOR	Historical	x	0	.	0	0	x	.	x	x	x	.	0	x
99	PEACE CREEK DR CANAL	POOR	Current	x	0	.	0	0	0	.	x	0	x	.	.	x
104	SADDLE CREEK	POOR	Historical	0	x	.	0	.	0	.	0	0	.	.	.	.

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1984 - 1993 TRENDS

WATERSHED ID	NAME	QUALITY RANK: MEETS USE ?	QUALITY RANK: WQI OR TSI	OVER-ALL TREND	WQI or TSI	TN	TP	TCOLI	CHLA	SD	PH	ALK	TURB	TSI	BOD	TOC	DOSAT	DO	TEMP	FCOLI	FLOW	TSS	DEGRADATION SOURCES, PRESENT CONDITIONS AND CLEANUP EFFORTS
* WATER BODY TYPE: ESTUARY																							
6	PUNTA GORDA ISLES 2 CA	YES	GOOD																				
7	PUNTA GORDA ISLES CA	YES	GOOD																				
8	PEACE R LOWER ESTUARY	PARTIAL	FAIR	0	0	0	0	0	0	0	.	0	0	0	.	0	0	0	.	0	0	.	
12	ALLIGATOR BAY	PARTIAL	FAIR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
13	PEACE R MID ESTUARY	PARTIAL	FAIR	0	0	0	0	0	0	0	.	x	0	0	.	0	0	0	x	0	.		
15	SHELL CREEK	PARTIAL	FAIR	0	x	0	.	.	0	.	.	x	.	0	.	0	+	0	x	x	.		
19	PEACE R UPPER ESTUARY	PARTIAL	FAIR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
25	PEACE R AB THORTON BR	YES	GOOD	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
29	PEACE R AB HORSE CK	YES	GOOD	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
34	PEACE R AB JOSHUA CK	NO	POOR	+	+	+	.	.	0	0	.	0	.	.	0	x	x	0	0	0	x		
* WATER BODY TYPE: LAKE																							
1	LAKE HARTRIDGE	YES	GOOD	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
67	Lake Buffum	YES	GOOD																				
76	LAKE EFFIE OUTLET	NO	POOR																				
82	Lake Hancock	NO	POOR																				
86	Banana Lake	NO	POOR	+	+	+	+	0	0	0	x	.	+	.	.	.	x	x	.	.	+	.	
87	LAKE WINTERSET	YES	GOOD	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
88	LAKE ELOISE	PARTIAL	FAIR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
89	EAGLE LAKE	YES	GOOD																				
92	LAKE LULU OUTLET	NO	POOR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
93	LAKE SHIPP	NO	POOR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
95	LAKE MAY	NO	POOR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
96	LAKE OTIS	YES	GOOD																				
97	CRYSTAL LAKE	YES	GOOD	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
100	LAKE MIRROR	NO	POOR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
101	LAKE CANNON	NO	POOR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
105	LAKE HOWARD	YES	GOOD	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
106	LAKE IDYLWILD	PARTIAL	FAIR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
108	LAKE JESSIE	PARTIAL	FAIR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
109	LAKE PARKER	PARTIAL	FAIR																				
110	LAKE LENA	NO	POOR																				
111	LAKE ECHO	YES	GOOD																				
113	LAKE LUCERNE	YES	GOOD	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
115	LAKE HENRY	NO	POOR																				
116	LAKE ARIANNA	YES	GOOD																				
117	LAKE TENOROC	PARTIAL	FAIR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
118	LAKE ALFRED	YES	GOOD																				
120	LAKE GIBSON	YES	GOOD																				

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WATERSHED ID	NAME	QUALITY RANK: MEETS USE ?	OR TSI	OVER-ALL TREND	WQI	1984 - 1993 TRENDS: WQI	TSI	TN	TP	CHLA	SD	PH	ALK	TURB	TSS	BOD	TCOLI	DO	DOSAT	TEMP	FCOLI	FLOW	TOC	<--- PLEASE READ THESE COLUMNS VERTICALLY: DEGRADATION SOURCES, PRESENT CONDITIONS AND CLEANUP EFFORTS
121	LAKE ARETTA	YES	GOOD																					
* WATER BODY TYPE: STREAM																								
2	BEAR BRANCH	NO	POOR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
4	SADDLE CK AB LK HANCOC	NO	POOR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
5	MYRTLE SLOUGH	PARTIAL	FAIR	0	0	0	0	0	.	0	.	0	.	0	0	0	.	.	0	.	.	.	0	
16	MYRTLE SLOUGH	PARTIAL	FAIR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
17	LITTLE ALLIGATOR CREEK	PARTIAL	FAIR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
24	PRAIRIE CREEK	YES	GOOD	0	0	0	0	+	.	0	.	.	.	.	0	0	.	.	0	0	.	.	0	
27	HAWTHORNE CREEK	PARTIAL	FAIR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
28	MYRTLE SLOUGH	NO	POOR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
31	COW SLOUGH	YES	GOOD																					
32	JOSHUA CK AB PEACE R	PARTIAL	FAIR	0	0	0	0	+	.	0	.	.	.	.	0	0	.	.	0	.				
35	HORSE CK AB PEACE R	PARTIAL	FAIR	x	x	x	+	0	.	0	.	x	.	0	0	0	x	0	0	0				
37	BUZZARD ROOST BRANCH	NO	POOR																					
38	BRANDY BRANCH	PARTIAL	FAIR																					
39	C WILL OUTFALL AT CONV	NO	POOR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
40	LIMESTONE CREEK	PARTIAL	FAIR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
41	PEACE R AB CHARLIE CK	PARTIAL	FAIR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
42	CHARLIE CK AB PEACE R	YES	GOOD	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
43	PEACE R AB OAK CK	PARTIAL	FAIR																					
44	OAK CREEK	PARTIAL	FAIR																					
45	LITTLE CHARLIE BOWLEGS	NO	UNKN																					
46	ALLIGATOR BRANCH	NO	POOR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
47	CHARLIE CK AB OAK CK	NO	POOR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
48	HICKORY CREEK	YES	GOOD																					
49	PEACE R AB TROUBLESOME	PARTIAL	FAIR	0	0	0	0	+	.	0	.	.	.	0	0	0	.	.	0	0				
50	BRUSHY CREEK	YES	GOOD	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
51	TROUBLESOME CREEK	PARTIAL	FAIR																					
52	THOMPSON BRANCH	PARTIAL	FAIR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
53	HORSE CK AB BUSHY CK	YES	GOOD	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
54	HOG BRANCH	NO	UNKN																					
55	PEACE R AB LTL CHARLIE	PARTIAL	FAIR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
56	LITTLE CHARLIE CREEK	PARTIAL	FAIR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
57	PAYNE CREEK	PARTIAL	FAIR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
58	PAYNE CREEK	PARTIAL	FAIR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
59	PEACE R AB PAYNE CK	PARTIAL	FAIR	0	0	0	0	+	.	0	.	0	.	.	0	0	.	0	0	.				
60	PAYNE CREEK	PARTIAL	FAIR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
61	BOWLEGS CREEK	YES	GOOD																					
62	MINED AREA	YES	GOOD	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	

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'+'=IMPROVING TREND
'.'=MISSING DATA

WATERSHED ID	NAME	QUALITY RANK MEETS USE ?	WQI OR TSI	1984 - 1993 TRENDS OVER-ALL TREND	W Q or I	T S I	T N	T P	T C H L A	S D	P H	A L K	T U R B	T S S	B O D	O C	T O C	D O S A	D O	T C O L I	F C O L I	T E M P	F L O W	T N	T P	T S S	DEGRADATION SOURCES, PRESENT CONDITIONS AND CLEANUP EFFORTS <--- PLEASE READ THESE COLUMNS VERTICALLY
63	WHIDDEN CREEK	NO	POOR																								
64	PEACE R AB WHIDDEN CK	YES	GOOD	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
65	SINK BRANCH	YES	GOOD	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
68	PEACE R AB BOWLEGS CK	NO	POOR	+		0	+	+	.	.	0	.	.	.	.	0	0	0	0	.	.	0	0				
74	BEAR BRANCH	YES	GOOD																								
77	SADDLE CREEK	PARTIAL	FAIR	+		0	+	+	.	.	x	.	.	.	.	0	0	0	0	.	.	0	0				
90	LAKE LULU RUN	PARTIAL	FAIR																								
94	BANANA LAKE CANAL	NO	POOR	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
98	LAKE LENA RUN	NO	POOR																								
99	PEACE CREEK DR CANAL	NO	POOR	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
104	SADDLE CREEK	NO	POOR																								

LEGEND:

ALK-ALKALINITY
BOD-BIOCHEM. OXYGEN DEMAND
CHLA-CHLOROPHYLL
DO-DISSOLVED OXYGEN
DOSAT-DO SATURATION
FCOLI-FECAL COLIFORM
FLOW-FLOW
MEETS USE-MEETS DESIGNATED USE
PH-PH
SD-SECCHI DISC METERS
TCOLI-TOTAL COLIFORM
TEMP-TEMPERATURE
TN-NITROGEN
TOC-T.ORGANIC CARBON
TP-PHOSPHORUS
TSS-TOTAL SUSPENDED SOLIDS
TURB-TURBIDITY
TSI-TROPHIC STATE INDEX FOR LAKES AND ESTUARIES
WQI-WATER QULAITY INDEX FOR STREAMS AND SPRINGS

NPS QUALITATIVE SURVEY RESULTS
AN "X" INDICATES A PROBLEM WITH POLLUTANT OR SOURCE
THE * ON MAPID INDICATES NO STORET INFORMATION AVAILABLE FOR THIS WATERSHED
-SEE PAGE 11 FOR LEGEND FOR THIS TABLE-

CATNAME=PEACE RIVER HUC=03100101

MAP ID	WBID	BASIN	WQ3 05	WQNPS	NUTRIEN T	BACTERIA	SEDIMENT	OIL	PESTICID	OTHER CHEMICAL	DEBRIS	OXYGEN	SALINITY	PH	METAL	HABITAT	FLOW	THERMAL	OTHER POL	FISHKILL	ALGAL	WEED	TURBIDI T	ODOR	FISDEC L	NOSWIM	NOFISH	OTHER SYM	IND	STP	AG	RE	SL	LD	UR	CN	HM	OT
1	1521I	LAKE HARTRIDGE	GOOD	FAIR	X	X	X	X	X	X	X	X	X		X	X	X			X	X	X			X	X		X			X			X	X	X	X	X
2	1539A	BEAR BRANCH	POOR	FAIR	X	X	X					X	X										X	X							X						X	
3*	1590A	LAKE RUBY		THREAT	X	X						X	X																		X				X	X	
4	1623N	SADDLE CK AB LK HANCOC	POOR	THREAT	X	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X		X			X	X		X	X	X	X
5	2054	MYRTLE SLOUGH	FAIR	THREAT	X	X	X		X	X	X	X	X			X	X			X	X	X	X	X	X						X			X		X	X	
6	2070	PUNTA GORDA ISLES 2 CA	GOOD	FAIR	X	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X		X						X	X	X	X	X
7	2069	PUNTA GORDA ISLES CA	GOOD	FAIR	X	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X			X			X			X	X	X	X	X
8	2056A	PEACE R LOWER ESTUARY	FAIR	THREAT	X	X	X	X	X	X	X			X	X	X	X		X	X	X	X	X	X	X		X	X			X	X		X	X	X	X	X
9*	2058	UNNAMED DITCH		THREAT	X	X	X		X	X		X	X			X	X			X	X	X	X	X	X						X			X	X	X	X	
10*	2060	MYAKKA CUTOFF		THREAT	X	X	X	X	X	X	X	X	X			X	X		X	X	X	X	X		X		X				X	X		X		X		
11*	2059	CLEVELAND CEM DITCH		FAIR	X	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X			X			X	X		X	X	X	X	X
12	2056D	ALLIGATOR BAY	FAIR	THREAT	X	X	X	X	X	X	X			X	X	X	X		X	X	X	X	X	X	X		X	X			X	X		X	X	X	X	X
13	2056B	PEACE R MID ESTUARY	FAIR	THREAT	X	X	X	X	X	X	X			X	X	X	X		X	X	X	X	X	X	X		X	X			X	X		X	X	X	X	X
14*	2047	UNNAMED CANAL		FAIR	X		X	X													X		X												X				
15	2041	SHELL CREEK	FAIR	THREAT	X	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X		X				X	X		X	X	X	X	X
16	2040	MYRTLE SLOUGH	FAIR	THREAT	X	X	X		X	X		X	X			X	X			X	X	X	X	X	X						X			X	X	X	X	X
17	2046	LITTLE ALLIGATOR CREEK	FAIR	FAIR	X		X	X													X		X												X				
18*	2044	CYPRESS SLOUGH		THREAT	X	X	X		X	X		X	X			X	X			X	X	X	X	X	X						X			X	X	X	X	
19	2056C	PEACE R UPPER ESTUARY	FAIR	THREAT	X	X	X	X	X	X	X			X	X	X	X		X	X	X	X	X	X	X		X	X			X	X		X	X	X	X	X
20*	2035	LEE BRANCH		THREAT	X	X	X	X	X	X	X	X	X			X	X			X	X	X	X		X						X	X		X		X		
21*	2033	UNNAMED DRAIN		THREAT	X				X														X								X				X			
22*	2008	THORNTON BRANCH		THREAT	X	X	X	X	X	X	X	X	X			X	X			X	X	X	X	X	X						X	X		X		X	X	X
23*	2028	UNNAMD DITCHES		THREAT	X		X	X	X	X	X	X	X			X	X			X	X	X	X	X	X						X	X		X		X	X	
24	1962	PRAIRIE CREEK	GOOD	THREAT	X	X	X		X	X		X	X			X	X			X	X	X	X	X	X						X	X		X		X	X	
25	1623A	PEACE R AB THORTON BR	GOOD	THREAT	X	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X		X			X	X		X	X	X	X	X
26*	2001	HOG BAY		THREAT	X				X														X								X				X			
27	1997	HAWTHORNE CREEK	FAIR	THREAT	X				X														X								X				X			
28	1995	MYRTLE SLOUGH	POOR	THREAT	X	X	X		X			X	X			X	X			X	X	X	X	X	X						X			X	X	X	X	
29	1623B	PEACE R AB HORSE CK	GOOD	THREAT	X	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X		X			X	X		X	X	X	X	X
30*	2003	UNNAMED DITCHES		THREAT	X		X	X	X	X	X	X	X			X	X			X	X	X	X	X	X						X	X		X		X	X	
31	1964	COW SLOUGH	GOOD	THREAT	X				X														X								X				X			
32	1950A	JOSHUA CK AB PEACE R	FAIR	THREAT	X		X		X	X	X											X	X		X						X				X			
33*	1986	UNNAMED SLOUGH		THREAT	X				X														X								X				X			
34	1623C	PEACE R AB JOSHUA CK	POOR	THREAT	X	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X		X			X	X		X	X	X	X	X
35	1787A	HORSE CK AB PEACE R	FAIR	THREAT	X		X	X	X	X	X	X	X			X	X			X	X	X	X	X	X						X	X		X			X	X
36*	1950B	JOSHUA CK AB HONEY CK		THREAT	X		X		X	X	X											X	X		X						X				X			
41	1623D	PEACE R AB CHARLIE CK	FAIR	THREAT	X	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X		X			X	X		X	X	X	X	X
43	1623E	PEACE R AB OAK CK	FAIR	THREAT	X	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X		X			X	X		X	X	X	X	X
49	1623F	PEACE R AB TROUBLESOME	FAIR	THREAT	X	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X		X	X	X	X	X		X	X	X	X	X
53	1787B	HORSE CK AB BUSHY CK	GOOD	THREAT	X		X	X	X	X	X	X	X			X	X			X	X	X	X	X	X						X	X		X			X	X
55	1623G	PEACE R AB LTL CHARLIE	FAIR	THREAT	X	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X		X			X	X		X	X	X	X	X
59	1623H	PEACE R AB PAYNE CK	FAIR	THREAT	X	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X		X			X	X		X	X	X	X	X
61	1677A	BOWLEGS CREEK	GOOD	THREAT	X																							X			X							X
64	1623I	PEACE R AB WHIDDEN CK	GOOD	THREAT	X	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X		X			X	X		X	X	X	X	X
66*	1677B	BOWLEGS CK AB BOGGY CK		THREAT	X																							X			X							X
67	1677C	Lake Buffum	GOOD	THREAT	X																							X			X							X
68	1623J	PEACE R AB BOWLEGS CK	POOR	THREAT	X	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X		X	X	X	X	X		X	X	X	X	X
69*	1647	LAKE PEMBROKE OUTLET		THREAT	X																							X			X							X
70*	1613	PEACE CR TRIB CANAL		THREAT	X	X						X	X																		X					X	X	

NPS QUALITATIVE SURVEY RESULTS
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THE * ON MAPID INDICATES NO STORET INFORMATION AVAILABLE FOR THIS WATERSHED
-SEE PAGE 11 FOR LEGEND FOR THIS TABLE-

CATNAME=PEACE RIVER HUC=03100101
(continued)

MAP ID	WBID	BASIN	WQ3 05	WQNPS	NUTRIENT	BACTERIA	SEDIMENT	OIL	PESTICIDE	OTHER	DEBRIS	OXYGEN	SALINITY	PH	METAL	HABITAT	FLOW	THERMAL	OTHER	FISHKILL	ALGAE	WEED	TURBIDITY	ODOR	FISHSHED	NOSWIM	NOFISH	OTHERSY	IND	STP	AG	RE	SL	LD	UR	CN	HM	OT
71*	1622	LAKE GARFIELD		THREAT	X												X														X	X					X	
72*	1634	MULE ISLAND DITCHES		THREAT	X	X	X					X	X						X		X	X		X	X	X					X					X	X	
73*	1626	WEST WALES DRAINAGE CA		THREAT	X	X						X	X																		X					X	X	
75*	1629	BRUSH LAKE OUTLET		FAIR	X	X	X					X	X						X		X				X		X				X					X	X	
76	1617	LAKE EFFIE OUTLET	POOR	FAIR	X		X					X	X								X	X				X					X			X				X
77	1623K	SADDLE CREEK	FAIR	THREAT	X	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X
78*	1539B	MOUNTAIN LAKE		FAIR	X	X	X					X	X										X	X							X							X	
79*	1608	UNNAMED SLOUGH		FAIR	X	X	X			X		X	X			X					X	X		X		X	X				X			X	X	X	X	X
80*	1602	UNNAMED DITCHES		THREAT	X	X						X	X																		X					X	X	
81*	1598	GASKIN BRANCH		FAIR	X	X	X					X	X			X	X				X			X		X					X			X	X	X	X	X
82	1623L	Lake Hancock	POOR	THREAT	X	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X		X	X	X	X		X	X	X	X	X	X
83*	1590	LAKE MYRTLE OUTLET		THREAT	X	X						X	X																		X					X	X	
84*	1580	WAHNETA FARMS DRAIN CA		FAIR	X	X	X		X		X	X	X			X	X				X	X	X	X		X	X				X			X	X	X	X	X
85*	1588	LAKE MCLEOD OUTLET		GOOD																																			
86	1549B	Banana Lake	POOR	FAIR	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X		X	X	X	X		X			X		
87	1521A	LAKE WINTERSET	GOOD	FAIR	X	X	X	X	X	X	X	X	X		X	X	X			X	X	X			X	X		X			X			X	X	X	X	X
88	1521B	LAKE ELOISE	FAIR	FAIR	X	X	X	X	X	X	X	X	X		X	X	X			X	X	X			X	X		X			X			X	X	X	X	X
89	1623M	EAGLE LAKE	GOOD	THREAT	X	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X		X			X	X		X	X	X	X	X
90	1521C	LAKE LULU RUN	FAIR	FAIR	X	X	X	X	X	X	X	X	X		X	X	X			X	X	X			X	X		X			X			X	X	X	X	X
91*	1539C	LAKE ANNIE		FAIR	X	X	X					X	X										X	X							X							X	
92	1521	LAKE LULU OUTLET	POOR	FAIR	X	X	X	X	X	X	X	X	X		X	X	X			X	X	X			X	X		X			X			X	X	X	X	X
93	1521D	LAKE SHIPP	POOR	FAIR	X	X	X	X	X	X	X	X	X		X	X	X			X	X	X			X	X		X			X			X	X	X	X	X
94	1549A	BANANA LAKE CANAL	POOR	FAIR	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X		X	X	X	X				X			
95	1521E	LAKE MAY	POOR	FAIR	X	X	X	X	X	X	X	X	X		X	X	X			X	X	X			X	X		X			X			X	X	X	X	X
96	1539D	LAKE OTIS	GOOD	FAIR	X	X	X					X	X										X	X							X							X	
97	1497A	CRYSTAL LAKE	GOOD	FAIR	X		X				X	X	X							X	X	X	X	X							X	X		X	X			X	X
98	1501A	LAKE LENA RUN	POOR	FAIR	X	X															X					X					X			X	X	X			
99	1539	PEACE CREEK DR CANAL	POOR	FAIR	X	X	X					X	X										X	X						X	X	X	X					X	
100	1521G	LAKE MIRROR	POOR	FAIR	X	X	X	X	X	X	X	X	X		X	X	X			X	X	X			X	X		X			X			X	X	X	X	X
101	1521H	LAKE CANNON	POOR	FAIR	X	X	X	X	X	X	X	X	X		X	X	X			X	X	X			X	X		X			X			X	X	X	X	X
102*	1488A	LAKE SMART		FAIR	X	X	X					X	X			X	X			X	X	X				X					X			X	X	X	X	X
103*	1504	LAKE HAMILTON OUTLET		THREAT	X												X														X				X	X	X	
104	1497	SADDLE CREEK	POOR	FAIR	X		X				X	X	X							X	X	X	X	X							X	X		X	X		X	X
105	1521F	LAKE HOWARD	GOOD	FAIR	X	X	X	X	X	X	X	X	X		X	X	X			X	X	X			X	X		X			X			X	X	X	X	X
106	1521J	LAKE IDYLWILD	FAIR	FAIR	X	X	X	X	X	X	X	X	X		X	X	X			X	X	X			X	X		X			X			X	X	X	X	X
107*	1488	LAKE FANNIE OUTLET		FAIR	X	X	X					X	X			X	X			X	X	X				X					X			X	X	X	X	X
108	1521K	LAKE JESSIE	FAIR	FAIR	X	X	X	X	X	X	X	X	X		X	X	X			X	X	X			X	X		X			X			X	X	X	X	X
109	1497B	LAKE PARKER	FAIR	FAIR	X		X				X	X	X							X	X	X	X								X	X		X	X		X	X
110	1501	LAKE LENA	POOR	FAIR	X	X															X					X					X			X	X	X			
111	1488B	LAKE ECHO	GOOD	FAIR	X	X	X					X	X				X	X			X	X				X	X				X			X	X	X	X	X
112*	1521L	LAKE MARIANNA		FAIR	X	X	X	X	X	X	X	X	X		X	X	X			X	X	X			X	X		X			X			X	X	X	X	X
113	1488C	LAKE LUCERNE	GOOD	FAIR	X	X	X					X	X				X	X			X	X				X	X				X			X	X	X	X	X
114*	1500	CHANNELIZED STREAM		THREAT	X													X													X				X	X	X	
115	1504A	LAKE HENRY	POOR	THREAT	X													X													X				X	X	X	
116	1501B	LAKE ARIANNA	GOOD	FAIR	X	X															X						X				X			X	X	X		
117	1497C	LAKE TENOROC	FAIR	FAIR	X		X				X	X	X							X	X	X	X								X	X		X	X		X	X
118	1488D	LAKE ALFRED	GOOD	FAIR	X	X	X					X	X				X	X			X	X				X	X				X			X	X	X	X	X
119*	1510	LAKE EVA OUTLET		THREAT	X													X													X				X	X	X	

NPS QUALITATIVE SURVEY RESULTS
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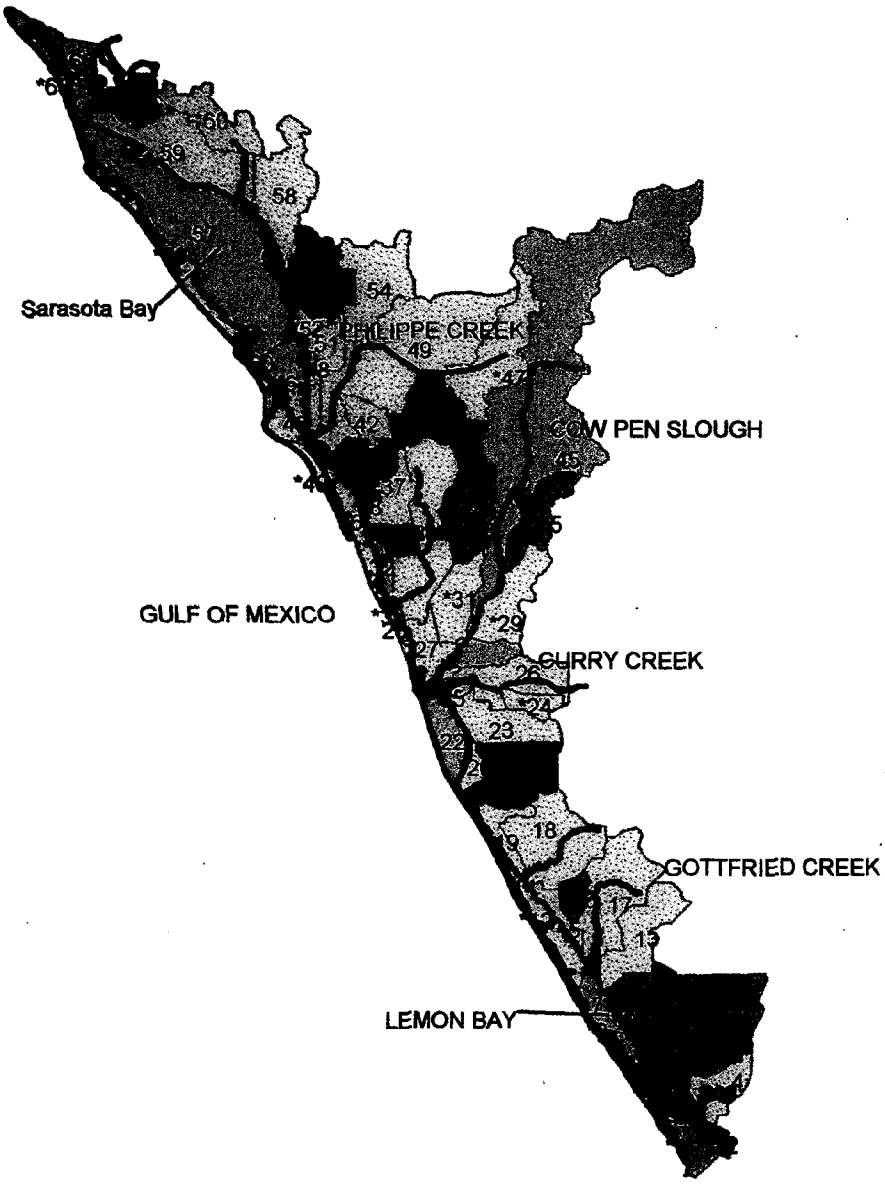
-SEE PAGE 11 FOR LEGEND FOR THIS TABLE-

CATNAME=PEACE RIVER HUC=03100101 (continued)

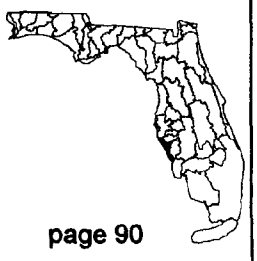
MAP ID	WBID	BASIN	WQ30	WQNPS	NUTRIENT	BACTERIA	SEDIMENT	OIL	PESTICID	OTHERCHE	DEBRIS	OXYGEN	SALINITY	PH	METAL	HABITAT	FLOW	THERMAL	OTHEROL	FISHKILL	ALGAL	WED	TURBIDT	ODOR	FISHDECL	NOSWIM	NOFISH	OTHERSYM	IND	STP	AGR	RES	SLD	URB	CNS	HYM	OTH
120	1497D	LAKE GIBSON	GOOD	FAIR	X		X				X	X	X							X	X	X	X								X	X		X	X		X	X
121	1501C	LAKE ARETTA	GOOD	FAIR	X	X															X					X					X			X	X	X		
122*	1492	LAKE TRACY OUTLET		THREAT	X												X														X				X	X	X	



SARASOTA BAY BASIN
03100201

AVERAGE WATER QUALITY
1984-1993 STORET DATA
WATERSHED ID NUMBERS LINK MAP TO TABLES
* INDICATES QUALITATIVE ASSESSMENT

WATER QUALITY
GOOD
THREATENED
FAIR
POOR
UNKNOWN



SARASOTA BAY BASIN

Basic Facts

Drainage Area: 268 square miles
Major Land Uses: urban development, agriculture
Population Density: moderate to high in coastal area (Sarasota, Bradenton, Venice)
Major Pollution Sources: urban runoff, WWTP
Best Water Quality Areas: Sarasota Bay near passes, Cowpen Slough
Worst Water Quality Areas: Whitaker Bayou, Alligator Creek
Water Quality Trends: stable quality at 23 sites, improvements at Phillippi Creek, Sarasota Bay and Lemon Bay, worsening trend at Elligrow Bayou
OFW Waterbodies:
Sarasota Bay Estuarine System
Lemon Bay Estuarine System
Lemon Bay State Aquatic Preserve
SWIM Waterbodies: none
Reference Reports:
Sarasota County Ambient Water Quality Report, Sarasota County, 1988
Water Quality Status and Trends in Sarasota Bay, Heyl and Dixon, 198
Sarasota Bay: Identification of Resource Management Problems and Issues to EPA, Mote Marine, 1988
Basin Water Quality Experts:
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In the News

* Sarasota Bay is part of EPA's National Estuary Program.
* The Cities of Sarasota, Venice And Sarasota County currently have applications under review by DEP for reverse osmosis and/or EDR reject discharges to state waters. Venice and Sarasota County are proposed to discharge to the Intracoastal Waterway. Venice's discharge point will be a combined outfall for their R/O reject and Domestic Wastewater effluent (a relocation of the WWTP discharge). The City of Sarasota is proposed to discharge to Sarasota Bay via a Stormwater outfall at Payne Terminal.

* The City of Sarasota also has an application pending for its WWTP to increase the number of discharge days to Whitaker Bayou.
* The Army Corps of Engineers and Sarasota County's Stormwater Utility are currently considering a flood control project for the tributaries of Whitake Bayou which involve creek channelization . DEP has suggested they explore other alternatives.
* Dredging of Stump Pass in Lemon Bay has provoked controversy.
* DEP has rejected requests from Sarasota County for permit to dredge and reopen Midnight Pass.

Ecological Characterization

The Sarasota Bay drainage area is 268 square miles and extends from Tampa Bay to Charlotte Harbor. Sarasota Bay, Little Sarasota Bay and Lemon Bay have a combined estuarine area of approximately 24 square miles. This bay is really more like a sound, protected by a strip of barrier islands and receiving little fresh water inflow. There are several small streams, most of which are less than five miles long, that enter the estuary. Nearly all of these streams and relatively clear waters of the basin support healthy, but degrading, seagrass beds.

This basin has two major urban centers, Sarasota and Bradenton, and most of the rest of the area is developed into subdivisions and small municipalities. There is also some agricultural drainage in the basin, mostly from citrus groves in the east section of the basin and rangeland at the headwaters of Phillippi Creek and Cow Pen Slough. Sarasota Bay has been designated in Section 317 (National Estuarine Program) of the Water Quality Act of 1987 as an Estuary of National Significance.

Anthropogenic Impacts

The major point source of pollution in the basin is the City of Sarasota WWTP which discharges into Whitaker Bayou. Whitaker Bayou has nutrient, DO and coliform problems. The plant has had a long history of enforcement actions taken against it, and the city has explored a variety of political, engineering and permitting options. The plant has been upgraded to an advanced water treatment facility. Currently, a combined system of "ridge and furrow" seepage irrigation and direct discharges to Whitaker Bayou are being used to dispose of wastewater. The plant is allowed a maximum of 59 days per year of direct discharge (primarily Phillippi Creek area).

Agricultural and urban stormwater runoff is also a problem in this basin. Many of the streams running through developed areas are affected by septic tanks. Tributaries and direct runoff supply the bay systems with heavy nutrient loading. Seagrass beds are declining in upper Sarasota Bay, especially the eastern side, presumably because high algae concentrations are reducing transparency. Runoff from the Bradenton area and the Manatee County WWTP "ridge and furrow" seepage irrigation (which actually water a fertilized gladiolus farm) provides further nutrient loading.

Sarasota Bay, Little Sarasota Bay and Lemon Bay have been declared Outstanding Florida Waters, which should afford them greater protection from both point source and nonpoint source pollution. However, all are threatened by increased boat traffic, seawalling and the replacement of mangroves by lawns and drainage canals. In association with the National Estuarine Program, several local agencies are conducting water quality monitoring within the bay and beginning a process of establishing a bay management plan.

** USGS HYDROLOGIC UNIT: 03100201 SARASOTA BAY

SURFACE WATER QUALITY DATA FOR 1970-1993
MEDIAN VALUES FOR EACH WATERSHED
CURRENT PERIOD OF RECORD (1989-1993) USED WHERE AVAILABLE
PERIOD PRIOR TO 1989 IS EVALUATED AS HISTORICAL INFORMATION

INDEX	GOOD	FAIR	POOR
WQI-RIVER	0-44	45-59	60-90
TSI-ESTUARY	0-49	50-59	60-100
TSI-LAKE	0-59	60-69	70-100

WATERSHED ID	NAME	WATERSHED DATA RECORD MAX #OBS	BEG YR	END YR	DATA PERIOD	WATER CLARITY TURB	SD	COLOR	TSS	DISSOLVED OXYGEN DO	DOSAT	OXYGEN DEMAND BOD	COD	TOC	PH	ALKALINITY ALK	TROPHIC STATUS NITRO	PHOS	CHLA	COLIFORM TOTAL	FECL	BIOLOGICAL SPECIES DIVERSITY NAT	ART	BECK	COND	FLOW	WATER QUALITY INDICES WQI	TSI
* WATER BODY TYPE: ESTUARY																												
7	LEMON BAY	28	76	86	Historical	4.0	1.6	20	.	7.7	82	2.3	.	.	8.0	.	0.44	0.08	14	450	2	4.4	.	.	46375	.	.	45
13	ROCK CREEK	4	91	92	Current	2.9	.	15	13	5.0	58	3.0	.	.	7.9	.	3.94	0.09	4	.	25	.	.	.	46000	.	.	50
14	LEMON BAY	28	89	89	Current	3.0	1.5	15	.	6.7	74	.	.	.	7.9	.	0.70	0.21	.	50	5	.	.	.	47250	.	.	50
17	GOTTFRIED CREEK	13	89	92	Current	2.2	.	25	17	4.7	56	3.2	.	.	7.7	.	1.07	0.16	6	975	80	.	.	.	42250	.	.	52
18	FORKED CREEK	8	89	89	Current	4.0	1.2	21	.	5.1	59	.	.	.	7.7	.	0.95	0.38	.	288	55	.	.	.	39575	.	.	55
19	DIRECT RUNOFF TO BAY	4	89	89	Current	3.0	.	30	.	4.4	47	.	.	.	7.6	.	1.16	0.28	.	300	100	.	.	.	39950	.	.	59
21	ALLIGATOR CREEK	4	89	89	Current	4.2	.	63	.	3.7	41	.	.	.	7.7	.	1.63	0.33	.	1750	335	.	.	.	5245	.	.	66
22	DIRECT RUNOFF TO BAY	16	89	89	Current	5.2	1.3	8	.	6.6	73	.	.	.	8.1	.	0.50	0.14	.	50	10	.	.	.	48685	.	.	48
23	HATCHETT CREEK	8	89	89	Current	2.5	.	38	.	3.7	41	.	.	.	7.4	.	0.91	0.25	.	875	295	.	.	.	20645	.	.	54
27	DONA BAY	4	89	89	Current	5.2	1.2	15	.	5.9	65	.	.	.	8.0	.	0.64	0.18	.	50	10	.	.	.	46390	.	.	51
28	Little Sarasota Bay	4	89	89	Current	4.1	1.7	5	.	6.2	69	.	.	.	8.2	.	0.67	0.15	.	50	5	.	.	.	48900	.	.	46
32	DIRECT RUNOFF TO BAY	4	89	89	Current	4.5	1.6	13	.	6.2	68	.	.	.	8.2	.	0.62	0.16	.	50	10	.	.	.	48965	.	.	47
36	Little Sarasota Bay	13	89	89	Current	4.0	1.4	10	.	6.7	76	.	.	.	8.2	.	0.85	0.16	.	75	8	.	.	.	45920	.	.	51
43	ROBERTS BAY	16	89	89	Current	3.9	1.2	10	.	6.3	73	.	.	.	8.1	.	0.78	0.14	.	50	5	.	.	.	46430	.	.	52
46	Sarasota Bay	6	89	89	Current	2.7	2.0	0	.	7.0	82	.	.	.	8.3	.	0.61	0.07	.	50	8	.	.	.	48468	.	.	44
51	HUDSON BAYOU	4	89	89	Current	5.6	.	15	.	3.8	42	.	.	.	8.0	.	0.85	0.17	.	310	200	.	.	.	47640	.	.	53
52	DIRECT RUNOFF TO BAY	3	89	89	Current	5.0	1.1	10	.	6.9	82	.	.	.	8.2	.	0.70	0.10	.	50	5	.	.	.	47590	.	.	53
55	WHITAKER BAYOU	8	89	89	Current	3.0	.	59	.	3.5	38	.	.	.	7.4	.	1.52	0.62	.	12550	560	.	.	.	8763	.	.	62
56	DIRECT RUNOFF TO GULF	8	89	89	Current	5.1	1.1	14	.	5.3	59	.	.	.	7.9	.	3.71	1.01	.	125	73	.	.	.	39680	.	.	74
57	Sarasota Bay	46	89	89	Current	3.7	1.6	5	44	6.7	74	.	.	.	8.2	.	0.72	0.14	3	50	5	.	.	.	48670	.	.	47
59	DIRECT RUNOFF TO BAY	1520	83	83	Historical	11.3	0.8	10	47	4.3	43	.	.	.	8.2	.	0.33	0.07	8	240	260	.	.	.	42000	.	.	50
62	Anna Maria Sound	8	92	92	Current	4.0	0.8	15	27	8.5	97	.	.	4	8.2	121	0.54	0.15	2	.	1	.	.	.	44593	.	.	45
* WATER BODY TYPE: LAKE																												
42	CLARK LAKE	4	89	89	Current	7.7	.	45	.	6.7	68	.	.	.	7.3	.	1.23	0.51	.	4500	995	.	.	.	570	.	.	60
* WATER BODY TYPE: STREAM																												
4	Coral Creek E.Branch	28	89	92	Current	2.4	.	43	13	5.2	63	2.1	.	.	7.6	.	1.48	0.07	10	.	26	.	.	.	41888	.	46	.
26	CURRY CREEK	4	89	89	Current	2.5	.	65	.	5.7	63	.	.	.	7.7	.	1.37	0.28	.	600	230	.	.	.	11430	.	49	.
33	NORTH CREEK	4	89	89	Current	4.9	.	50	.	3.1	36	.	.	.	7.6	.	1.40	0.26	.	2700	1000	.	.	.	33335	.	71	.
34	SOUTH CREEK	8	89	89	Current	4.6	.	48	.	4.2	46	.	.	.	7.5	.	1.23	0.35	.	613	83	.	.	.	21160	.	54	.
37	CATFISH CREEK	11	89	92	Current	5.0	0.5	45	27	6.2	78	.	.	9	7.9	90	1.29	0.27	6	17500	905	.	.	.	34685	.	53	.
38	CLOWERS CREEK	4	89	89	Current	30.5	.	125	.	5.7	62	.	.	.	7.4	.	1.63	0.33	.	3100	1100	.	.	.	940	.	74	.
41	ELLIGRAW BAYOU	8	89	89	Current	5.2	.	58	.	3.8	42	.	.	.	7.6	.	1.33	0.28	.	2400	680	.	.	.	9518	.	66	.
45	COW PEN SLOUGH	12	89	89	Current	1.3	.	45	.	9.2	100	.	.	.	8.2	.	1.01	0.06	.	100	45	.	.	.	1075	.	20	.
49	PHILIPPE CREEK	20	89	89	Current	2.9	.	48	.	6.5	72	.	.	.	7.7	.	2.29	0.45	.	1000	125	.	.	.	1220	.	47	.
54	PHILIPPI CREEK	12	89	89	Current	4.6	.	50	.	8.1	82	.	.	.	7.5	.	0.88	0.50	.	1050	320	.	.	.	480	.	47	.
58	BOWLES CREEK	492	70	87	Historical	4.1	.	45	.	5.7	65	2.6	.	.	8.0	.	.	.	.	353	240	.	.	.	20000	.	52	.

LEGEND:

ALK-ALKALINITY MG/L
ART-ARTIFICIAL SUBSTRATE DI
BEG YR-BEGINNING SAMPLING YEAR
BECK-BECK'S BIOTIC INDEX
BOD-BIOCHEMICAL OXYGEN DEMAND MG/L
CHLA-CHLOROPHYLL UG/L
COD-CHEMICAL OXYGEN DEMAND MG/L
COLOR-COLOR PCU
COND-CONDUCTIVITY UMHOS
DO-DISSOLVED OXYGEN MG/L
DOSAT-DO % SATURATION
END YR-ENDING YEAR
FECL-FECAL COLIFORM MPN/100ML
FLOW-FLOW CFS
MAX #OBS-MAXIMUM NUMBER OF SAMPLES
NAT-NATURAL SUBSTRATE DIVERSITY
NITRO-TOTAL NITROGEN MG/L
PH-PH STANDARD UNITS
PHOS-TOTAL PHOSPHORUS MG/L
SD-SECCHI DISC METERS
TOC-TOTAL ORGANIC CARBON MG/L
TOTAL-TOTAL COLIFORM MPN/100ML
TSI-TROPHIC STATE INDEX
TSS-TOTAL SUSPENDED SOLIDS MG/L
TURB-TURBIDITY MG/L
WQI-WATER QUALITY INDEX

SURFACE WATER QUALITY DATA SCREENING REPORT
MEDIAN VALUES FOR EACH WATERSHED SCREENED

** USGS HYDROLOGIC UNIT: 03100201 SARASOTA BAY

'x'=EXCEEDS SCREENING CRITERIA
'0'=WITHIN SCREENING CRITERIA
'.'=MISSING DATA

WATERSHED ID	NAME	RANK WQI OR TSI	DATA RECORD CURRENT OR HISTORICAL	SCREENING VARIABLES AND CRITERIA: TN TN>2.0	STREAM TP TP>.46	LAKE TP TP>.12	PH PH>8.8 PH<5.2	ALK ALK<20	TURB & TSS TURB>16.5 TSS>18	COND COND>1275	OXYGEN DEMAND BOD>3.3 COD>102 TOC>27.5	DO DO<4	COLIFORM BACTI TOT>3700 FECAL>470	BIOL DIV DIART<1.95 DINAT<1.5 BECK<5.5	CHLA CHLA>40	SECCHI DISC SD<.7
* WATER BODY TYPE: ESTUARY																
7	LEMON BAY	GOOD	Historical	0	.	0	0	.	0	x	0	0	0	0	0	0
13	ROCK CREEK	FAIR	Current	x	.	0	0	.	0	x	0	0	0	.	0	.
14	LEMON BAY	FAIR	Current	0	.	x	0	.	0	x	.	0	0	.	.	0
17	GOTTFRIED CREEK	FAIR	Current	0	.	x	0	.	0	x	0	0	0	.	0	.
18	FORKED CREEK	FAIR	Current	0	.	x	0	.	0	x	.	0	0	.	.	0
19	DIRECT RUNOFF TO BAY	FAIR	Current	0	.	x	0	.	0	x	.	0	0	.	.	.
21	ALLIGATOR CREEK	POOR	Current	0	.	x	0	.	0	x	.	x	0	.	.	.
22	DIRECT RUNOFF TO BAY	GOOD	Current	0	.	x	0	.	0	x	.	0	0	.	.	0
23	HATCHETT CREEK	FAIR	Current	0	.	x	0	.	0	x	.	x	0	.	.	.
27	DONA BAY	FAIR	Current	0	.	x	0	.	0	x	.	0	0	.	.	0
28	Little Sarasota Bay	GOOD	Current	0	.	x	0	.	0	x	.	0	0	.	.	0
32	DIRECT RUNOFF TO BAY	GOOD	Current	0	.	x	0	.	0	x	.	0	0	.	.	0
36	Little Sarasota Bay	FAIR	Current	0	.	x	0	.	0	x	.	0	0	.	.	0
43	ROBERTS BAY	FAIR	Current	0	.	x	0	.	0	x	.	0	0	.	.	0
46	Sarasota Bay	GOOD	Current	0	.	0	0	.	0	x	.	0	0	.	.	0
51	HUDSON BAYOU	FAIR	Current	0	.	x	0	.	0	x	.	x	0	.	.	.
52	DIRECT RUNOFF TO BAY	FAIR	Current	0	.	0	0	.	0	x	.	0	0	.	.	0
55	WHITAKER BAYOU	POOR	Current	0	.	x	0	.	0	x	.	x	x	.	.	.
56	DIRECT RUNOFF TO GULF	POOR	Current	x	.	x	0	.	0	x	.	0	0	.	.	0
57	Sarasota Bay	GOOD	Current	0	.	x	0	.	x	x	.	0	0	.	0	0
59	DIRECT RUNOFF TO BAY	FAIR	Historical	0	.	0	0	.	x	x	.	0	0	.	0	0
62	Anna Maria Sound	GOOD	Current	0	.	x	0	0	x	x	0	0	0	.	0	0
* WATER BODY TYPE: LAKE																
42	CLARK LAKE	FAIR	Current	0	.	x	0	.	0	0	.	0	x	.	.	.
* WATER BODY TYPE: STREAM																
4	Coral Creek E.Branch	FAIR	Current	0	0	.	0	.	0	x	0	0	0	.	0	.
26	CURRY CREEK	FAIR	Current	0	0	.	0	.	0	x	.	0	0	.	.	.
33	NORTH CREEK	POOR	Current	0	0	.	0	.	0	x	.	x	x	.	.	.
34	SOUTH CREEK	FAIR	Current	0	0	.	0	.	0	x	.	0	0	.	.	.
37	CATFISH CREEK	FAIR	Current	0	0	.	0	0	x	x	0	0	x	.	0	x
38	CLOWERS CREEK	POOR	Current	0	0	.	0	.	x	0	.	0	x	.	.	.
41	ELLIGRAW BAYOU	POOR	Current	0	0	.	0	.	0	x	.	x	x	.	.	.
45	COW PEN SLOUGH	GOOD	Current	0	0	.	0	.	0	0	.	0	0	.	.	.
49	PHILIPPE CREEK	FAIR	Current	x	0	.	0	.	0	0	.	0	0	.	.	.
54	PHILIPPI CREEK	FAIR	Current	0	x	.	0	.	0	0	.	0	0	.	.	.
58	BOWLES CREEK	FAIR	Historical	.	.	.	0	.	0	x	0	0	0	.	.	.

LEGEND:
ALK-ALKALINITY
BECK-BECK'S BIOTIC INDEX
BIOL DIV-BIOLOGICAL DIVERSITY
CHLA-CHLOROPHYLL
COND-CONDUCTIVITY
DO-DISSOLVED OXYGEN
CURRENT-1989 TO 1993
DIART-ARTIFICIAL SUBSTRATE DIVERSITY
DINAT-NATURAL SUBSTRATE DIVERSITY
FECAL-FECAL COLIFORM BACTERIA
HISTORICAL-1970 TO 1988
OXYGEN DEMAND-BOD,COD,TOC
PH-PH
TN-NITROGEN
TP-PHOSPHORUS
TOT-TOTAL COLIFORM BACTERIA
TSS-TOTAL SUSPENDED SOLIDS
TURB-TURBIDITY
SD-SECCHI DISC METERS
WQI OR TSI-WATER QUALITY INDEX RATING WHICH INDEX USED, WQI OR TSI, IS BASED ON WATERBODY TYPE

SURFACE WATER QUALITY ASSESSMENT REPORT
TRENDS-SOURCES-CLEANUP

** USGS HYDROLOGIC UNIT: 03100201 SARASOTA BAY

'x'=DEGRADING TREND
'0'=STABLE TREND
'+'=IMPROVING TREND
'.'=MISSING DATA

WATERSHED ID	NAME	QUALITY RANK: MEETS USE ?	OR WQI	TSI	OVER-ALL TREND	1984 - 1993 TRENDS: Q or I	W S I	T N	T P	T C L A	S D	P H	A L K	T U R B	T S I	B O D	T O C	D O S	D C O	T C O L I	F C O L I	T E M P	F L O W	T P	<--- PLEASE READ THESE COLUMNS VERTICALLY	DEGRADATION SOURCES, PRESENT CONDITIONS AND CLEANUP EFFORTS
* WATER BODY TYPE: ESTUARY																										
7	LEMON BAY	YES	GOOD	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.		
13	ROCK CREEK	PARTIAL	FAIR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.		
14	LEMON BAY	PARTIAL	FAIR	+	+	+	0	+	+	0	.	0	.	.	.	0	0	0	0	0	0	+	.			
17	GOTTFRIED CREEK	PARTIAL	FAIR	0	0	0	0	.	.	+	.	x	.	.	.	0	0	x	0	0	0	0	.			
18	FORKED CREEK	PARTIAL	FAIR	0	0	0	0	0	.	0	.	x	.	.	.	0	0	0	0	0	0	0	.			
19	DIRECT RUNOFF TO BAY	PARTIAL	FAIR	0	0	0	0	.	.	0	.	0	.	.	.	0	0	0	0	0	0	0	.			
21	ALLIGATOR CREEK	NO	POOR	0	0	0	0	.	.	0	.	x	.	.	.	0	0	0	0	0	0	0	.			
22	DIRECT RUNOFF TO BAY	YES	GOOD	0	0	0	0	0	.	0	.	0	.	.	.	x	0	+	x	0	x	x	.			
23	HATCHETT CREEK	PARTIAL	FAIR	0	0	0	0	.	.	0	.	0	.	.	.	0	0	0	0	0	0	0	.			
27	DONA BAY	PARTIAL	FAIR	0	0	0	0	0	.	0	.	0	.	.	.	0	0	0	0	0	0	0	.			
28	Little Sarasota Bay	YES	GOOD	0	0	0	0	0	.	0	.	0	.	.	.	0	0	0	0	0	0	0	.			
32	DIRECT RUNOFF TO BAY	YES	GOOD	0	0	0	0	0	.	0	.	0	.	.	.	0	0	0	0	0	0	0	.			
36	Little Sarasota Bay	PARTIAL	FAIR	0	0	x	0	0	.	0	.	x	.	.	.	0	0	0	0	0	0	x	.			
43	ROBERTS BAY	PARTIAL	FAIR	0	0	x	0	0	.	+	.	0	.	.	.	0	0	0	0	0	0	x	.			
46	Sarasota Bay	YES	GOOD	+	+	+	0	+	.	+	.	+	.	.	.	0	0	+	0	0	0	0	.			
51	HUDSON BAYOU	PARTIAL	FAIR	0	0	0	0	.	.	0	.	0	.	.	.	x	x	0	0	0	0	0	.			
52	DIRECT RUNOFF TO BAY	PARTIAL	FAIR	0	0	0	0	0	.	0	.	0	.	.	.	0	0	0	+	0	0	0	.			
55	WHITAKER BAYOU	NO	POOR	0	0	0	0	.	.	0	.	+	.	.	.	0	0	x	0	0	0	0	.			
56	DIRECT RUNOFF TO GULF	NO	POOR	0	0	0	0	0	.	0	.	0	.	.	.	0	0	0	0	0	0	0	.			
57	Sarasota Bay	YES	GOOD	0	0	0	0	0	.	0	.	0	.	.	.	x	x	0	0	0	0	0	.			
59	DIRECT RUNOFF TO BAY	PARTIAL	FAIR																							
62	Anna Maria Sound	YES	GOOD	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.			
* WATER BODY TYPE: LAKE																										
42	CLARK LAKE	PARTIAL	FAIR	0	0	0	0	x	.	.	0	.	0	.	.	.	0	0	0	0	0	0	.			
* WATER BODY TYPE: STREAM																										
4	Coral Creek E.Branch	PARTIAL	FAIR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.			
26	CURRY CREEK	PARTIAL	FAIR	0	0	0	0	.	.	0	.	x	.	.	.	0	0	0	0	0	0	0	.			
33	NORTH CREEK	NO	POOR	0	0	0	0	.	.	x	.	0	.	.	.	x	0	0	x	0	0	0	.			
34	SOUTH CREEK	PARTIAL	FAIR	0	0	0	0	.	.	0	.	0	.	.	.	x	x	0	0	0	0	0	.			
37	CATFISH CREEK	PARTIAL	FAIR	0	0	0	0	.	.	0	.	0	.	.	.	0	0	0	0	0	0	0	.			
38	CLOWERS CREEK	NO	POOR	0	+	0	0	.	.	0	.	0	.	.	.	0	0	x	x	0	0	0	.			
41	ELLIGRAW BAYOU	NO	POOR	x	x	0	0	.	.	x	.	x	.	.	.	x	x	x	0	0	0	0	.			
45	COW PEN SLOUGH	YES	GOOD	0	0	0	0	.	.	+	.	0	.	.	.	0	0	0	0	0	0	0	.			
49	PHILIPPE CREEK	PARTIAL	FAIR	0	0	0	0	.	.	+	.	0	.	.	.	0	0	x	0	0	0	0	.			
54	PHILIPPI CREEK	PARTIAL	FAIR	+	+	+	0	.	.	+	.	0	.	.	.	+	+	0	0	0	0	0	.			
58	BOWLES CREEK	PARTIAL	FAIR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.			

LEGEND:

ALK-ALKALINITY
BOD-BIOCHEM. OXYGEN DEMAND
CHLA-CHLOROPHYLL
DO-DISSOLVED OXYGEN
DOSAT-DO SATURATION
FCOLI-FECAL COLIFORM
FLOW-FLOW
MEETS USE-MEETS DESIGNATED USE
PH-PH
SD-SECCHI DISC METERS
TCOLI-TOTAL COLIFORM
TEMP-TEMPERATURE
TN-NITROGEN
TOC-T.ORGANIC CARBON
TP-PHOSPHORUS
TSS-TOTAL SUSPENDED SOLIDS
TURB-TURBIDITY
TSI-TROPHIC STATE INDEX FOR LAKES AND ESTUARIES
WQI-WATER QULAITY INDEX FOR STREAMS AND SPRINGS

NPS QUALITATIVE SURVEY RESULTS
AN "X" INDICATES A PROBLEM WITH POLLUTANT OR SOURCE
THE * ON MAPID INDICATES NO STORET INFORMATION AVAILABLE FOR THIS WATERSHED
-SEE PAGE 11 FOR LEGEND FOR THIS TABLE-

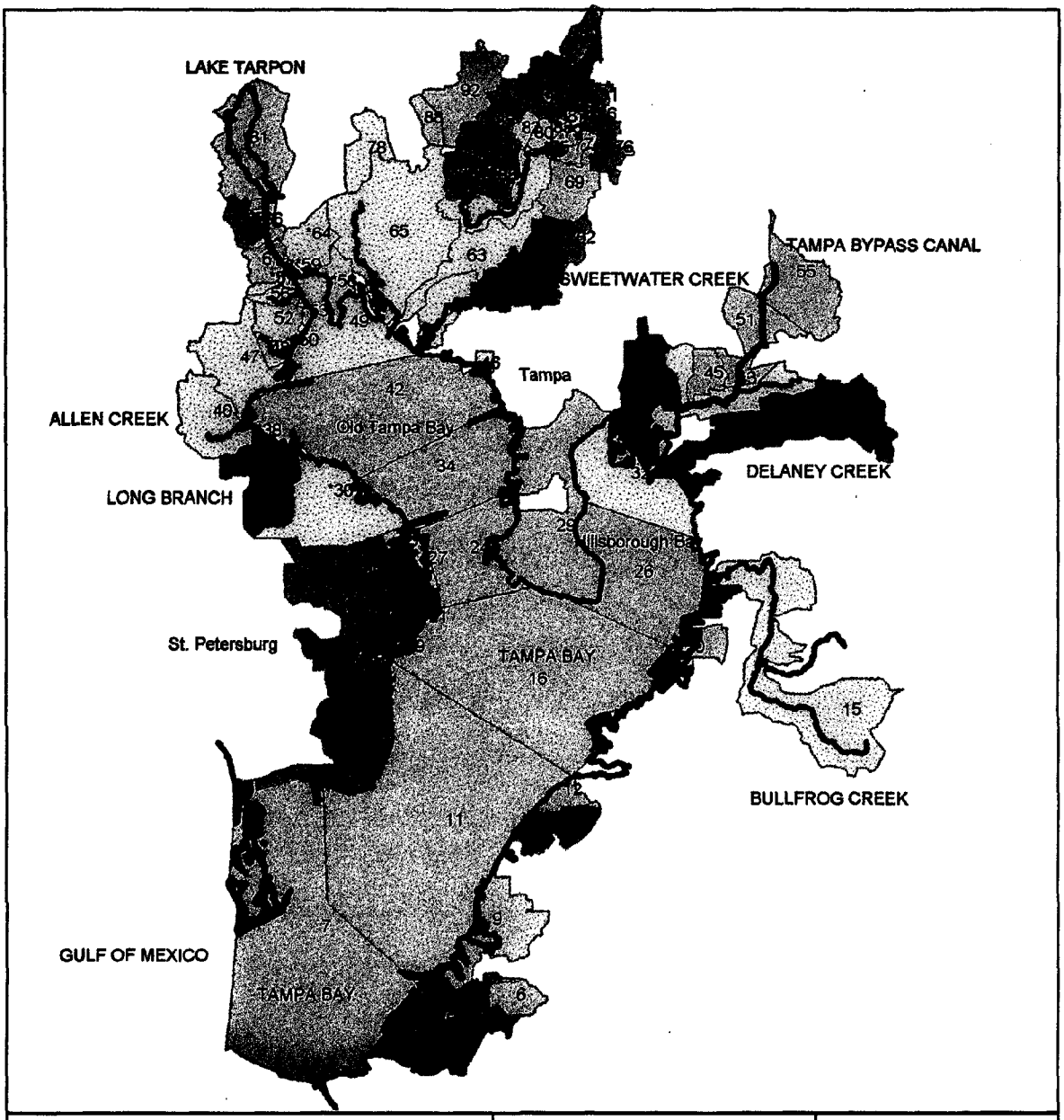
CATNAME=SARASOTA BAY HUC=03100201

MAPID	WBID	BASIN	WQ3005	WQNPS	NUTRIENT	BACTERIA	SEDIMENT	OIL	PESTICID	OTHERCHE	DEBRIS	OXYGEN	SALINITY	PH	METAL	HABITAT	FLOW	THERMAL	OTHERPOL	FISHKILL	ALGAE	WEED	TURBIDOD	TURBIDOR	FISHDEC	NOSWIM	NOFISH	OTHERSY	IND	STP	AG	RE	SL	LD	UR	CN	HM	OT
1*	2075A	Barrier Island		FAIR		X	X	X			X	X	X			X	X						K	X	X	X	X						X	X	X	X	X
2*	2087	DIRECT RUNOFF TO BAY		THREAT		X																			X		X							X	X	X		
3*	2078A	CORAL CREEK		THREAT	X	X	X	X	X	X		X	X			X						X												X		X	X	
4	2078B	Coral Creek E.Branch	FAIR	THREAT	X	X	X	X	X	X		X	X			X						X												X		X	X	
5*	2075B	Barrier Island		FAIR		X	X	X			X	X	X			X	X						K	X	X	X	X						X	X	X	X	X	X
6*	2076	DIRECT RUNOFF TO BAY		THREAT		X																			X		X							X	X	X		
7	1983B	LEMON BAY	GOOD	THREAT	X	X	X	X	X	X	X	X	X		X	X	X			X	X	X	K	X	X	X	X				X			X		X	X	X
8*	2075C	Barrier Island		FAIR		X	X	X			X	X	X			X	X						K	X	X	X	X							X	X	X	X	X
9*	2068	BUCK CREEK		THREAT	X	X	X	X	X	X	X				X	X	X				X	X	K		X			K			X	X		X	X	X	X	X
10*	2072	DIRECT RUNOFF TO BAY		THREAT	X	X	X	X		X					X	X	X				X	X	X		X			K							X	X	X	X
11*	2067	OYSTER CREEK		THREAT	X	X	X	X	X	X	X	X	X			X									X		X								X	X	X	X
12*	2075D	Barrier Island		FAIR		X	X	X			X	X	X			X	X						K	X	X	X	X							X	X	X	X	X
13	2052	ROCK CREEK	FAIR	THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	K	X	X						X		X	X	X	X	X	X
14	1983A	LEMON BAY	FAIR	THREAT	X	X	X	X	X	X	X	X	X		X	X	X			X	X	X	K	X	X	X	X				X			X		X	X	X
15*	2051	DIRECT RUNOFF TO BAY		FAIR	X	X	X	X	X		X	X	X		X	X	X			X	X	X	K		X	X	X				X			X	X	X	X	X
16*	2050	UNNAMED DITCH		THREAT	X	X	X	X	X		X	X	X		X	X	X			X	X	X	K	X	X	X					X		X	X	X	X	X	X
17	2049	GOTTFRIED CREEK	FAIR	THREAT	X	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	K	X	X	X	X	K			X		X	X	X	X	X	X
18	2039	FORKED CREEK	FAIR	FAIR	X	X	X	X	X	X	X	X	X		X	X	X			X	X	X	K		X	X		K			X	X	X	X	X	X	X	X
19	2042	DIRECT RUNOFF TO BAY	FAIR	THREAT	X	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	K	X	X			K			X			X	X	X	X	X
20*	2021	DIRECT RUNOFF TO BAY		FAIR	X	X	X	X	X		X	X	X		X	X	X			X	X	X	K		X	X					X			X	X	X	X	X
21	2030	ALLIGATOR CREEK	POOR	THREAT	X	X	X	X	X		X	X	X		X	X	X			X	X	X	K	X	X	X	X				X	X		X	X	X	X	X
22	2018	DIRECT RUNOFF TO BAY	GOOD	FAIR	X	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	K		X			X						X	X	X	X	X
23	2015	HATCHETT CREEK	FAIR	THREAT	X	X	X	X	X	X	X	X	X		X	X	X			X	X	X	K	X	X			X			X	X	X	X	X	X	X	X
24*	2016	BLACKBURN CANAL		FAIR	X	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	K	X	X			X			X			X	X	X	X	X
25*	2017	DIRECT RUNOFF TO BAY		THREAT	X	X	X	X	X		X					X					X		K		X						X			X				
26	2009	CURRY CREEK	FAIR	THREAT	X	X	X	X	X		X	X	X		X	X	X			X	X	X	K	X	X						X	X		X	X	X	X	X
27	2002	DONA BAY	FAIR	THREAT	X	X	X	X	X	X	X	X	X		X	X	X			X	X	X	K	X	X			X			X	X		X	X	X	X	X
28	1968F	Little Sarasota Bay	GOOD	FAIR	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	K	X	X						X			X	X	X	X	X
29*	1994	SALT CREEK		FAIR	X	X	X	X	X		X	X	X		X	X	X			X	X	X	K		X						X	X	X	X	X	X	X	X
30*	1993	DIRECT RUNOFF TO BAY		FAIR	X	X	X	X	X		X	X	X		X	X	X			X	X	X	K	X	X						X			X	X	X	X	X
31*	1996	FOX CREEK		FAIR	X	X	X	X	X		X	X	X		X	X	X			X	X	X	K		X						X	X	X	X	X	X	X	X
32	1992	DIRECT RUNOFF TO BAY	GOOD	THREAT	X	X	X	X	X	X	X	X	X		X	X	X			X	X	X	K	X	X			X						X	X	X	X	X
33	1984A	NORTH CREEK	POOR	THREAT	X	X	X	X	X	X	X	X	X		X	X	X			X	X	X	K	X	X		X	X			X	X	X	X	X	X	X	X
34	1982	SOUTH CREEK	FAIR	THREAT	X	X	X	X	X		X	X	X		X	X	X			X	X	X	K	X	X						X	X	X	X	X	X	X	X
35*	1987	UNNAMED DRAIN		THREAT	X	X	X		X		X	X	X			X						X	K		X						X		X	X	X	X	X	
36	1968E	Little Sarasota Bay	FAIR	FAIR	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	K	X	X				X	X	X	X		X	X	X	X	X
37	1984	CATFISH CREEK	FAIR	THREAT	X	X	X	X	X	X	X	X	X		X	X	X			X	X	X	K	X	X		X	X			X	X	X	X	X	X	X	X
38	1975A	CLOWERS CREEK	POOR	THREAT	X	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	K	X	X			X			X	X		X	X	X	X	X
39*	1985	UNNAMED CREEK		THREAT	X	X	X	X				X	X							X	X	X	K								X		X	X	X	X	X	X
40*	1979	DIRECT RUNOFF TO BAY		FAIR	X	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	K	X	X			X			X			X	X	X	X	X
41	1975	ELLIGRAW BAYOU	POOR	THREAT	X	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	K	X	X			X	X	X	X	X		X	X	X	X	X
42	1971	CLARK LAKE	FAIR	FAIR	X	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	K	X	X						X			X	X	X	X	X
43	1968D	ROBERTS BAY	FAIR	FAIR	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	K	X	X						X			X	X	X	X	X
44*	1966	UNNAMED DITCH		POOR	X	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	K	X	X						X		X	X	X	X	X	X
45	1924	COW PEN SLOUGH	GOOD	FAIR	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	K	X	X						X		X	X	X	X	X	X
46	1968C	Sarasota Bay	GOOD	FAIR	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	K	X	X						X			X	X	X	X	X
47*	1941	UNNAMED DITCH		FAIR	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	K	X	X						X		X	X	X	X	X	X
48*	1961	DIRECT RUNOFF TO BAY		FAIR	X	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	K	X	X			X						X	X	X	X	X
49	1947	PHILIPPE CREEK	FAIR	POOR	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	K	X	X		X		X	X	K	X	X	X	X	X	X	X

NPS QUALITATIVE SURVEY RESULTS
AN "X" INDICATES A PROBLEM WITH POLLUTANT OR SOURCE
THE * ON MAPID INDICATES NO STORET INFORMATION AVAILABLE FOR THIS WATERSHED
-SEE PAGE 11 FOR LEGEND FOR THIS TABLE-

CATNAME=SARASOTA BAY HUC=03100201
(continued)

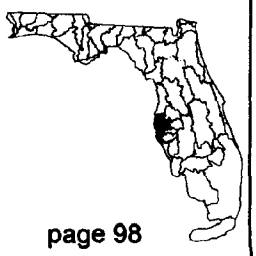
MAP_ID	WBID	BASIN	WQ30	WQNS	NUTRIENT	BACTERIA	SEDIMENT	OIL	PESTICIDE	OTHER CHEMICAL	DEBRIS	OXYGEN	SALINITY	PH	METAL	HABITAT	FLOW	THERMAL	OTHER POL	FISHKILL	ALGAE	WEED	TURBID	ODOR	FISHDEC	NOSWIM	NOFISH	OTHERS	IND	STP	AG	RE	SL	LD	UR	CN	HM	OT
50*	1954	DIRECT RUNOFF TO BAY		FAIR	X	X	X	X	X	X	X	X	X		X	X	X			X	X	X	X		X		X				X			X	X	X	X	X
51	1953	HUDSON BAYOU	FAIR	POOR	X	X	X	X	X	X	X	X	X		X	X	X			X	X	X	X	X	X		X	X			X			X	X	X	X	X
52	1951	DIRECT RUNOFF TO BAY	FAIR	FAIR	X	X	X	X	X	X	X	X	X		X	X	X			X	X	X	X	X	X			X						X	X	X	X	X
53*	1916	DIRECT RUNOFF TO BAY		FAIR	X	X	X	X	X	X	X	X	X		X	X	X			X	X	X	X		X			X						X	X	X	X	X
54	1937	PHILIPPI CREEK	FAIR	POOR	X	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X						X	X	X	X	X	X	X	X
55	1936	WHITAKER BAYOU	POOR	FAIR	X	X	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X		X			X	X			X	X	X	X	X
56	1931	DIRECT RUNOFF TO GULF	POOR	THREAT	X	X	X	X	X	X	X				X	X	X				X	X	X	X	X			X							X	X	X	X
57	1968B	Sarasota Bay	GOOD	FAIR	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X	X	X						X			X	X	X	X	X
58	1896	BOWLES CREEK	FAIR	FAIR	X	X	X	X	X	X	X	X	X		X	X	X			X	X	X	X	X	X	X	X	X			X				X	X	X	X
59	1888	DIRECT RUNOFF TO BAY	FAIR	FAIR	X	X	X	X	X	X	X				X	X	X		X		X	X	X	X	X			X	X	X	X			X	X	X	X	X
60*	1885	WEST CEDAR HAMMOCK		FAIR	X	X	X	X			X	X	X			X					X		X	X	X		X				X								
61*	1883	PALMA SOLA BAY		THREAT	X	X	X	X	X	X	X	X	X	X	X	X	X		X		X	X	X	X	X			X				X				X	X	X	X
62	1968A	Anna Maria Sound	GOOD	FAIR	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X	X	X						X			X	X	X	X	X
63*	1862	DIRECT RUNOFF TO BAY		FAIR	X	X	X	X							X		X				X		X		X			X			X				X	X	X	X	X



TAMPA BAY BASIN
03100206

AVERAGE WATER QUALITY
1984-1993 STORET DATA
WATERSHED ID NUMBERS LINK MAP TO TABLES
* INDICATES QUALITATIVE ASSESSMENT

WATER QUALITY
- GOOD
- THREATENED
- FAIR
- POOR
- UNKNOWN



TAMPA BAY BASIN

Basic Facts

Drainage Area: 350 square miles
Major Land Uses: urban development
Population Density: high (Tampa, St. Petersburg, Clearwater)
Major Pollution Sources: urban runoff; industrial domestic discharge
Best Water Quality Areas: Lower Tampa Bay
Worst Water Quality Areas: Delaney Creek, Lake Maggiore, Cockroach Bay
Water Quality Trends: stable quality at 11 sites, improvements in Hillsborough and Tampa Bay
OFW Waterbodies:
Pinellas County Aquatic Preserve
Cockroach Bay State Aquatic Preserve
Terra Ceia State Aquatic Preserve
SWIM Waterbodies:
Tampa Bay
Lake Tarpon
Reference Reports:
Tampa Bay SWIM Plan, SWFWMD, 1989
Tampa Bay National Estuary Program Nomination, DEP/SWFWMD, 1988
Basis, Sea Grant (Mangrove Systems), 1982
Ecological Assessment, Classification and Management of Tampa Bay Tidal Creeks, TBRPC, 1986
Proceedings, Tampa Bay Scientific Information Symposium 2 (February 27 - March 1, 1991), S.F. Treat and P.A. Clark editor 1991
Tampa and Sarasota Bays: Issues, Resources Status, and Management NOAA Estuary of the Month Series No. 11, U.S. Department of Commerce, 1989
Basin Water Quality Experts:
Doug Farrell, DEP (Tampa), 813/620-6100
Don Moores, Pinellas County, 813/462-4761
Dick Eckenrod, Tampa Bay National Estuary Program

In the News

* Consent orders have been signed and fines levied against five comp that loaded fertilizer on to ships in Hillsborough Bay. Bay water

tested near the fertilizer terminals after rain contained phosphorus and nitrogen concentrations hundreds to thousands of times higher than limits set for WWTPs.

* Tampa Bay is part of the EPA's National Estuary Program.
* The area surrounding Weedon Island has been closed to motorboat traffic in an effort to protect seagrasses from boat prop scarring.

Ecological Characterization

Tampa Bay is a multi-lobed (roughly Y-shaped) estuarine system which opens into the Gulf of Mexico approximately midway down the west central coast of peninsular Florida. The bay is often divided into sub-areas: Old Tampa Bay, Hillsborough Bay/McKay Bay, Middle Tampa Bay, Lower Tampa Bay, Boca Ciega Bay, and Terra Ceia Bay. The Manatee River estuary is also sometimes considered a section of the bay. Geomorphology and a difference in certain chemical and physical properties of the sub-areas are the normal criteria utilized to sub-divide the system.

Tampa Bay is approximately 35 miles long, 10 miles wide, and covers a total surface area of about 346 square miles with a shoreline of 212 statute miles. The overall estuary is a rather shallow water body, having a mean depth of 11 feet, with 90% of the total bay area less than 22 feet deep. Tampa Bay was reported as being the second largest estuarine system of the 40 estuaries examined along the entire Gulf Coast. River systems that empty into the bay include the Hillsborough River, the Alafia River, the Little Manatee River and, just south of Terra Ceia, the Manatee River. Because of reduced freshwater inflows and the influence of the Gulf of Mexico waters, Tampa Bay waters are of higher salinity and clarity than many estuaries. Because of its natural and anthropogenic phosphorus input, the bay is extremely nitrogen-limited (i.e., increases in nitrogen can cause algae blooms). Major cities in the basin include Tampa and St. Petersburg.

The tremendous increase in Florida's population over the past several decades has resulted in increased development along the shoreline of the bay. This development, together with increased pollutant loading, shoreline and bay bottom alterations, and wetland destruction has led to a gradual degradation of the Tampa Bay estuary. Various ecological changes in the bay system over this period of time have been documented chemically, physically and biologically. Historically, a much higher proportion of production in the bay was based on mangrove forests and seagrass beds. With increased nutrient input, phytoplankton are becoming a more dominant member of the bay community.

The degradation of the bay has spurred intensive efforts over the last ten years by local scientists, environmental organizations, politicians and engineers to reverse the trends. Protective management policies, legislation and regulation have been adopted. As a result, at least one portion of the bay's system, Hillsborough Bay, has shown some recovery, based on chlorophyll levels.

Anthropogenic Impacts

Biological and water quality degradation of the Tampa Bay system has been well documented. The primary reason for this degradation is the intensive residential and industrial development of the area which has led to: 1. Vegetative denudation and associated erosion and stormwater runoff problems in the coastal zone area;

2. Alteration of bay circulation patterns by channels, causeways and spoil islands;

3. Dredging and filling projects related to harbor development, industrialization, and finger fills for increased housing;
4. Attenuation of fresh water inflow of rivers for consumptive use;
5. Increased pollutant loading related to all of the above factors, and exacerbated by the naturally slow flushing rate of the bay.
6. Alteration of water quality and habitat in tidal streams.
7. Boat prop scarring of seagrass beds.

In the past 30 years, loss of coastal vegetation (primarily mangroves) and seagrasses in the bay system has been substantial in terms of total acreage. Estimates of vegetative loss range from 50-80% for seagrass and about 50% for mangroves. The overall importance of these losses is directly related to biological integrity of the estuary since the wetlands vegetation (both submerged and emergent) serves as an important food source, nursery ground and substrate habitat for many species of marine organisms. A more recent trend, 1982-1990, shows a 10% increase in Tampa Bay.

In addition to the habitat destruction, Tampa Bay has also suffered from significant point and nonpoint sources of pollution. Due to the ecological, economic and aesthetic importance of this waterbody and the noted water quality degradation, Tampa Bay has become a major focus of local, regional and state actions to reverse the negative trends. It has been legislatively designated as a priority SWIM waterbody, and a knowledgeable advisory committee has been set up. Needed studies are occurring and restoration efforts are ongoing.

Nonpoint source pollution is a serious problem in the bay system. With the shift from wetland and upland vegetation to streets, lawns and buildings, the quality of runoff severely decreases while the quantity increases. The bay also serves as a shipping channel to the port and is subject to oil and grease pollution, sewage, and occasional fuel and/or cargo spills. An extreme phosphorus and nitrogen loading source appears to be the port itself, which serves as a loading and unloading facility for items such as fertilizers, pesticides, concrete and oil. Spills and waste of these products can be washed into the bay water during rains. Even a 0.1% fertilizer product loss would make this the major nitrogen source to the bay.

In addition to the substantial habitat destruction and nonpoint pollution problems, several point source dischargers affect the bay. The worst water quality problems are found in Hillsborough and McKay Bays. This area receives 60 MGD (to be expanded to 90 MGD) of treated wastewater from Hooker's Point advanced treatment plant, 1268 MGD of cooling and process water from the TECO Power Company, and, several other small industrial discharges in this portion of the bay. These are detailed in the following paragraphs.

The Hillsborough River enters the northern portion of the bay, and, while the lower river has no point sources, it receives nutrient and toxins (found in sediments) loading from Tampa urban runoff. The Alafia River, a particularly important source of nutrients to the bay, has extensive phosphate mining and fertilizer production operations in its headwaters. A phosphate processor, Cargill, is located at the mouth of the river. A 1987 release of about 14 million gallons of highly acidic process water burned hundreds of acres of productive Tampa Bay habitat. Restoration of Tampa Bay at the mouth of the Alafia River is in progress.

The smaller tributaries in Hillsborough Bay area also have problems. A 1985 intensive survey of Delaney Creek indicated that there were frequent DO violations and nutrient problems. Discharge from Nitram, a nitrogen fertilizer company, has historically been a problem, but is now in compliance. In the past the creek may have received leachate or accidental spills from a battery splitting operation. That business has

since been closed. The site is currently under hazardous waste cleanup enforcement. A domestic WWTP discharge has been proposed for the creek.

Palm River and Sixmile Creek, now components of the Tampa Bypass Canal, have nutrient, bacteria and DO problems. The dischargers to these reaches include phosphorus and nitrogen processors and the Eastside WWTP (which discharges to Sixmile Creek via Harney Creek). The worst water quality problems, however, appear to be caused by the historical pollutant loading and the current nonpoint runoff entering this small river system. It flows through a heavily developed portion of Tampa and has been extensively ditched, channeled, and walled. The major Palm River problem appears to be nonpoint input of nutrients at fertilizer loading terminals.

In summary, Hillsborough Bay suffers from the highest concentration of pollution sources in the Tampa Bay system. It has historically had the worst water quality in the basin. However, there has been some notable improvement since the Hookers Point plant converted to advanced treatment in the early 1979. There has also been a net improvement of the industrial discharges. However, continued vigilance of discharges and the abatement of runoff is required to maintain or improve conditions in Hillsborough Bay.

Old Tampa Bay also has problematic tributaries. Sweetwater Creek exhibits high nutrient concentrations and low DO values. Rocky Creek has elevated bacteria counts as well as nutrient and DO problems. Alligator Creek has high nutrient concentrations; and finally, the Cross Bayou Canal has nutrient, bacteria and DO problems. Many of the these problems are caused by the numerous, small WWTPs located in Hillsborough County operating under temporary permits (TOP). The treatment processes of many of these facilities are inadequate to meet required treatment levels. There was a legislative bill passed in 1987 requiring all domestic dischargers to Tampa and Sarasota Bays to attain advanced treatment standards. This condition is still far from being satisfied. The bill was somewhat controversial among environmentalists because it has had the effect of increasing permit requests for surface discharge as opposed to encouraging more innovative methods such as water reuse. There are several ongoing studies and actions in the Old Tampa Bay drainage. An impact study of Rocky Creek has been conducted. A historical biological study of western Old Tampa Bay indicated poor conditions. Local experts indicate a degrading water quality trend in Old Tampa Bay. Brushy Creek receives WWTP discharges. WWTP's no longer discharge to Cross Bayou Canal. Pinellas County has initiated a monitoring effort on that waterbody. Nonpoint sources are still a problem for the entire drainage area. Tampa Bay proper exhibits better water quality than Old Tampa Bay or Hillsborough Bay because it has greater mixing and dilution with the Gulf of Mexico waters and less concentrated pollution sources. Development is fairly intense along its shoreline, and there are both domestic and industrial discharges. Cockroach Bay, located on the east side of Tampa Bay, has been downgraded from good to poor water quality. It is affected by septic tanks and the lower part of Cockroach Bay has heavy agricultural impacts.

Because of its close connection to the Gulf, Terra Ceia Bay has very good water quality. Development around this bay threatens it with increased runoff and mangrove cutting; although there have been some enforcement cases which will hopefully deter the latter. The Pinellas County portion of Tampa Bay is also designated as an OFW to protect it from further degradation; however, under current law, many of the existing discharges to the bay will be allowed to continue operating. The Intergovernmental Program Section of DEP (formerly Coastal Zone Management) has been conducting sediment metals surveys of port areas and also some "ambient" sites within estuaries. Seven different metals were measured. The Tampa Bay results show metals enrichment (particularly lead, zinc and cadmium) in sediment throughout much of Hillsborough Bay and associated with navigation channels. Another "hot spot" for metals enrichment was the Port of St. Petersburg. Radium and radon levels are high in the bay; in fact, studies from the University of South Florida found them to be the highest of any Gulf Coast continental shelf

area. The suspected source is the Alafia River from the mining activities there or perhaps leachate from fissures under nearby gypsum stacks.

The National Ocean Survey (NOS) has completed a study of fishes and sediments in the bay for toxin problems. In addition, USF has performed sediment sampling for metals. NOS has also completed a tidal circulation study. Information from that study will be used to correct tide tables and predict currents more accurately and also provide information to aid in hydrologic/eutrophication modeling of the bay.

In August 1990, Pinellas County initiated a water resources monitoring network. The stated goals of that program are the development of specific watershed management plans for the drainage basins throughout the county. The county is preparing management plans for Allen's Creek, Lake Tarpon, and Lake Seminole.

In summary, Tampa Bay has suffered impacts from wetland and seagrass destruction and coastline alteration; severe stormwater pollution from residential and commercial sources; dredging and harbor activities; litter; fertilizer, food processing, and other industrial discharges; and a heavy load of domestic wastewater from power and sewage treatment utilities. The bay has extremely high phosphorus levels and is nitrogen limited. Recent trends in water quality show improving conditions in Hillsborough Bay. SWIM legislation has targeted Tampa Bay as one of the waterbodies to receive funding for restoration and other management projects. The plan encompasses stormwater control, habitat restoration and increased environmental monitoring and assessment.

** USGS HYDROLOGIC UNIT: 03100206 TAMPA BAY

SURFACE WATER QUALITY DATA FOR 1970-1993
MEDIAN VALUES FOR EACH WATERSHED
CURRENT PERIOD OF RECORD (1989-1993) USED WHERE AVAILABLE
PERIOD PRIOR TO 1989 IS EVALUATED AS HISTORICAL INFORMATION

INDEX	GOOD	FAIR	POOR
WQI-RIVER	0-44	45-59	60-90
TSI-ESTUARY	0-49	50-59	60-100
TSI-LAKE	0-59	60-69	70-100

WATERSHED ID	NAME	WATERSHED DATA RECORD: MAX #OBS	BEG YR	END YR	DATA PERIOD	WATER CLARITY: TURB	SD	COLOR	TSS	DISSOLVED OXYGEN: DO	DOSAT	OXYGEN DEMAND: BOD	COD	TOC	PH	ALKALINITY: ALK	TROPHIC STATUS: NITRO	PHOS	CHLA	COLIFORM: TOTAL	FECL	BIOLOGICAL SPECIES DIVERSITY: NAT	ART	BECK	COND	FLOW	WATER QUALITY INDICES: WQI	TSI
* WATER BODY TYPE: ESTUARY																												
7	TAMPA BAY LOWER	1228	89	93	Current	5.5	2.7	2	10	6.4	75	0.8	.	3	7.9	.	0.44	0.05	3	2	2	.	.	.	51000	.	.	32
9	BISHOPS HARBOR	570	73	82	Historical	4.4	1.2	14	21	6.4	75	4.7	.	6	8.2	127	0.64	0.38	7	5	5	4.0	2.9	.	36750	.	.	46
10	COCKROACH BAY	110	89	93	Current	8.5	0.6	20	36	4.5	54	2.5	.	.	7.6	.	0.93	0.40	9	70	50	.	.	.	40250	.	.	64
11	TAMPA BAY MID	1726	89	93	Current	5.0	2.4	5	.	6.4	73	1.1	.	.	7.8	.	0.52	0.17	3	2	2	.	.	.	48450	.	.	36
12	DIR RUNOFF TO BAY	57	74	75	Historical	3.2	0.8	16	24	7.3	90	2.2	.	4	8.0	99	0.34	0.78	6	248	50	.	.	.	42375	.	.	48
16	TAMPA BAY UPPER	1512	89	93	Current	5.0	2.2	7	19	6.7	76	1.3	.	.	7.8	.	0.58	0.29	5	2	2	.	.	.	44000	.	.	39
20	BIG BEND BAYOU	194	89	93	Current	7.5	1.3	8	.	6.0	70	1.4	.	.	7.8	.	0.65	0.38	8	2	2	.	.	.	43500	.	.	48
24	Old Tampa Bay LOWER	860	89	93	Current	5.2	2.1	6	25	7.0	76	1.4	.	6	7.8	.	0.52	0.32	6	4	2	.	.	.	42400	.	.	41
26	Hillsborough Bay LOWER	1392	89	93	Current	7.5	1.4	9	19	6.7	76	1.6	.	6	7.9	.	0.65	0.41	8	3	2	.	.	.	41350	.	.	49
29	DIRECT RUNOFF TO BAY	189	89	93	Current	4.5	1.5	10	.	5.7	62	1.7	.	.	7.7	.	0.77	0.39	8	190	60	.	.	.	40000	.	.	48
31	CROSS CANAL (NORTH)	8	92	92	Current	8.7	0.7	50	19	3.6	41	.	.	10	7.7	162	1.26	0.32	8	.	180	.	.	.	26732	.	.	60
32	Hillsborough Bay UPPER	944	89	93	Current	8.0	1.1	9	.	6.3	73	1.9	.	.	7.8	.	0.75	0.43	9	4	3	.	.	.	40800	.	.	51
33	BLACK POINT CHANNEL	4	73	73	Historical	3.0	.	.	.	3.0	28	.	.	.	7.9	.	1.27	2.50	.	.	.	.	.	.	38700	.	.	61
34	Old Tampa Bay	748	89	93	Current	5.5	1.8	7	3	6.9	81	1.5	.	.	7.9	.	0.57	0.31	5	2	2	.	.	.	42750	.	.	42
37	McKay Bay	388	89	93	Current	6.5	1.3	9	.	5.0	56	1.5	.	.	7.7	.	0.75	0.36	9	16	6	.	.	.	41475	.	.	50
39	UNNAMED DITCH	3	71	71	Historical	2.2	.	.	.	7.1	86	.	.	9	7.8	.	3.56	1.80	.	.	.	.	.	.	33200	.	.	81
40	ALLEN CREEK	8	92	92	Current	6.8	0.8	20	27	5.5	65	.	.	7	7.7	119	0.90	0.39	13	.	69	.	.	.	35990	.	.	58
42	Old Tampa Bay	1488	89	93	Current	5.7	1.5	8	20	6.8	76	1.7	.	.	7.8	.	0.67	0.32	7	4	2	.	.	.	41225	.	.	47
45	UCETA YARD DRAIN	3	89	89	Current	2.6	1.7	10	.	6.8	75	.	.	.	8.1	.	0.74	0.32	.	50	5	.	.	.	46110	.	.	47
46	DIRECT RUNOFF TO BAY	190	89	93	Current	6.0	1.1	31	.	3.5	40	2.0	.	.	7.2	.	1.02	0.20	8	2400	930	.	.	.	30650	.	.	53
47	DIRECT RUNOFF TO BAY	67	72	76	Historical	6.0	.	10	9	5.3	64	3.7	.	5	8.3	.	0.90	1.10	3	.	.	.	.	.	35000	.	.	50
49	Old Tampa Bay	475	89	93	Current	6.5	1.2	10	25	6.4	72	1.7	.	6	7.8	119	0.70	0.30	7	6	3	.	.	.	39950	.	.	50
52	MULLET CREEK	8	92	92	Current	2.6	0.6	50	1	3.6	41	.	.	9	7.1	108	0.52	0.16	2	.	480	.	.	.	394	.	.	48
54	CHANNEL G	259	89	93	Current	4.2	1.0	26	.	5.2	61	1.6	.	.	7.2	.	1.18	0.22	6	900	325	.	.	.	7371	.	.	53
65	DOUBLE BRANCH	153	89	93	Current	7.5	0.9	48	.	4.5	50	1.4	.	.	7.2	.	0.97	0.27	5	460	300	.	.	.	27050	.	.	54
* WATER BODY TYPE: LAKE																												
1	LAKE HOBBS	30	70	70	Historical	5.0	.	0	.	.	.	.	.	.	6.2	8	0.52	0.03	.	.	.	.	.	.	215	.	.	43
14	LAKE MAGGIORE	27	71	80	Historical	26.9	0.3	34	.	13.4	165	.	.	.	8.2	103	3.94	0.11	98	.	.	.	.	.	1158	.	.	85
61	LAKE TARPON CANAL	30	89	91	Current	1.8	.	52	3	.	.	.	.	10	.	45	0.76	0.05	6	.	.	.	.	.	.	.	.	47
66	LAKE TARPON CANAL	51	89	92	Current	1.6	.	45	2	4.7	57	.	.	10	7.0	36	0.78	0.05	8	.	.	.	.	.	1674	.	.	50
69	LAKE MADELENE	326	70	84	Historical	4.0	.	9	8	7.1	87	1.1	.	9	6.7	4	0.66	0.02	.	49	.	.	.	.	160	.	.	41
77	LAKE CHARLES	34	70	73	Historical	1.7	.	50	.	.	.	.	.	.	7.4	67	0.75	0.02	.	.	.	.	.	.	245	0	.	39
78	BUCK LAKE	63	85	85	Historical	.	.	240	.	7.1	70	0.8	.	29	6.5	.	1.43	0.30	.	.	.	.	.	.	158	.	.	63
79	SADDLEBACK LAKE	39	70	73	Historical	2.5	.	31	.	.	.	.	.	.	7.2	52	0.54	0.01	.	.	.	.	.	.	140	0	.	34
80	STARVATION LAKE	2	92	92	Current	.	.	30	.	4.5	58	.	.	.	7.5	.	1.03	0.08	.	.	.	.	.	.	141	.	.	60
81	LAKE TARPON	318	89	92	Current	1.4	.	35	3	7.2	85	.	.	9	7.1	5	0.69	0.03	5	.	.	.	.	.	698	.	.	44
82	VAN DYKE LAKE	42	70	73	Historical	4.1	.	130	.	.	.	.	.	.	6.6	17	1.61	0.06	.	.	.	.	.	.	182	0	.	62
83	ROUND LAKE	36	70	73	Historical	1.4	.	10	.	.	.	.	.	.	7.6	114	0.55	0.02	.	.	.	.	.	.	257	0	.	35
87	LAKE CRENSHAW	33	70	73	Historical	5.0	.	50	.	.	.	.	.	.	5.4	1	1.68	0.05	.	.	.	.	.	.	50	0	.	51

LEGEND:
ALK-ALKALINITY MG/L
ART-ARTIFICIAL SUBSTRATE DI
BEG YR-BEGINNING SAMPLING YEAR
BECK-BECK'S BIOTIC INDEX
BOD-BIOCHEMICAL OXYGEN DEMAND MG/L
CHLA-CHLOROPHYLL UG/L
COD-CHEMICAL OXYGEN DEMAND MG/L
COLOR-COLOR PCU
COND-CONDUCTIVITY UMHOS
DO-DISSOLVED OXYGEN MG/L
DOSAT-DO % SATURATION
END YR-ENDING YEAR
FECL-FECAL COLIFORM MPN/100ML
FLOW-FLOW CFS
MAX #OBS-MAXIMUM NUMBER OF SAMPLES
NAT-NATURAL SUBSTRATE DIVERSITY
NITRO-TOTAL NITROGEN MG/L
PH-PH STANDARD UNITS
PHOS-TOTAL PHOSPHORUS MG/L
SD-SECCHI DISC METERS
TOC-TOTAL ORGANIC CARBON MG/L
TOTAL-TOTAL COLIFORM MPN/100ML
TSI-TROPHIC STATE INDEX
TSS-TOTAL SUSPENDED SOLIDS MG/L
TURB-TURBIDITY MG/L
WQI-WATER QUALITY INDEX

** USGS HYDROLOGIC UNIT: 03100206 TAMPA BAY

SURFACE WATER QUALITY DATA FOR 1970-1993
MEDIAN VALUES FOR EACH WATERSHED
CURRENT PERIOD OF RECORD (1989-1993) USED WHERE AVAILABLE
PERIOD PRIOR TO 1989 IS EVALUATED AS HISTORICAL INFORMATION

INDEX	GOOD	FAIR	POOR
WQI-RIVER	0-44	45-59	60-90
TSI-ESTUARY	0-49	50-59	60-100
TSI-LAKE	0-59	60-69	70-100

WATERSHED ID	NAME	WATERSHED DATA RECORD				WATER CLARITY				DISSOLVED OXYGEN		OXYGEN DEMAND			PH	ALKALINITY	TROPHIC STATUS				COLIFORM		BIOLOGICAL SPECIES DIVERSITY			COND	FLOW	WATER QUALITY INDICES	
		MAX #OBS	BEG YR	END YR	DATA PERIOD	TURB	SD	COLOR	TSS	DO	DOSAT	BOD	COD	TOC	PH	ALK	NITRO	PHOS	CHLA	TOTAL	FECL	NAT	ART	BECK	COND	FLOW	WQI	TSI
88	KEYSTONE LAKE	76	72	80	Historical	3.2	1.2	.	.	8.5	61	1.0	.	.	5.5	15	0.59	0.03	.	235	38	.	.	.	77	.	.	45
94	LAKE BROOKER	30	79	79	Historical	6.0	0.3	.	.	10.4	125	.	.	.	.	.	3.10	0.51	.	.	.	.	.	.	160	.	.	87
95	LAKE HARVEY	38	71	71	Historical	4.0	.	80	.	.	.	.	.	.	6.3	90	1.22	0.03	.	.	.	.	.	.	129	.	.	44
* WATER BODY TYPE: STREAM																													
3	EUREKA SPRINGS RUN	50	72	78	Historical	3.0	.	5	.	6.2	69	3.4	8	12	7.1	151	1.03	0.35	.	21	7	.	.	.	475	.	44	.
6	MCMULLIN CREEK	116	72	76	Historical	.	.	.	.	.	.	.	.	.	7.8	.	.	.	.	325	240	.	.	.	.	.	41	.
8	FROG CREEK	118	72	76	Historical	.	.	.	.	.	.	.	.	.	7.5	.	.	.	.	1600	220	.	.	.	.	.	70	.
15	BULLFROG CREEK	288	89	93	Current	6.2	0.6	43	4	6.0	67	1.5	.	.	7.3	.	0.96	0.35	5	2150	1475	.	.	.	11018	41	54	.
17	BOOKER CREEK	19	79	80	Historical	169.8	.	.	.	.	.	4.2	82	25	.	.	1.93	0.39	.	13E4	23000	.	.	.	.	57	83	.
23	DIR RUNOFF TO BAY	2	75	75	Historical	3.0	.	40	.	.	.	4.4	190	.	7.6	.	4.25	1.40	.	4600	930	.	.	.	15640	.	71	.
41	DELANEY CREEK	218	89	93	Current	9.5	0.4	56	6	3.5	41	2.3	.	.	7.2	.	2.31	0.83	6	3950	1600	.	.	.	2235	.	75	.
43	Palm River	498	89	93	Current	5.7	1.2	13	6	5.6	62	3.3	.	5	7.7	.	1.03	0.34	14	175	75	.	.	.	39600	.	55	.
44	YBOR CITY DRAIN	53	83	87	Historical	.	.	.	38	.	.	6.0	83	.	6.5	.	6.33	1.22	.	.	.	.	.	.	6919	59	88	.
48	ALLIGATOR CREEK	220	70	87	Historical	13.0	.	50	26	6.9	77	2.5	37	16	7.3	92	1.32	0.47	.	.	.	.	.	.	420	5	52	.
51	Sixmile Creek	189	89	93	Current	8.0	0.9	18	.	7.0	80	2.9	.	7	7.9	.	0.72	0.21	19	250	200	.	.	.	538	.	43	.
55	TAMPA BYPASS CANAL	24	89	92	Current	2.3	.	6	.	7.7	87	.	.	2	7.7	.	0.92	0.12	.	.	.	.	.	.	470	.	26	.
56	BISHOP CREEK	34	70	71	Historical	5.0	.	15	.	7.4	86	.	.	18	7.7	71	0.66	0.13	.	.	.	.	.	.	8320	0	45	.
60	SWEETWATER CREEK	95	89	93	Current	6.0	0.9	37	5	3.7	39	1.6	.	8	6.8	.	1.02	0.64	5	700	350	.	.	.	353	3	60	.
63	Rocky Creek	217	89	93	Current	7.5	1.1	25	5	5.0	55	2.5	.	9	7.4	.	1.19	0.30	15	932	140	.	.	.	19478	27	58	.
72	BRUSHY CREEK	5	92	92	Current	.	.	33	.	3.5	38	1.0	.	13	6.6	.	0.81	0.11	.	447	320	.	.	.	285	1	53	.
84	BROOKER CREEK	41	89	92	Current	.	.	230	.	2.3	26	.	.	42	6.0	.	1.38	0.04	.	.	.	.	.	.	195	1	77	.
92	UPPER BROOKER CREEK	48	70	88	Historical	2.6	.	50	7	4.9	57	1.1	.	.	5.0	2	0.86	0.04	.	658	60	.	.	.	77	487	34	.

LEGEND:
ALK-ALKALINITY MG/L
ART-ARTIFICIAL SUBSTRATE DI
BEG YR-BEGINNING SAMPLING YEAR
BECK-BECK'S BIOTIC INDEX
BOD-BIOCHEMICAL OXYGEN DEMAND MG/L
CHLA-CHLOROPHYLL UG/L
COD-CHEMICAL OXYGEN DEMAND MG/L
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TSI-TROPHIC STATE INDEX
TSS-TOTAL SUSPENDED SOLIDS MG/L
TURB-TURBIDITY MG/L
WQI-WATER QUALITY INDEX

SURFACE WATER QUALITY DATA SCREENING REPORT ** USGS HYDROLOGIC UNIT: 03100206 TAMPA BAY
MEDIAN VALUES FOR EACH WATERSHED SCREENED

'x'=EXCEEDS SCREENING CRITERIA
'0'=WITHIN SCREENING CRITERIA
'.'=MISSING DATA

WATERSHED ID	NAME	RANK WQI OR TSI	DATA RECORD CURRENT OR HISTORICAL	SCREENING VARIABLES AND CRITERIA: TN TN>2.0	STREAM TP TP>.46	LAKE TP TP>.12	PH PH>8.8 PH<5.2	ALK ALK<20	TURB & TSS TURB>16.5 TSS>18	COND COND>1275	OXYGEN DEMAND BOD>3.3 COD>102 TOC>27.5	DO DO<4	COLIFORM BACTI TOT>3700 FECAL>470	BIOL DIV DIART<1.95 DINAT<1.5 BECK<5.5	CHLA CHLA>40	SECCHI DISC SD<.7
* WATER BODY TYPE: ESTUARY																
7	TAMPA BAY LOWER	GOOD	Current	0	.	0	0	.	0	x	0	0	0	.	0	0
9	BISHOPS HARBOR	GOOD	Historical	0	.	x	0	0	x	x	x	0	0	0	0	0
10	COCKROACH BAY	POOR	Current	0	.	x	0	.	x	x	0	0	0	.	0	x
11	TAMPA BAY MID	GOOD	Current	0	.	x	0	.	0	x	0	0	0	.	0	0
12	DIR RUNOFF TO BAY	GOOD	Historical	0	.	x	0	0	x	x	0	0	0	.	0	0
16	TAMPA BAY UPPER	GOOD	Current	0	.	x	0	.	x	x	0	0	0	.	0	0
20	BIG BEND BAYOU	GOOD	Current	0	.	x	0	.	0	x	0	0	0	.	0	0
24	Old Tampa Bay LOWER	GOOD	Current	0	.	x	0	.	x	x	0	0	0	.	0	0
26	Hillsborough Bay LOWER	GOOD	Current	0	.	x	0	.	x	x	0	0	0	.	0	0
29	DIRECT RUNOFF TO BAY	GOOD	Current	0	.	x	0	.	0	x	0	0	0	.	0	0
31	CROSS CANAL (NORTH)	POOR	Current	0	.	x	0	0	x	x	0	x	0	.	0	x
32	Hillsborough Bay UPPER	FAIR	Current	0	.	x	0	.	0	x	0	0	0	.	0	0
33	BLACK POINT CHANNEL	POOR	Historical	0	.	x	0	.	0	x	.	x	.	.	.	.
34	Old Tampa Bay	GOOD	Current	0	.	x	0	.	0	x	0	0	0	.	0	0
37	McKay Bay	FAIR	Current	0	.	x	0	.	0	x	0	0	0	.	0	0
39	UNNAMED DITCH	UNKN	Historical	x	.	x	0	.	0	x	0	0	.	.	.	.
40	ALLEN CREEK	FAIR	Current	0	.	x	0	0	x	x	0	0	0	.	0	0
42	Old Tampa Bay	GOOD	Current	0	.	x	0	.	x	x	0	0	0	.	0	0
45	UCETA YARD DRAIN	GOOD	Current	0	.	x	0	.	0	x	.	0	0	.	.	0
46	DIRECT RUNOFF TO BAY	FAIR	Current	0	.	x	0	.	0	x	0	x	x	.	0	0
47	DIRECT RUNOFF TO BAY	FAIR	Historical	0	.	x	0	.	0	x	x	0	.	.	0	.
49	Old Tampa Bay	FAIR	Current	0	.	x	0	0	x	x	0	0	0	.	0	0
52	MULLET CREEK	FAIR	Current	0	.	x	0	0	0	.	0	x	x	.	0	x
54	CHANNEL G	FAIR	Current	0	.	x	0	.	0	x	0	0	0	.	0	0
65	DOUBLE BRANCH	FAIR	Current	0	.	x	0	.	0	x	0	0	0	.	0	0
* WATER BODY TYPE: LAKE																
1	LAKE HOBBS	GOOD	Historical	0	.	0	0	x	0	.	.	.	.	.	.	.
14	LAKE MAGGIORE	POOR	Historical	x	.	0	0	0	x	.	.	0	.	.	x	x
61	LAKE TARPON CANAL	GOOD	Current	0	.	0	.	0	0	.	0	.	.	.	0	.
66	LAKE TARPON CANAL	GOOD	Current	0	.	0	0	0	0	x	0	0	.	.	0	.
69	LAKE MADELENE	GOOD	Historical	0	.	0	0	x	0	.	0	0	0	.	.	.
77	LAKE CHARLES	GOOD	Historical	0	.	0	0	0	0	.	.	.	.	.	.	.
78	BUCK LAKE	FAIR	Historical	0	.	x	0	.	.	.	x	0	.	.	.	.
79	SADDLEBACK LAKE	GOOD	Historical	0	.	0	0	0	0	.	.	.	.	.	.	.
80	STARVATION LAKE	FAIR	Current	0	.	0	0	.	.	.	.	0	.	.	.	.
81	LAKE TARPON	GOOD	Current	0	.	0	0	x	0	.	0	0	.	.	0	.
82	VAN DYKE LAKE	FAIR	Historical	0	.	0	0	x	0	.	.	.	.	.	.	.
83	ROUND LAKE	GOOD	Historical	0	.	0	0	0	0	.	.	.	.	.	.	.
87	LAKE CRENSHAW	GOOD	Historical	0	.	0	0	x	0	.	.	.	.	.	.	.

LEGEND:
ALK-ALKALINITY
BECK-BECK'S BIOTIC INDEX
BIOL DIV-BIOLOGICAL DIVERSITY
CHLA-CHLOROPHYLL
COND-CONDUCTIVITY
DO-DISSOLVED OXYGEN
CURRENT-1989 TO 1993
DIART-ARTIFICIAL SUBSTRATE DIVERSITY
DINAT-NATURAL SUBSTRATE DIVERSITY
FECAL-FECAL COLIFORM BACTERIA
HISTORICAL-1970 TO 1988
OXYGEN DEMAND-BOD,COD,TOC
PH-PH
TN-NITROGEN
TP-PHOSPHORUS
TOT-TOTAL COLIFORM BACTERIA
TSS-TOTAL SUSPENDED SOLIDS
TURB-TURBIDITY
SD-SECCHI DISC METERS
WQI OR TSI-WATER QUALITY INDEX RATING WHICH INDEX USED, WQI OR TSI, IS BASED ON WATERBODY TYPE

SURFACE WATER QUALITY DATA SCREENING REPORT
MEDIAN VALUES FOR EACH WATERSHED SCREENED

** USGS HYDROLOGIC UNIT: 03100206 TAMPA BAY

'x'=EXCEEDS SCREENING CRITERIA
'0'=WITHIN SCREENING CRITERIA
'.'=MISSING DATA

WATERSHED ID	NAME	RANK WQI OR TSI	DATA RECORD CURRENT OR HISTORICAL	SCREENING VARIABLES AND CRITERIA: TN TN>2.0	STREAM TP TP>.46	LAKE TP TP>.12	PH PH>8.8 PH<5.2	ALK ALK<20	TURB & TSS TURB>16.5 TSS>18	COND COND>1275	OXYGEN DEMAND BOD>3.3 COD>102 TOC>27.5	DO DO<4	COLIFORM BACTI TOT>3700 FECAL>470	BIOL DIV DIART<1.95 DINAT<1.5 BECK<5.5	CHLA CHLA>40	SECCHI DISC SD<.7
88	KEYSTONE LAKE	GOOD	Historical	0	.	0	0	x	0	.	0	0	0	.	.	0
94	LAKE BROOKER	POOR	Historical	x	.	x	.	.	0	.	.	0	.	.	.	x
95	LAKE HARVEY	GOOD	Historical	0	.	0	0	0	0	.	.	.	.	.	.	.
* WATER BODY TYPE: STREAM																
3	EUREKA SPRINGS RUN	GOOD	Historical	0	0	.	0	0	0	.	x	0	0	.	.	.
6	MCMULLIN CREEK	GOOD	Historical	.	.	.	0	.	.	.	.	.	0	.	.	.
8	FROG CREEK	UNKN	Historical	.	.	.	0	.	.	.	.	.	0	.	.	.
15	BULLFROG CREEK	FAIR	Current	0	0	.	0	.	0	x	0	0	x	.	0	x
17	BOOKER CREEK	POOR	Historical	0	0	.	.	.	x	.	x	.	x	.	.	.
23	DIR RUNOFF TO BAY	POOR	Historical	x	x	.	0	.	0	x	x	.	x	.	.	.
41	DELANEY CREEK	POOR	Current	x	x	.	0	.	0	x	0	x	x	.	0	x
43	Palm River	FAIR	Current	0	0	.	0	.	0	x	x	0	0	.	0	0
44	YBOR CITY DRAIN	POOR	Historical	x	x	.	0	.	x	x	x	.	.	.	.	.
48	ALLIGATOR CREEK	FAIR	Historical	0	x	.	0	0	x	.	0	0	.	.	.	.
51	Sixmile Creek	GOOD	Current	0	0	.	0	.	0	0	0	0	0	.	0	0
55	TAMPA BYPASS CANAL	GOOD	Current	0	0	.	0	.	0	.	0	0	.	.	.	.
56	BISHOP CREEK	FAIR	Historical	0	0	.	0	0	0	x	0	0	.	.	.	.
60	SWEETWATER CREEK	POOR	Current	0	x	.	0	.	0	0	0	x	0	.	0	0
63	Rocky Creek	FAIR	Current	0	0	.	0	.	0	x	0	0	0	.	0	0
72	BRUSHY CREEK	FAIR	Current	0	0	.	0	.	.	.	0	x	0	.	.	.
84	BROOKER CREEK	UNKN	Current	0	0	.	0	.	.	.	x	x	.	.	.	.
92	UPPER BROOKER CREEK	GOOD	Historical	0	0	.	x	x	0	.	0	0	0	.	.	.

LEGEND:
ALK-ALKALINITY
BECK-BECK'S BIOTIC INDEX
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OXYGEN DEMAND-BOD,COD,TOC
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TN-NITROGEN
TP-PHOSPHORUS
TOT-TOTAL COLIFORM BACTERIA
TSS-TOTAL SUSPENDED SOLIDS
TURB-TURBIDITY
SD-SECCHI DISC METERS
WQI OR TSI-WATER QUALITY INDEX RATING WHICH INDEX USED, WQI OR TSI, IS BASED ON WATERBODY TYPE

SURFACE WATER QUALITY ASSESSMENT REPORT
TRENDS-SOURCES-CLEANUP

** USGS HYDROLOGIC UNIT: 03100206 TAMPA BAY

'x'=DEGRADING TREND
'0'=STABLE TREND
'+'=IMPROVING TREND
'.'=MISSING DATA

WATERSHED ID	NAME	QUALITY MEETS USE ?	RANK OR WQI TSI	OVER-ALL TREND	W Q or S I I	1984 - 1993 TRENDS: T N	T P	T C H L A	S D	P H	A L K	T U B	T S R	B O D	T C	D O	D O S A T	T C O L I	F C O L I	T E M P	F L O W	<--- PLEASE READ THESE COLUMNS VERTICALLY: DEGRADATION SOURCES, PRESENT CONDITIONS AND CLEANUP EFFORTS
* WATER BODY TYPE: ESTUARY																						
7	TAMPA BAY LOWER	YES	GOOD	+	+	0	+	+	0	x	.	x	.	x	.	0	+	0	0	0	.	
9	BISHOPS HARBOR	YES	GOOD																			
10	COCKROACH BAY	NO	POOR	0	0	0	0	0	0	0	.	0	.	0	.	0	0	0	0	0	0	
11	TAMPA BAY MID	YES	GOOD	+	+	0	+	+	0	x	.	x	.	0	.	0	0	0	0	0	+	.
12	DIR RUNOFF TO BAY	YES	GOOD																			
16	TAMPA BAY UPPER	YES	GOOD	+	+	+	+	+	+	x	.	x	+	0	.	0	0	0	0	0	0	.
20	BIG BEND BAYOU	YES	GOOD	+	+	0	+	+	0	0	.	x	.	0	.	0	0	0	0	0	0	.
24	Old Tampa Bay LOWER	YES	GOOD	+	+	+	+	+	+	x	.	x	0	+	.	0	+	0	0	0	0	.
26	Hillsborough Bay LOWER	YES	GOOD	+	+	+	+	+	+	x	.	x	+	0	.	0	0	+	0	0	0	.
29	DIRECT RUNOFF TO BAY	YES	GOOD	+	+	+	+	0	+	0	.	0	.	x	.	0	0	+	0	0	0	.
31	CROSS CANAL (NORTH)	NO	POOR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
32	Hillsborough Bay UPPER	PARTIAL	FAIR	+	+	+	+	+	+	x	.	x	.	0	.	0	0	+	0	0	0	.
33	BLACK POINT CHANNEL	NO	POOR																			
34	Old Tampa Bay	YES	GOOD	+	+	+	+	+	+	x	.	x	0	+	.	0	0	+	+	0	0	.
37	McKay Bay	PARTIAL	FAIR	+	+	+	+	+	+	0	.	x	.	0	.	0	0	+	0	0	0	.
39	UNNAMED DITCH	NO	UNKN																			
40	ALLEN CREEK	PARTIAL	FAIR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
42	Old Tampa Bay	YES	GOOD	+	+	+	+	+	+	x	.	x	+	0	.	0	0	0	0	0	+	.
45	UCETA YARD DRAIN	YES	GOOD	0	0	0	0	.	+	0	.	0	.	.	.	0	0	0	0	0	0	.
46	DIRECT RUNOFF TO BAY	PARTIAL	FAIR	0	0	0	0	0	0	0	.	x	.	0	.	0	0	0	0	0	0	.
47	DIRECT RUNOFF TO BAY	PARTIAL	FAIR																			
49	Old Tampa Bay	PARTIAL	FAIR	+	+	+	+	+	+	x	.	x	.	+	.	0	0	+	0	+	+	.
52	MULLET CREEK	YES	FAIR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
54	CHANNEL G	PARTIAL	FAIR	+	+	+	0	+	0	0	.	0	.	0	.	+	+	0	+	0	0	.
65	DOUBLE BRANCH	PARTIAL	FAIR	0	0	0	0	+	0	0	.	0	.	0	.	0	0	+	0	0	0	.
* WATER BODY TYPE: LAKE																						
1	LAKE HOBBS	YES	GOOD																			
14	LAKE MAGGIORE	NO	POOR																			
61	LAKE TARPON CANAL	YES	GOOD	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
66	LAKE TARPON CANAL	YES	GOOD	0	0	0	0	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
69	LAKE MADELENE	YES	GOOD	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
77	LAKE CHARLES	YES	GOOD																			
78	BUCK LAKE	PARTIAL	FAIR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
79	SADDLEBACK LAKE	YES	GOOD																			
80	STARVATION LAKE	PARTIAL	FAIR	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
81	LAKE TARPON	YES	GOOD	+	+	0	+	.	0	.	.	.	.	+	0	0	.	.	0	.		
82	VAN DYKE LAKE	PARTIAL	FAIR																			
83	ROUND LAKE	YES	GOOD																			

LEGEND:

ALK-ALKALINITY
BOD-BIOCHEM. OXYGEN DEMAND
CHLA-CHLOROPHYLL
DO-DISSOLVED OXYGEN
DOSAT-DO SATURATION
FCOLI-FECAL COLIFORM
FLOW-FLOW
MEETS USE-MEETS DESIGNATED USE
PH-PH
SD-SECCHI DISC METERS
TCOLI-TOTAL COLIFORM
TEMP-TEMPERATURE
TN-NITROGEN
TOC-T.ORGANIC CARBON
TP-PHOSPHORUS
TSS-TOTAL SUSPENDED SOLIDS
TURB-TURBIDITY
TSI-TROPHIC STATE INDEX FOR LAKES AND ESTUARIES
WQI-WATER QULAITY INDEX FOR STREAMS AND SPRINGS

SURFACE WATER QUALITY ASSESSMENT REPORT
TRENDS-SOURCES-CLEANUP

** USGS HYDROLOGIC UNIT: 03100206 TAMPA BAY

'x'=DEGRADING TREND
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WATERSHED ID	NAME	QUALITY RANK: MEETS USE ?	WQI OR TSI	OVER-ALL TREND	1984 - 1993 TRENDS: W Q or I I	T S I	T N	T P	T C H L A	S D	P H	A L K	T U R B	T S S	B O D	T O C	D O	D O S A T	T C O L I	F C O L I	T E M P	F L O W	T N	T P	DEGRADATION SOURCES, PRESENT CONDITIONS AND CLEANUP EFFORTS
87	LAKE CRENSHAW	YES	GOOD																						
88	KEYSTONE LAKE	YES	GOOD																						
94	LAKE BROOKER	NO	POOR																						
95	LAKE HARVEY	YES	GOOD																						
* WATER BODY TYPE: STREAM																									
3	EUREKA SPRINGS RUN	YES	GOOD																						
6	MCMULLIN CREEK	YES	GOOD																						
8	FROG CREEK	NO	UNKN																						
15	BULLFROG CREEK	PARTIAL	FAIR	0	0		0	0	0	+	0	.	0	0	0	0	x	x	0	0	0	0	0		
17	BOOKER CREEK	NO	POOR																						
23	DIR RUNOFF TO BAY	NO	POOR																						
41	DELANEY CREEK	NO	POOR	+	0		+	0	0	0	x	.	+	+	+	.	x	x	0	0	0	0	.		
43	Palm River	PARTIAL	FAIR	+	0		+	+	+	+	0	.	x	.	0	0	0	0	0	0	0	0	.		
44	YBOR CITY DRAIN	NO	POOR	.	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.		
48	ALLIGATOR CREEK	PARTIAL	FAIR	.	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.		
51	Sixmile Creek	YES	GOOD	0	0		+	0	0	0	+	.	x	.	0	0	+	+	0	0	0	0	.		
55	TAMPA BYPASS CANAL	YES	GOOD	0	0		0	0	.	.	0	.	0	.	.	0	0	0	.	.	.	0	.		
56	BISHOP CREEK	PARTIAL	FAIR																						
60	SWEETWATER CREEK	NO	POOR	0	0		0	0	0	.	0	.	0	.	+	0	0	0	0	0	0	0	0		
63	Rocky Creek	PARTIAL	FAIR	0	0		0	0	0	0	0	.	x	0	0	0	0	0	0	0	0	0	0		
72	BRUSHY CREEK	PARTIAL	FAIR	.	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.		
84	BROOKER CREEK	NO	UNKN	0	0		0	0	0	.	0	.	.	.	.	0	0	0	.	.	.	0	0		
92	UPPER BROOKER CREEK	YES	GOOD	.	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.		

<--- PLEASE READ THESE COLUMNS VERTICALLY

LEGEND:

ALK-ALKALINITY
BOD-BIOCHEM. OXYGEN DEMAND
CHLA-CHLOROPHYLL
DO-DISSOLVED OXYGEN
DOSAT-DO SATURATION
FCOLI-FECAL COLIFORM
FLOW-FLOW
MEETS USE-MEETS DESIGNATED USE
PH-PH
SD-SECCHI DISC METERS
TCOLI-TOTAL COLIFORM
TEMP-TEMPERATURE
TN-NITROGEN
TOC-T.ORGANIC CARBON
TP-PHOSPHORUS
TSS-TOTAL SUSPENDED SOLIDS
TURB-TURBIDITY
TSI-TROPHIC STATE INDEX FOR LAKES AND ESTUARIES
WQI-WATER QULAITY INDEX FOR STREAMS AND SPRINGS

NPS QUALITATIVE SURVEY RESULTS
AN "X" INDICATES A PROBLEM WITH POLLUTANT OR SOURCE
THE * ON MAPID INDICATES NO STORET INFORMATION AVAILABLE FOR THIS WATERSHED
-SEE PAGE 11 FOR LEGEND FOR THIS TABLE-

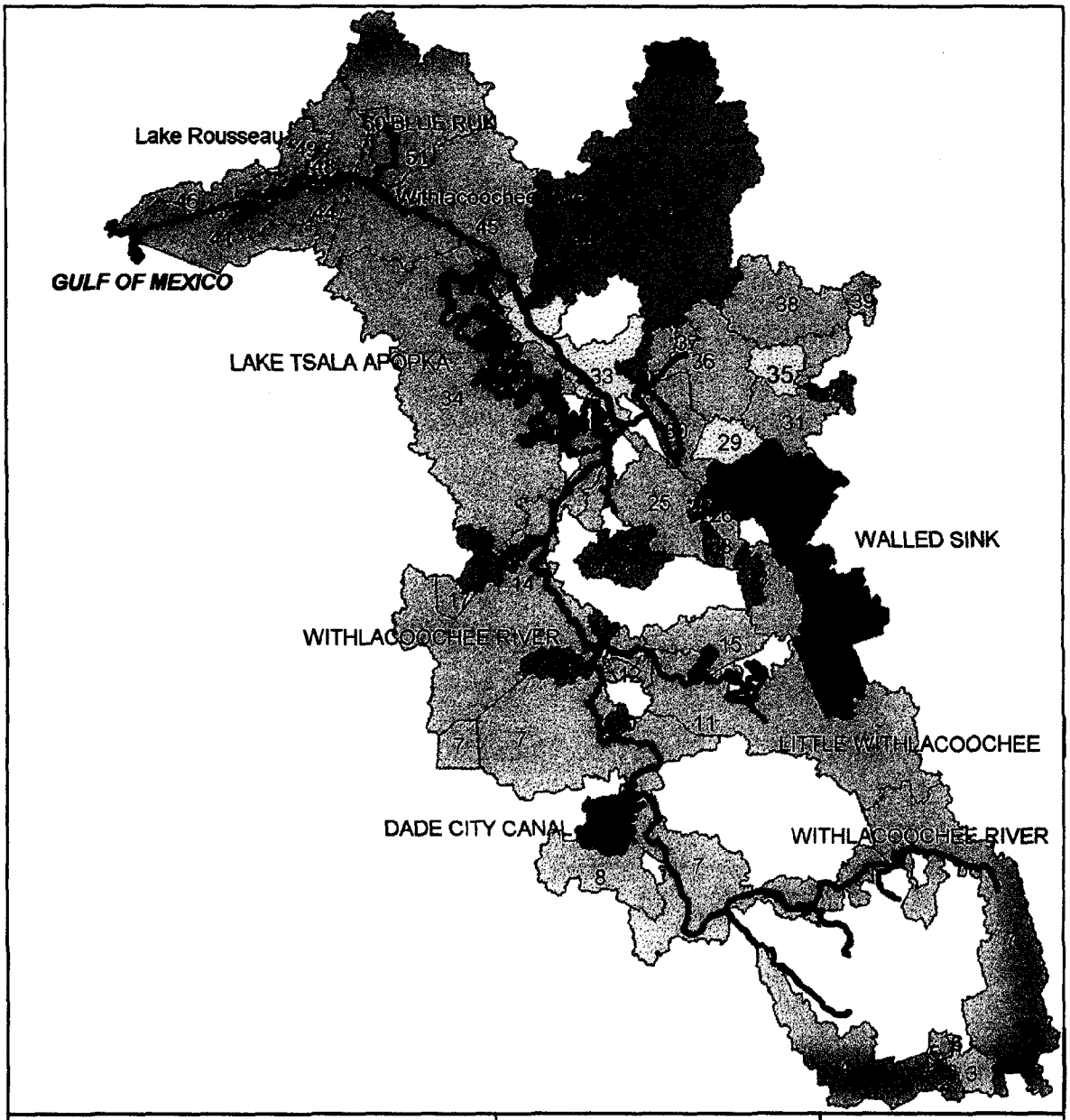
CATNAME=TAMPA BAY HUC=03100206

MAPID	WBID	BASIN	WQ3 0S	WQNPS	NUTRIENT	BACTERIA	SEDIMENT	OIL	PESTICIDE	OTHER	DEBRIS	OXYGEN	SALINITY	PH	METAL	HABITAT	FLOW	THERMAL	OTHER	FISHKILL	ALGAL	WEED	TURBIDITY	ODOR	FISHDEC	NOSWIM	NOFISH	OTHERSYM	IND	STP	AG	RE	SL	LD	UR	CN	HM	OT
1	1478F	LAKE HOBBS	GOOD	THREAT	X		X	X		X	X					X							X											X		X		
2*	1494	LAKE DRAINAGE DITCH		THREAT			X	X		X	X					X							X											X		X		
3	1536D	EUREKA SPRINGS RUN	GOOD	FAIR	X	X		X	X	X	X	X	X			X	X			X		X			X						X	X	X	X	X	X	X	X
4*	1574A	ALLIGATOR LAKE		FAIR	X	X	X				X	X	X			X	X			X	X	X	X										X	X	X	X	X	X
5*	1797A	TERRA CEIA BAY		THREAT	X		X									X	X			X		X			X			X			X			X	X		X
9	1797B	BISHOPS HARBOR	GOOD	THREAT	X		X									X	X			X		X			X			X			X			X	X		X
10	1778	COCKROACH BAY	POOR	THREAT	X	X	X	X	X	X						X	X					X	X		X			X			X	X	X	X	X	X	X
13*	1709	DIRECT RUNOFF TO BAY		THREAT	X	X	X	X			X			X	X	X		X		X	X	X	X		X		X										
14	1731	LAKE MAGGIORE	POOR	THREAT	X	X	X	X	X		X	X	X		X	X	X			X	X	X	X	X	X	X	X									X	X
17	1696	BOOKER CREEK	POOR	THREAT	X	X	X	X		X	X	X	X	X	X	X	X	X			X	X	X		X		X	X										
18*	1700	COFFEEPOT BAYOU		THREAT	X	X	X	X			X	X	X			X				X	X	X	X		X		X											
19*	1703	DIRECT RUNOFF TO BAY		THREAT												X									X										X			
20	1693	BIG BEND BAYOU	GOOD	THREAT	X		X	X		X	X	X	X		X	X	X	X	X		X	X	X		X			X	X	X				X	X	X	X	X
21*	1687	SHORE ACRES DRAIN		THREAT	X	X	X	X			X					X						X	X		X										X			
22*	1683	SMACKS BAYOU		THREAT	X	X	X	X			X					X				X	X	X	X	X	X													X
25*	1661	SAWGRASS LAKE		THREAT	X	X	X	X			X	X	X			X				X	X	X	X	X	X	X									X			X
27*	1656	DIRECT RUNOFF TO BAY		FAIR	X	X	X	X			X	X	X			X					X	X	X		X	X									X	X	X	X	X
28*	1654	MASTERS BAYOU		FAIR	X	X	X	X			X	X	X			X		X			X	X	X		X	X									X	X	X	X	X
29	1609	*DIRECT RUNOFF TO BAY*	*GOOD*	POOR	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X			X				X	X	X	X
30*	1624	DIRECT RUNOFF TO BAY		FAIR	X	X	X	X			X	X	X			X	X	X		X	X	X	X	X	X		X				X				X	X		X	X
31	1625	CROSS CANAL (NORTH)	POOR	POOR	X	X	X	X			X	X	X			X	X			X	X	X	X	X							X				X	X	X	X	X
35*	1627	LONG BRANCH		POOR	X	X					X	X	X			X						X									X				X	X		X	
36*	1630	DIRECT RUNOFF TO BAY		POOR	X	X					X	X	X			X						X									X				X	X		X	
37	1584B	McKay Bay	FAIR	POOR	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X	X
38*	1620	DIRECT RUNOFF TO BAY		POOR	X	X					X	X	X			X						X									X				X	X		X	
39	1615	UNNAMED DITCH	POOR	POOR	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X		X	X	X	X		X							X	X	X	X	X
40	1604	ALLEN CREEK	FAIR	POOR	X	X	X	X			X	X	X		X	X	X			X	X	X	X	X							X				X	X		X	X
41	1605	DELANEY CREEK	POOR	THREAT	X	X	X		X	X	X				X	X	X				X	X	X		X							X				X	X	X	X	X
43	1536A	Palm River	FAIR	FAIR	X	X		X	X	X	X	X	X			X	X			X			X		X						X	X			X	X	X	X	X
44	1584A	YBOR CITY DRAIN	POOR	POOR	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X	X
47	1603	DIRECT RUNOFF TO BAY	FAIR	POOR	X	X	X				X	X	X			X	X					X	X	X											X	X	X	X	X
48	1574	ALLIGATOR CREEK	FAIR	FAIR	X	X	X				X	X	X			X	X				X	X	X	X											X	X	X	X	X
50*	1593	DIRECT RUNOFF TO BAY		POOR		X	X				X	X	X			X	X						X											X	X	X	X	X
51	1536B	Sixmile Creek	GOOD	FAIR	X	X		X	X	X	X	X	X			X	X			X		X			X						X	X		X	X	X	X	X
52	1575	MULLET CREEK	GOOD	POOR		X	X				X	X	X			X	X						X											X	X	X	X	X
53*	1572	DIRECT RUNOFF TO BAY		FAIR		X	X				X	X	X			X							X												X	X	X		
55	1536C	TAMPA BYPASS CANAL	GOOD	FAIR	X	X		X	X	X	X	X	X			X	X			X		X			X						X	X			X	X	X	X	X
56	1569	BISHOP CREEK	FAIR	FAIR		X	X				X	X	X			X							X												X	X	X		
57*	1559	DIRECT RUNOFF TO BAY		FAIR		X	X					X	X			X						X	X												X	X	X	X	X
58*	1546	MOBBLY BAYOU		FAIR		X	X				X	X	X			X	X				X	X	X												X	X	X	X	X
59*	1557	DIRECT RUNOFF TO BAY		FAIR		X	X					X	X			X						X	X												X	X	X	X	X
60	1516	SWEETWATER CREEK	POOR	THREAT					X								X				X	X									X				X	X	X	X	X
61	1541A	LAKE TARPON CANAL	GOOD	FAIR		X	X					X	X			X						X	X												X	X	X	X	X
62*	1516A	LAKE LIPSEY		THREAT					X								X				X	X									X				X	X	X	X	X
63	1507	Rocky Creek	FAIR	THREAT			X																							X	X					X		X
64*	1530	MOCCASIN CREEK		FAIR		X	X				X	X	X			X	X				X	X	X												X	X	X	X	X
65	1513	DOUBLE BRANCH	FAIR	THREAT					X								X					X	X								X				X	X	X	X	X
66	1541B	LAKE TARPON CANAL	GOOD	FAIR		X	X					X	X			X							X	X											X	X	X	X	X
67*	1529	COW BRANCH		THREAT	X	X					X	X	X	X		X					X	X	X													X		X	X

NPS QUALITATIVE SURVEY RESULTS
AN "X" INDICATES A PROBLEM WITH POLLUTANT OR SOURCE
THE * ON MAPID INDICATES NO STORET INFORMATION AVAILABLE FOR THIS WATERSHED
-SEE PAGE 11 FOR LEGEND FOR THIS TABLE-

CATNAME=TAMPA BAY HUC=03100206
(continued)

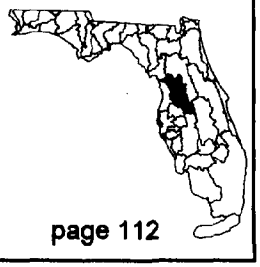
MAP_ID	WBID	BASIN	WQ305	WQNPS	NUTRIEN	BACTERIA	SEDIMEN	OIL	PESTICID	OTHERCHE	DEBRIS	OXYGEN	SALINITY	PH	METAL	HABITAT	FLOW	THERMAL	OTHERPOL	FISHKILL	ALGAL	WEED	TURBIDIT	ODOR	FISHDEC	NOSWIM	NOFISH	OTHERSYM	IND	STP	AG	RE	SL	LD	UR	CN	HM	OT
68*	1514	LAKE LE CLARE DRAIN		THREAT			X																												X			
69	1516B	LAKE MADELENE	GOOD	THREAT					X								X				X	X									X			X	X	X	X	X
70*	1519	SLOUGH		THREAT			X																													X			
71*	1517	HALFMOON LAKE DRAIN		THREAT	X		X			X	X	X	X			X							X											X		X			
72	1498	BRUSHY CREEK	FAIR	THREAT																														X					
73*	1509	DRAINAGE DITCHES		THREAT			X																													X			
74*	1519A	PRETTY LAKE		THREAT			X																													X			
75*	1478	DRAINAGE CANAL		THREAT	X		X	X		X	X					X							X											X		X			
76*	1502	CHAPMAN LAKE OUTLET		THREAT			X	X		X	X					X							X											X	X	X			
77	1494A	LAKE CHARLES	GOOD	THREAT			X	X		X	X					X							X											X		X			
79	1478A	SADDLEBACK LAKE	GOOD	THREAT	X		X	X		X	X					X							X											X		X			
80	1498A	STARVATION LAKE	FAIR	THREAT																														X		X			
81	1486	LAKE TARPON	GOOD	THREAT	X	X					X	X	X	X						X	X	X			X						X	X	X	X	X	X	X	X
82	1498B	VAN DYKE LAKE	FAIR	THREAT																														X		X			
83	1478B	ROUND LAKE	GOOD	THREAT	X		X	X		X	X					X							X											X		X			
84	1474	BROOKER CREEK	POOR	THREAT	X							X	X									X									X							X	
85*	1463	UPPER ROCKY CREEK		THREAT	X		X		X	X	X					X							X								X					X			
86*	1494B	BRANT LAKE		THREAT			X	X		X	X					X							X											X		X			
87	1478C	LAKE CRENSHAW	GOOD	THREAT	X		X	X		X	X					X							X											X		X			
89*	1478D	CRYSTAL LAKE		THREAT	X		X	X		X	X					X							X											X		X			
90*	1463A	TURKEY FORD LAKE		THREAT	X		X		X	X	X					X							X								X					X			
91*	1478E	NORTH CRYSTAL LAKE		THREAT	X		X	X		X	X					X							X											X		X			
93*	1463B	LAKE THOMAS		THREAT	X		X		X	X	X					X							X								X					X			
94	1463C	LAKE BROOKER	POOR	THREAT	X		X		X	X	X					X							X								X					X			
95	1463D	LAKE HARVEY	GOOD	THREAT	X		X		X	X	X					X							X								X					X			



WITHLACOOCHEE RIVER BASIN
03100208

AVERAGE WATER QUALITY
1984-1993 STORET DATA
WATERSHED ID NUMBERS LINK MAP TO TABLES
* INDICATES QUALITATIVE ASSESSMENT

WATER QUALITY
- GOOD
- THREATENED
- FAIR
- POOR
- UNKNOWN



WITHLACOOCHEE RIVER BASIN, SOUTH

Basic Facts

Drainage Area: 2,090 square miles
Major Land Uses: agriculture, forest, wetlands
Population Density: low (Dade City, Inverness, Wildwood, Dunellon)
Major Pollution Sources: septic tank leachate, runoff
Best Water Quality Areas: lower and upper Withlacoochee R, Lake Panasoffkee
Worst Water Quality Areas: Dade City Canal, Walled sink
Water Quality Trends: stable quality at 8 sites, improving trend for Withlacoochee River and Lake Panasoffkee
OFW Waterbodies:
Withlacoochee Riverine and Lake System
Rainbow River
SWIM Waterbodies:
Rainbow River (Blue Run)
Lake Panasoffkee
Reference Reports:
Rainbow River SWIM Plan, SWFWMD, 1989
Florida Rivers Assessment, DEP/FREAC/NPS, 1989
Florida Nonpoint Source Assessment, DEP (Tallahassee), 1988
Lake Tsala Apopka Study, SFWMD, 1990
Lake Rousseau Operations and Management Study, SWFWMD 1989
Basin Water Quality Experts:
Gary Maidoff, Citrus County Planning, 904/746-4223
Guy Hadley, DEP (Orlando), 407/894-7555

In the News

* The Withlacoochee River was designated an OFW.
* A compromise plan to turn the Cross Florida Barge Canal into a 40,000 acre "greenway corridor" for recreation and conservation apparently was worked out on Capitol Hill.
* A major fish kill was reported on Lake Rousseau. The combined effects of herbicide spraying for aquatic weed control, overcast skies, and low dissolved oxygen levels resulted in the death of 45,000 fish.

Ecological Characterization

Originating from the Green Swamp near the junction of Lake and Polk Counties, the Withlacoochee River flows generally west and north for approximately 157 miles and drains 2,090 square miles of West

Central Florida before discharging to the Gulf of Mexico. The average flow of the Withlacoochee River is estimated to be 1,800 cfs at the mouth of the river. A major portion of the flow is contributed by the Floridan Aquifer. During the course of its long journey, the Withlacoochee crosses many habitats. From its cypress swamp headwaters, it passes through pine and hardwood forests, palmetto hammocks, small lakes and ponds and is hydrologically connected to adjacent Tsala-Apopka Lake. This "lake", covering about 30 square miles, is really more like a large grassy marsh with a series of pools of open water. It is sometimes referred to as the miniature Everglades. Downstream of Tsala-Apopka, the Withlacoochee is impounded near Inglis to form Lake Rousseau. A remnant of the Cross Florida Barge Canal connects Lake Rousseau to the Gulf through locks. From the dam, the river flows another 11 miles to the saltmarsh estuary fringing the Gulf.

Along its course the river receives considerable input from the Floridan Aquifer. Blue Run, a 6 mile long river flowing from the largest of the springs, Rainbow Spring, enters near the head of Lake Rousseau. Lake Panasoffkee is a spring-fed lake connected to the river upstream of Tsala-Apopka.

Land use in the Withlacoochee River basin consists primarily of silviculture and citrus groves in the upper reaches of the river basin. The river flows through the Withlacoochee State Forest in the middle reaches. There is also considerable drainage from wetlands. The banks of Lake Rousseau and the downstream Withlacoochee have moderate residential development. There are no major cities along the entire corridor of the river; however, just west of Tsala-Apopka Lake there is considerable residential development and the City of Inverness. The Southwest Florida Water Management District has bought large holdings all along the river, and is especially trying to safeguard the Tsala-Apopka and Panasoffkee areas and the headwater region in the Green Swamp.

Anthropogenic Impacts

Water quality in this basin is very good, especially along the river itself, where all monitored reaches are meeting their designated use. The spring fed Blue Run (also called Rainbow River) has excellent water quality and is designated as an Outstanding Florida Water and a SWIM preservation waterbody. Much of the Withlacoochee River has periods of low DO during high flows due to swampland drainage.

There are few water quality problems in the basin, but the Nonpoint Assessment rates most of the waterbodies as threatened. In the upper basin, the Dade City Canal, which is affected by agricultural runoff and orange processing companies, loosely connects to the river via wetlands. The upper stretches of Jumper Creek may be affected by agriculture and citrus operations at Center Hill. The Little Withlacoochee River is also threatened by agriculture, silviculture and, near its confluence with the Withlacoochee, residential and septic tank runoff. Lake Panasoffkee is a spring fed lake and has good to fair water quality. There are some weed problems and there is some threat from shoreline development and septic tank leachate.

In the lower basin, Lake Rousseau experiences excessive aquatic weed growth, particularly hydrilla. The river is periodically sprayed for aquatic weed control. Construction activities, shoreline alterations (such as finger canals and docks) and failing septic tanks, contribute sediments, nutrients and bacteria to the lake. The reservoir has fair water quality. The artificial maintenance of constant water levels in the lake may also affect water quality. Drawdown of the lake as a way of improving water quality has been recommended by the SWFWMD and by the FGFWFC, but it would require modifying the water control structures at the reservoir to allow a drawdown. Downstream of Lake Rousseau, the river experiences similar pollution sources. The City of Dunellon WWTP has historically discharged to the lower Rainbow

River. This discharge is due to switch to land application (percolation ponds) in the near future. Finally, limestone mining contributes turbidity to the lower river.

** USGS HYDROLOGIC UNIT: 03100208 WITHLACOOCHEE RIVER, SOUTH

SURFACE WATER QUALITY DATA FOR 1970-1993
MEDIAN VALUES FOR EACH WATERSHED
CURRENT PERIOD OF RECORD (1989-1993) USED WHERE AVAILABLE
PERIOD PRIOR TO 1989 IS EVALUATED AS HISTORICAL INFORMATION

INDEX	GOOD	FAIR	POOR
WQI-RIVER	0-44	45-59	60-90
TSI-ESTUARY	0-49	50-59	60-100
TSI-LAKE	0-59	60-69	70-100

WATERSHED ID	NAME	WATERSHED DATA RECORD MAX #OBS	BEG YR	END YR	DATA PERIOD	WATER CLARITY TURB	SD	COLOR	TSS	DISSOLVED OXYGEN DO	DOSAT	OXYGEN DEMAND BOD	COD	TOC	PH	ALKALINITY ALK	TROPHIC STATUS NITRO	PHOS	CHLA	COLIFORM TOTAL	FECL	BIOLOGICAL SPECIES DIVERSITY NAT	ART	BECK	COND	FLOW	WATER QUALITY INDICES WQI	TSI
* WATER BODY TYPE: ESTUARY																												
46	WITHLACOOCHEE RIVER	13	92	93	Current	1.4	4.4	30	1	8.5	92	.	.	6	7.8	101	0.59	0.03	2	.	68	.	.	.	321	.	.	27
* WATER BODY TYPE: LAKE																												
2	LAKE JULIANA OUTLET	81	71	71	Historical	5.0	.	.	.	8.9	109	.	.	.	.	.	1.11	0.03	.	.	.	.	.	.	161	.	.	47
3	LAKE MATTIE OUTLET	30	71	81	Historical	27.3	0.6	175	.	9.0	93	.	.	.	5.8	3	1.29	0.37	11	.	.	.	.	.	200	.	.	64
4	ORANGE HAMMOCK DRAIN	78	70	70	Historical	1.0	.	20	.	9.7	117	.	.	.	6.0	2	0.51	0.03	.	.	.	.	.	.	67	.	.	42
5	LAKE AGNES OUTLET	8	80	80	Historical	.	0.9	75	.	.	.	.	.	.	7.0	7	0.84	0.05	23	.	.	.	.	.	130	.	.	59
6	LAKE HELENE OUTLET	84	70	71	Historical	1.4	.	0	.	8.6	104	.	.	.	6.4	10	0.58	0.02	.	.	.	.	.	.	135	.	.	33
8	CLEAR LAKE	79	70	70	Historical	5.0	.	0	.	12.0	141	.	.	.	7.4	39	1.01	0.02	.	.	.	.	.	.	178	.	.	40
17	LAKE LINDSEY	20	92	93	Current	1.9	1.3	33	3	5.2	56	.	.	12	7.1	7	0.85	0.01	5	.	150	.	.	.	39	.	.	41
30	Lake Panasoffkee	4	89	89	Current	.	.	10	.	8.9	97	.	.	7	8.4	.	0.58	0.01	.	.	.	.	.	.	228	93	.	24
31	LAKE OKAHUMPKA OUTLET	45	79	80	Historical	2.2	.	5	.	9.2	80	.	.	19	8.4	55	1.02	0.03	.	.	.	.	.	.	228	.	.	43
34	TSALA APOPKA OUTLET	552	70	80	Historical	4.0	2.4	55	.	7.2	86	.	.	.	7.2	44	0.58	0.02	3	.	.	.	.	.	175	.	.	44
35	LAKE DEATON OUTLET	54	79	80	Historical	8.5	0.6	23	.	8.9	92	.	.	17	7.9	25	2.93	0.04	29	.	.	.	.	.	182	.	.	63
38	LAKE MIONA OUTLET	59	79	83	Historical	1.0	1.7	22	.	6.0	77	.	.	16	7.1	25	1.22	0.02	14	.	.	.	.	.	137	.	.	46
39	LADY LAKE	90	70	76	Historical	8.0	.	6	.	7.3	83	1.0	.	5	5.7	2	0.89	0.02	.	36	.	.	.	.	134	.	.	37
44	Lake Rousseau	23	89	93	Current	1.5	2.0	28	2	8.2	87	0.9	.	5	7.5	103	0.64	0.05	5	.	508	.	.	.	259	.	.	46
* WATER BODY TYPE: SPRING																												
37	LITTLE JONES SPRING	21	77	79	Historical	1.0	.	5	.	3.8	43	0.6	.	4	7.6	110	1.17	0.04	.	.	18	.	.	.	295	.	30	.
50	RAINBOW SPRINGS	3	89	89	Current	.	.	3	.	5.9	67	.	.	1	7.7	.	1.10	0.03	.	.	.	.	.	.	204	650	27	.
* WATER BODY TYPE: STREAM																												
1	WITHLACOOCHEE RIVER	14	89	90	Current	.	.	380	.	3.6	38	.	.	31	4.7	.	1.19	0.04	.	.	.	.	.	.	82	4	61	.
7	WITHLACOOCHEE RIVER	19	89	90	Current	.	.	170	.	5.5	59	.	.	15	6.6	.	0.91	0.04	.	.	.	.	.	.	206	13	41	.
9	DADE CITY CANAL	136	70	88	Historical	3.0	.	10	.	2.5	31	2.3	.	6	6.9	139	0.71	0.12	.	.	.	.	.	.	333	25	68	.
11	LITTLE WITHLACOOCHEE	7	89	89	Current	.	.	30	.	3.6	39	.	.	6	7.4	.	0.80	0.04	.	.	.	.	.	.	331	14	41	.
12	SPRING HAMMOCK RUN	155	70	83	Historical	2.5	1.2	90	2	5.2	63	1.7	19	22	7.4	142	1.07	0.10	0	175	30	3.1	3.2	16	194	1	43	.
14	WITHLACOOCHEE RIVER	15	89	89	Current	1.3	.	100	2	5.0	58	.	.	18	7.4	84	1.02	0.07	1	.	.	.	.	.	243	159	44	.
15	BIG GANT CANAL	15	92	93	Current	3.5	1.4	50	2	4.0	41	.	.	13	6.7	144	0.98	0.05	.	.	60	.	.	.	350	.	44	.
22	WALLED SINK	18	70	72	Historical	10.4	.	100	.	4.8	56	2.2	.	18	6.7	19	1.22	0.04	.	.	.	.	.	.	194	0	68	.
25	JUMPER CREEK CANAL	192	70	87	Historical	8.0	.	8	.	8.4	96	0.5	.	5	7.8	190	0.32	0.03	.	.	.	.	.	.	409	26	13	.
28	LESLIE-HEFNER CANAL	72	70	87	Historical	.	.	.	.	4.7	55	.	.	9	7.2	.	.	.	.	.	.	.	.	.	247	11	65	.
29	SHADY BROOK	3	89	89	Current	.	.	100	.	4.4	51	.	.	15	7.4	.	1.02	0.14	.	.	.	.	.	.	266	.	59	.
33	Withlacoochee River	117	70	87	Historical	10.0	.	30	.	4.8	55	1.0	.	15	7.5	98	0.57	0.03	.	.	.	.	.	.	260	459	53	.
36	LITTLE JONES CREEK	4	89	90	Current	.	.	13	.	6.6	74	.	.	3	7.7	.	1.23	0.04	.	.	.	.	.	.	330	.	24	.
41	WITHLACOOCHEE RIVER	246	70	83	Historical	3.2	2.7	34	.	6.8	77	1.1	.	8	7.5	105	0.60	0.03	.	172	9	.	.	.	264	70	26	.
43	BYPASS CHANNEL	6	89	90	Current	1.1	.	23	3	7.5	90	1.0	.	5	7.0	97	0.56	0.03	.	.	.	.	.	.	248	.	16	.
45	Withlacoochee River	13	89	90	Current	0.9	.	20	2	6.8	77	0.5	.	6	6.4	64	0.70	0.04	.	.	15	.	.	.	286	436	21	.
51	BLUE RUN	60	70	81	Historical	1.3	.	5	2	7.0	78	0.5	22	1	7.8	103	0.58	0.03	.	200	19	.	.	.	242	658	16	.

LEGEND:
ALK-ALKALINITY MG/L
ART-ARTIFICIAL SUBSTRATE DI
BEG YR-BEGINNING SAMPLING YEAR
BECK-BECK'S BIOTIC INDEX
BOD-BIOCHEMICAL OXYGEN DEMAND MG/L
CHLA-CHLOROPHYLL UG/L
COD-CHEMICAL OXYGEN DEMAND MG/L
COLOR-COLOR PCU
COND-CONDUCTIVITY UMHOS
DO-DISSOLVED OXYGEN MG/L
DOSAT-DO % SATURATION
END YR-ENDING YEAR
FECL-FECAL COLIFORM MPN/100ML
FLOW-FLOW CFS
MAX #OBS-MAXIMUM NUMBER OF SAMPLES
NAT-NATURAL SUBSTRATE DIVERSITY
NITRO-TOTAL NITROGEN MG/L
PH-PH STANDARD UNITS
PHOS-TOTAL PHOSPHORUS MG/L
SD-SECCHI DISC METERS
TOC-TOTAL ORGANIC CARBON MG/L
TOTAL-TOTAL COLIFORM MPN/100ML
TSI-TROPHIC STATE INDEX
TSS-TOTAL SUSPENDED SOLIDS MG/L
TURB-TURBIDITY MG/L
WQI-WATER QUALITY INDEX

** USGS HYDROLOGIC UNIT: 03100208 WITHLACOOCHEE RIVER,SOUTH

SURFACE WATER QUALITY DATA FOR 1970-1993
MEDIAN VALUES FOR EACH WATERSHED
CURRENT PERIOD OF RECORD (1989-1993) USED WHERE AVAILABLE
PERIOD PRIOR TO 1989 IS EVALUATED AS HISTORICAL INFORMATION

INDEX	GOOD	FAIR	POOR
WQI-RIVER	0-44	45-59	60-90
TSI-ESTUARY	0-49	50-59	60-100
TSI-LAKE	0-59	60-69	70-100

WATERSHED ID	NAME	WATERSHED DATA RECORD				WATER CLARITY				DISSOLVED OXYGEN		OXYGEN DEMAND			PH	ALKALINITY	TROPHIC STATUS				COLIFORM	BIOLOGICAL SPECIES DIVERSITY			COND	FLOW	WATER QUALITY INDICES	
		MAX #OBS	BEG YR	END YR	DATA PERIOD	TURB	SD	COLOR	TSS	DO	DOSAT	BOD	COD	TOC	PH	ALK	NITRO	PHOS	CHLA	TOTAL	FECL	NAT	ART	BECK	COND	FLOW	WQI	TSI

LEGEND:

ALK-ALKALINITY MG/L
ART-ARTIFICIAL SUBSTRATE DI
BEG YR-BEGINNING SAMPLING YEAR
BECK-BECK'S BIOTIC INDEX
BOD-BIOCHEMICAL OXYGEN DEMAND MG/L
CHLA-CHLOROPHYLL UG/L
COD-CHEMICAL OXYGEN DEMAND MG/L
COLOR-COLOR PCU
COND-CONDUCTIVITY UMHOS
DO-DISSOLVED OXYGEN MG/L
DOSAT-DO % SATURATION
END YR-ENDING YEAR
FECL-FECAL COLIFORM MPN/100ML
FLOW-FLOW CFS
MAX #OBS-MAXIMUM NUMBER OF SAMPLES
NAT-NATURAL SUBSTRATE DIVERSITY
NITRO-TOTAL NITROGEN MG/L
PH-PH STANDARD UNITS
PHOS-TOTAL PHOSPHORUS MG/L
SD-SECCHI DISC METERS
TOC-TOTAL ORGANIC CARBON MG/L
TOTAL-TOTAL COLIFORM MPN/100ML
TSI-TROPHIC STATE INDEX
TSS-TOTAL SUSPENDED SOLIDS MG/L
TURB-TURBIDITY MG/L
WQI-WATER QUALITY INDEX

SURFACE WATER QUALITY DATA SCREENING REPORT
MEDIAN VALUES FOR EACH WATERSHED SCREENED

** USGS HYDROLOGIC UNIT: 03100208 WITHLACOOCHEE RIVER,SOUTH

'x'=EXCEEDS SCREENING CRITERIA
'0'=WITHIN SCREENING CRITERIA
'.'=MISSING DATA

WATERSHED ID	NAME	RANK WQI OR TSI	DATA RECORD CURRENT OR HISTORICAL	SCREENING VARIABLES AND CRITERIA: TN TN>2.0	STREAM TP TP>.46	LAKE TP TP>.12	PH PH>8.8 PH<5.2	ALK ALK<20	TURB & TSS TURB>16.5 TSS>18	COND COND>1275	OXYGEN DEMAND BOD>3.3 COD>102 TOC>27.5	DO DO<4	COLIFORM BACTI TOT>3700 FECAL>470	BIOL DIV DIART<1.95 DINAT<1.5 BECK<5.5	CHLA CHLA>40	SECCHI DISC SD<.7
* WATER BODY TYPE: ESTUARY																
46	WITHLACOOCHEE RIVER	GOOD	Current	0	.	0	0	0	0	.	0	0	0	.	0	0
* WATER BODY TYPE: LAKE																
2	LAKE JULIANA OUTLET	GOOD	Historical	0	.	0	.	.	0	.	.	0	.	.	.	.
3	LAKE MATTIE OUTLET	FAIR	Historical	0	.	x	0	x	x	.	.	0	.	.	0	x
4	ORANGE HAMMOCK DRAIN	GOOD	Historical	0	.	0	0	x	0	.	.	0	.	.	.	.
5	LAKE AGNES OUTLET	GOOD	Historical	0	.	0	0	x	.	.	.	.	.	.	0	0
6	LAKE HELENE OUTLET	GOOD	Historical	0	.	0	0	x	0	.	.	0	.	.	.	.
8	CLEAR LAKE	GOOD	Historical	0	.	0	0	0	0	.	.	0	.	.	.	.
17	LAKE LINDSEY	GOOD	Current	0	.	0	0	x	0	.	0	0	0	.	0	0
30	Lake Panasoffkee	GOOD	Current	0	.	0	0	.	.	.	0	0	.	.	.	.
31	LAKE OKAHUMPKA OUTLET	GOOD	Historical	0	.	0	0	0	0	.	0	0	.	.	.	.
34	TSALA APOPKA OUTLET	GOOD	Historical	0	.	0	0	0	0	.	.	0	.	.	0	0
35	LAKE DEATON OUTLET	FAIR	Historical	x	.	0	0	0	0	.	0	0	.	.	0	x
38	LAKE MIONA OUTLET	GOOD	Historical	0	.	0	0	0	0	.	0	0	.	.	0	0
39	LADY LAKE	GOOD	Historical	0	.	0	0	x	0	.	0	0	0	.	.	.
44	Lake Rousseau	GOOD	Current	0	.	0	0	0	0	.	0	0	x	.	0	0
* WATER BODY TYPE: SPRING																
37	LITTLE JONES SPRING	GOOD	Historical	0	0	.	0	0	0	.	0	x	0	.	.	.
50	RAINBOW SPRINGS	GOOD	Current	0	0	.	0	.	.	.	0	0	.	.	.	.
* WATER BODY TYPE: STREAM																
1	WITHLACOOCHEE RIVER	POOR	Current	0	0	.	x	.	.	.	x	x	.	.	.	.
7	WITHLACOOCHEE RIVER	GOOD	Current	0	0	.	0	.	.	.	0	0	.	.	.	.
9	DADE CITY CANAL	POOR	Historical	0	0	.	0	0	0	.	0	x	.	.	.	.
11	LITTLE WITHLACOOCHEE	GOOD	Current	0	0	.	0	.	.	.	0	x	.	.	.	.
12	SPRING HAMMOCK RUN	GOOD	Historical	0	0	.	0	0	0	.	0	0	0	0	0	0
14	WITHLACOOCHEE RIVER	GOOD	Current	0	0	.	0	0	0	.	0	0	.	.	0	.
15	BIG GANT CANAL	GOOD	Current	0	0	.	0	0	0	.	0	x	0	.	.	0
22	WALLED SINK	POOR	Historical	0	0	.	0	x	0	.	0	0	.	.	.	.
25	JUMPER CREEK CANAL	GOOD	Historical	0	0	.	0	0	0	.	0	0	.	.	.	.
28	LESLIE-HEFNER CANAL	UNKN	Historical	.	.	.	0	.	.	.	0	0	.	.	.	.
29	SHADY BROOK	FAIR	Current	0	0	.	0	.	.	.	0	0	.	.	.	.
33	Withlacoochee River	FAIR	Historical	0	0	.	0	0	0	.	0	0	.	.	.	.
36	LITTLE JONES CREEK	GOOD	Current	0	0	.	0	.	.	.	0	0	.	.	.	.
41	WITHLACOOCHEE RIVER	GOOD	Historical	0	0	.	0	0	0	.	0	0	0	.	.	0
43	BYPASS CHANNEL	GOOD	Current	0	0	.	0	0	0	.	0	0	.	.	.	.
45	Withlacoochee River	GOOD	Current	0	0	.	0	0	0	.	0	0	0	.	.	.
51	BLUE RUN	GOOD	Historical	0	0	.	0	0	0	.	0	0	0	.	.	.

LEGEND:
ALK-ALKALINITY
BECK-BECK'S BIOTIC INDEX
BIOL DIV-BIOLOGICAL DIVERSITY
CHLA-CHLOROPHYLL
COND-CONDUCTIVITY
DO-DISSOLVED OXYGEN
CURRENT-1989 TO 1993
DIART-ARTIFICIAL SUBSTRATE DIVERSITY
DINAT-NATURAL SUBSTRATE DIVERSITY
FECAL-FECAL COLIFORM BACTERIA
HISTORICAL-1970 TO 1988
OXYGEN DEMAND-BOD,COD,TOC
PH-PH
TN-NITROGEN
TP-PHOSPHORUS
TOT-TOTAL COLIFORM BACTERIA
TSS-TOTAL SUSPENDED SOLIDS
TURB-TURBIDITY
SD-SECCHI DISC METERS
WQI OR TSI-WATER QUALITY INDEX RATING WHICH INDEX USED, WQI OR TSI, IS BASED ON WATERBODY TYPE

SURFACE WATER QUALITY DATA SCREENING REPORT
MEDIAN VALUES FOR EACH WATERSHED SCREENED

** USGS HYDROLOGIC UNIT: 03100208 WITHLACOOCHEE RIVER,SOUTH

'x'=EXCEEDS SCREENING CRITERIA
'0'=WITHIN SCREENING CRITERIA
'.'=MISSING DATA

WATERSHED ID	NAME	RANK WQI OR TSI	DATA RECORD CURRENT OR HISTORICAL	SCREENING VARIABLES AND CRITERIA												
				TN	STREAM TP	LAKE TP	PH	ALK	TURB & TSS	COND	OXYGEN DEMAND	DO	COLIFORM BACTI	BIOL DIV	CHLA	SECCHI DISC
				TN>2.0	TP>.46	TP>.12	PH>8.8 PH<5.2	ALK<20	TURB>16.5 TSS>18	COND>1275	BOD>3.3 COD>102 TOC>27.5	DO<4	TOT>3700 FECAL>470	DIART<1.95 DINAT<1.5 BECK<5.5	CHLA>40	SD<.7

LEGEND:
ALK-ALKALINITY
BECK-BECK'S BIOTIC INDEX
BIOL DIV-BIOLOGICAL DIVERSITY
CHLA-CHLOROPHYLL
COND-CONDUCTIVITY
DO-DISSOLVED OXYGEN
CURRENT-1989 TO 1993
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DINAT-NATURAL SUBSTRATE DIVERSITY
FECAL-FECAL COLIFORM BACTERIA
HISTORICAL-1970 TO 1988
OXYGEN DEMAND-BOD,COD,TOC
PH-PH
TN-NITROGEN
TP-PHOSPHORUS
TOT-TOTAL COLIFORM BACTERIA
TSS-TOTAL SUSPENDED SOLIDS
TURB-TURBIDITY
SD-SECCHI DISC METERS
WQI OR TSI-WATER QUALITY INDEX RATING WHICH INDEX USED, WQI OR TSI, IS BASED ON WATERBODY TYPE

SURFACE WATER QUALITY ASSESSMENT REPORT
TRENDS-SOURCES-CLEANUP

** USGS HYDROLOGIC UNIT: 03100208 WITHLACOOCHEE RIVER, SOUTH

'x'=DEGRADING TREND
'0'=STABLE TREND
'+'=IMPROVING TREND
'.'=MISSING DATA

1984 - 1993 TRENDS

WATERSHED ID	NAME	QUALITY MEETS USE ?	RANK WQI OR TSI	OVER-ALL TREND	W Q or I	T S I	T N	T P	T C L A	S D	P H	A L K	T U B	T S	B O D	T C	D O S A	D O L	T C L I	F C L I	T E M P	F L O W	DEGRADATION SOURCES, PRESENT CONDITIONS AND CLEANUP EFFORTS
* WATER BODY TYPE: ESTUARY																							
46	WITHLACOOCHEE RIVER	YES	GOOD	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
* WATER BODY TYPE: LAKE																							
2	LAKE JULIANA OUTLET	YES	GOOD																				
3	LAKE MATTIE OUTLET	PARTIAL	FAIR																				
4	ORANGE HAMMOCK DRAIN	YES	GOOD																				
5	LAKE AGNES OUTLET	YES	GOOD																				
6	LAKE HELENE OUTLET	YES	GOOD																				
8	CLEAR LAKE	YES	GOOD																				
17	LAKE LINDSEY	YES	GOOD	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
30	Lake Panasoffkee	YES	GOOD	+		+	0	+	.	.	0	.	.	.	0	0	0	0	.	.	0	0	
31	LAKE OKAHUMPKA OUTLET	YES	GOOD																				
34	TSALA APOPKA OUTLET	YES	GOOD																				
35	LAKE DEATON OUTLET	PARTIAL	FAIR																				
38	LAKE MIONA OUTLET	YES	GOOD																				
39	LADY LAKE	YES	GOOD																				
44	Lake Rousseau	YES	GOOD	0		0	0	0	.	.	0	0	0	0	+	0	0	0	.	.	0	.	
* WATER BODY TYPE: SPRING																							
37	LITTLE JONES SPRING	YES	GOOD																				
50	RAINBOW SPRINGS	YES	GOOD	0		x	0	0	.	.	0	.	.	.	.	0	0	x	.	.	0	0	
* WATER BODY TYPE: STREAM																							
1	WITHLACOOCHEE RIVER	NO	POOR	+		0	+	+	.	.	0	.	.	.	.	0	0	0	.	.	0	0	
7	WITHLACOOCHEE RIVER	YES	GOOD	0		0	0	+	.	.	0	.	.	.	.	0	0	0	.	.	0	0	
9	DADE CITY CANAL	NO	POOR	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	
11	LITTLE WITHLACOOCHEE	YES	GOOD	0		0	0	0	.	.	0	.	.	.	.	0	0	0	.	.	0	0	
12	SPRING HAMMOCK RUN	YES	GOOD																				
14	WITHLACOOCHEE RIVER	YES	GOOD	0		0	0	0	.	.	0	.	.	.	.	0	0	0	.	.	0	0	
15	BIG GANT CANAL	YES	GOOD	0		0	.	.	.	.	0	.	.	.	.	0	0	0	.	.	0	.	
22	WALLED SINK	NO	POOR																				
25	JUMPER CREEK CANAL	YES	GOOD	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
28	LESLIE-HEFNER CANAL	NO	UNKN	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
29	SHADY BROOK	PARTIAL	FAIR	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
33	Withlacoochee River	PARTIAL	FAIR	.		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
36	LITTLE JONES CREEK	YES	GOOD	0		0	0	0	.	.	0	.	.	.	.	0	.	0	.	.	0	.	
41	WITHLACOOCHEE RIVER	YES	GOOD																				
43	BYPASS CHANNEL	YES	GOOD	0		0	+	0	.	.	0	0	0	0	0	0	0	0	.	.	x	.	
45	Withlacoochee River	YES	GOOD	+		0	0	0	.	.	0	x	+	0	+	0	0	0	.	.	0	0	

<--- PLEASE READ THESE COLUMNS VERTICALLY

LEGEND:

ALK-ALKALINITY
BOD-BIOCHEM. OXYGEN DEMAND
CHLA-CHLOROPHYLL
DO-DISSOLVED OXYGEN
DOSAT-DO SATURATION
FCOLI-FECAL COLIFORM
FLOW-FLOW
MEETS USE-MEETS DESIGNATED USE
PH-PH
SD-SECCHI DISC METERS
TCOLI-TOTAL COLIFORM
TEMP-TEMPERATURE
TN-NITROGEN
TOC-T.ORGANIC CARBON
TP-PHOSPHORUS
TSS-TOTAL SUSPENDED SOLIDS
TURB-TURBIDITY
TSI-TROPHIC STATE INDEX FOR LAKES AND ESTUARIES
WQI-WATER QULAITY INDEX FOR STREAMS AND SPRINGS

SURFACE WATER QUALITY ASSESSMENT REPORT
TRENDS-SOURCES-CLEANUP

** USGS HYDROLOGIC UNIT: 03100208 WITHLACOOCHEE RIVER,SOUTH

'x'=DEGRADING TREND
'0'=STABLE TREND
'+'=IMPROVING TREND
'.'=MISSING DATA

WATERSHED ID	NAME	QUALITY RANK: MEETS USE ?	WQI OR TSI	OVER-ALL TREND	1984 - 1993 TRENDS: W Q I	T S I	T N	T P	C H L A	S D I	P H	A L K	T U R B	T S S	B O D	T O C	D O S A T	D O C S A T	T C O L I	F C O L I	T E M P	F L O W	T M O P	F W Q I	<--- PLEASE READ THESE COLUMNS VERTICALLY	DEGRADATION SOURCES, PRESENT CONDITIONS AND CLEANUP EFFORTS
51	BLUE RUN	YES	GOOD																							

LEGEND:

ALK-ALKALINITY
BOD-BIOCHEM. OXYGEN DEMAND
CHLA-CHLOROPHYLL
DO-DISSOLVED OXYGEN
DOSAT-DO SATURATION
FCOLI-FECAL COLIFORM
FLOW-FLOW
MEETS USE-MEETS DESIGNATED USE
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TSS-TOTAL SUSPENDED SOLIDS
TURB-TURBIDITY
TSI-TROPHIC STATE INDEX FOR LAKES AND ESTUARIES
WQI-WATER QULAITY INDEX FOR STREAMS AND SPRINGS

NPS QUALITATIVE SURVEY RESULTS
AN "X" INDICATES A PROBLEM WITH POLLUTANT OR SOURCE
THE * ON MAPID INDICATES NO STORET INFORMATION AVAILABLE FOR THIS WATERSHED
-SEE PAGE 11 FOR LEGEND FOR THIS TABLE-

CATNAME=WITHLACOOCHEE RIVER, SOUTH HUC=03100208

MAP ID	WBID	BASIN	WQ3 05	WQN PS	NUTRIENT	BACTERIA	SEDIMENT	OIL	PESTICID	OTHER CHEM	DEBRIS	OXYGEN	SALINITY	PH	METAL	HABITAT	FLOW	THERMAL	OTHER	FISHKILL	ALGAE	WEED	TURBIDITY	ODOR	FISHDEC	NOSWIM	NOFISH	OTHERSYM	IND	STP	AG	RE	SL	LD	UR	CN	HM	OT
1	1329G	WITHLACOOCHEE RIVER	POOR	THREAT	X	X	X	X	X		X	X	X	X		X	X				X	X	X		X						X	X	X	X	X	X	X	X
7	1329F	WITHLACOOCHEE RIVER	GOOD	THREAT	X	X	X	X	X		X	X	X	X		X	X				X	X	X		X						X	X	X	X	X	X	X	X
8	1403	CLEAR LAKE	GOOD	THREAT	X	X	X		X							X					X	X	X	X	X	X					X			X	X		X	
9	1399	DADE CITY CANAL	POOR	THREAT	X	X	X	X	X								X					X	X								X		X	X	X		X	X
10*	1390	LAKE ELIZABETH OUTLET		THREAT																											X				X	X	X	X
13*	1385	ROCK POND OUTLET		THREAT																											X							
14	1329E	WITHLACOOCHEE RIVER	GOOD	THREAT	X	X	X	X	X		X	X	X	X		X	X				X	X	X		X						X	X	X	X	X	X	X	X
16*	1379	WILD COW PRAIRIE DRAIN		THREAT				X		X																					X	X				X		
17	1329H	LAKE LINDSEY	GOOD	THREAT	X	X	X	X	X		X	X	X	X		X	X				X	X	X		X						X	X	X	X	X	X	X	X
18*	1375	MOBLEY POND OUTLET		THREAT													X														X							
19*	1371	MCKITHEN LAKE OUTLET		THREAT			X	X			X											X														X		
20*	1376	GATOR HEAD SLOUGH		THREAT																											X						X	
21*	1374	CLABBER CREEK		THREAT																											X					X		
23*	1369	UNNAMED DITCH		THREAT													X														X							
24*	1372	GRANT SLOUGH		THREAT																											X					X		
26*	1365	TOWNS PRAIRIE DRAIN		THREAT													X														X							
27*	1363	SCHOOLHOUS POND DRAIN		THREAT													X														X							
29	1356	SHADY BROOK	FAIR	THREAT				X																							X	X		X				
32*	1352	ROBINSON LAKE OUTLET		THREAT																											X					X	X	X
33	1329D	Withlacoochee River	FAIR	THREAT	X	X	X	X	X		X	X	X	X		X	X				X	X	X		X						X	X	X	X	X	X	X	X
38	1342	LAKE MAHA OUTLET	GOOD	THREAT	X		X			X						X						X	X								X	X		X	X			
39	1342A	LADY LAKE	GOOD	THREAT	X		X			X						X						X	X								X	X		X	X			
40*	1338B	GUM SLOUGH		THREAT	X	X	X		X		X											X	X		X						X			X		X		X
41	1329A	WITHLACOOCHEE RIVER	GOOD	THREAT	X	X	X	X	X		X	X	X	X		X	X				X	X	X		X						X	X	X	X	X	X	X	X
42*	1338A	GUM SPRINGS		THREAT	X	X	X		X		X											X	X		X						X			X		X		X
44	1329B	Lake Rousseau	GOOD	THREAT	X	X	X	X	X		X	X	X	X		X	X				X	X	X		X						X	X	X	X	X	X	X	X
45	1329C	Withlacoochee River	GOOD	THREAT	X	X	X	X	X		X	X	X	X		X	X				X	X	X		X						X	X	X	X	X	X	X	X
47*	1324	BIG JONES CREEK		THREAT	X	X	X	X	X					X								X	X		X						X	X		X		X		
48*	1336	TURNER CREEK		GOOD																																		
49*	1334	BELL BRANCH		GOOD																																		
50	1320A	RAINBOW SPRINGS	GOOD	THREAT	X	X	X																X								X			X				
51	1320	BLUE RUN	GOOD	THREAT	X	X	X																X								X			X				

ALAFIA RIVER	16
ALLIGATOR CREEK	98
ANCLOTE RIVER	31
BAKER CREEK	43
BANANA LAKE	73
BEAR BRANCH	73
BEAR CREEK	31
BELL CREEK	16
BIG BEND BAYOU	98
BIG DITCH	43
BIG GANT CANAL	112
BIG SLOUGH CANAL	65
BISHOP CREEK	98
BISHOPS HARBOR	98
BLACKWATER CREEK	43
BLUE RUN	112
BOCA CIEGA BAY	31
BONN CREEK	31
BOOKER CREEK	98
BOWLEGS CREEK	73
BOWLES CREEK	90
BRADEN RIVER	58
BROOKER CREEK	98
BUCK LAKE	98
BULLFROG CREEK	98
CAPTIVA ISLAND	24
CATFISH CREEK	90
CHANNEL G	98
CHARLOTTE HARBOR LOWER	24
CHASSAHAWITZKA RIVER	31
CLEAR LAKE	112
COCKROACH BAY	98
CORAL CREEK E.BRANCH	90
COW PEN SLOUGH	90
COW SLOUGH	73
CRYSTAL RIVER	31
CURLEW CREEK	31
CYPRESS CREEK	43
DADE CITY CANAL	112
DEER PRAIRIE CREEK	65
DELANEY CREEK	98
DOUBLE BRANCH	98
DUG CREEK	51
EAGLE LAKE	73
EUREKA SPRINGS RUN	98
FISH HATCHERY DRAIN	43
FISHHAWK CREEK	16
FLINT CREEK	43
FROG CREEK	98
GAP CREEK	58
GATES CREEK	58
GATOR SLOUGH CANAL	24
GILLY CREEK	58
GOTTFRIED CREEK	90
HILLSBOROUGH BAY	98
HILLSBOROUGH RIVER	43
HOG BRANCH	73
HOLLIN CREEK	31
HOLLOMANS BRANCH	43
HOMOSASSA RIVER	31
HORSE CK	73
HUNTER LAKE	31
ITCHEPACKASASSA CREEK	43
JOHNSON CREEK	65
JOSHUA CK AB PEACE R	73
JUMPER CREEK CANAL	112
JUMPING GULLY	31
KEYSTONE LAKE	98
KLOSTERMAN BAYOU RUN	31
LADY LAKE	112
LAKE ALFRED	73
LAKE ARETTA	73
LAKE ARIANNA	73
LAKE BROOKER	98
LAKE BUFFUM	73
LAKE CANNON	73
LAKE CHARLES	98
LAKE CRENSHAW	98
LAKE DAN	31
LAKE DEATON OUTLET	112
LAKE DRAIN	16
LAKE EFFIE OUTLET	73
LAKE ELOISE	73
LAKE GIBSON	73
LAKE HANCOCK	73
LAKE HARTRIDGE	73
LAKE HARVEY	98
LAKE HELENE OUTLET	112
LAKE HENRY	73
LAKE HOBBS	98
LAKE HUNTER	43
LAKE IDYLWILD	73
LAKE IOLA	31
LAKE JESSIE	73
LAKE JULIANA OUTLET	112
LAKE LENA RUN	73
LAKE LINDSEY	112
LAKE LUCERNE	73
LAKE LULU OUTLET	73
LAKE MADELENE	98
LAKE MAGGIORE	98
LAKE MATTIE OUTLET	112
LAKE MAY	73
LAKE MIONA OUTLET	112
LAKE MIRROR	73
LAKE OKAHUMPKA OUTLET	112
LAKE OTIS	73
LAKE PARKER	73
LAKE ROUSSEAU	112
LAKE SEMINOLE	31
LAKE SHIPP	73
LAKE TARPON	98
LAKE TENOROC	73
LAKE THOMAS	31
LAKE THONOTOSASSA	43
LAKE WINTERSET	73
LEMON BAY	90
LESLIE-HEFNER CANAL	112
LITTLE CHARLIE BOWLEGS	73
LITTLE CHARLIE CREEK	73
LITTLE JONES SPRING	112
LITTLE MANATEE RIVER	51
LITTLE SARASOTA BAY	90
LTL ALAFIA	16
MANATEE RIVER	58
MATLACHA PASS	24
MCKAY BAY	98
MCMULLIN CREEK	98
MEDARD RESERVOIR	16
MILL CREEK	58
MINED AREA	73
MOON LAKE	31
MUD LAKE SLOUGH	65
MYAKKA RIVER	65
MYRTLE SLOUGH	73
N. FORK L. MANATEE R.	51
NO. PRONG ALLIGATOR CR	24
NORTH PRONG ALAFIA R.	16
OLD TAMPA BAY	98
ORANGE HAMMOCK DRAIN	112
PALM RIVER	98
PEACE RIVER	73
PECKS SINK OVERFLOW	31
PEMBERTON CREEK	43
PHILIPPE CREEK	90
PHILIPPI CREEK	90
PINE ISLAND SOUND LOWR	24
PITHLACHASCOTEE RIVER	31
POLEY BRANCH	58
PRAIRIE CREEK	73
PUNTA GORDA ISLES CA	73
ROBERTS BAY	90
ROCKY CREEK	98
ROUND LAKE	98
SADDLE CK AB LK HANCOC	73
SADDLE CREEK	73
SADDLEBACK LAKE	98
SAN CARLOS BAY	24
SARASOTA BAY	90
SEFFNER CANAL	43
SHELL CREEK	73
SIXMILE CREEK	98
SO FK LITTLE MANATEE R	51
SOUTH BRANCH	31
SOUTH PRONG ALAFIA R	16
SPRING HAMMOCK RUN	112
ST JOE CREEK	31
STEVENSON CREEK	31
SULPHUR SPRINGS	43
SWEETWATER CREEK	98
TAMPA BAY	98
TAMPA BYPASS CANAL	98
THOMPSON BRANCH	73
TROUT CREEK	43
TSALA APOPKA OUTLET	112
TURKEY CK AB LTL ALAFI	16
TWO HOLE BRANCH	43
UPPER BROOKER CREEK	98
VAN DYKE LAKE	98
WALLED SINK	112
WARES CREEK	58
WARM MINERAL SPRING	65
WEEKIWATCHEE RIVER	31
WHIDDEN CREEK	73
WILLIAMS CREEK	58
WINGATE CREEK	65
WITHLACOOCHEE RIVER	112