

TECHNICAL MEMORANDUM

WRE Publication #348

**REPORT OF
1995 WET SEASON HYDROLOGIC CONDITIONS**

**South Florida Water Management District
3301 Gun Club Road
West Palm Beach, Florida 33406**

WRE-348

EXECUTIVE SUMMARY

The objective of this 1995 Wet Season Report is to compile and analyze available data on hydrometeorology, water quality and the environment, as well as to provide quantitative descriptions of the impacts caused by the above average wet season rainfall of 1995 associated with severe storms and hurricanes. The report is intended to inform the general public and decision-makers on the status of water resources, provide a systematic record of rainfall events and associated District operations, and analyze the consequences of the District's management in terms of impacts on South Florida ecosystems and protection from floods.

The 1995 Atlantic Hurricane Season was very active, and the District was either directly or indirectly affected by four tropical storms and hurricanes between June and October. The noteworthy storm events occurred during June 18-26 and October 14-19, 1995. The South Florida area was also affected by two hurricanes: Hurricane Erin on August 2-5 and Opal on October 5-7, 1995. Hurricane Allison (June 3-7) had little overall impact on South Florida and is not included as a significant event in this report of the 1995 season. Tropical storm Jerry hit the area on August 23-26, 1995. These systems, combined with periodic upper level disturbances and stalled fronts, produced a record amount of rainfall for the season. The 1994 wet season was also wetter than a normal year and it is rare to have two such wet periods in succession. Rainfall amounts from the above average daily rainfall, coupled with the amounts from these storm events during the wet season, accounted for approximately 80 percent of the total 1995 rainfall for South Florida. During the typical wet season from May to October, South Florida receives approximately 70 percent of annual rainfall. The 1995 wet season delivered approximately 49.5 inches or 126 percent of the long-term average wet season rainfall to the region.

The 1995 disturbances produced some locally heavy rains. In June, parts of Charlotte County received as much as 15 inches of rain in a two-day period. Furthermore, certain areas of the Upper East Coast (Martin-St. Lucie) and the Lower East Coast (Palm Beach, Broward and Dade counties) experienced heavy rainfall in October, with the daily rainfall depths over 10 inches at several locations. This volume of rain occurring in a single day is a rare event with no more than 1 chance in 100 of that event occurring in any year, commonly referred to as a 100-year return period.

Rainfall from the storms during the 1995 wet season had major impacts on the surface water storage system. An historical high stage of 18.6 feet (NGVD) was recorded on October 26 in Lake Okeechobee. Additionally, as a result of high water stages in the Water Conservation Areas (WCAs) during the wet season, water that would normally be conveyed from Lake Okeechobee southward to the WCAs, including regulatory and water supply releases, was partially diverted to the St. Lucie

Canal and Caloosahatchee River so that higher than average wet season discharges were released through these two outlets. Everglades National Park received a relatively large amount of water from Water Conservation Area 3 through releases from the S-12 structures. WCA-2 and WCA-3 had stages almost as high as has ever been seen in these areas.

S-197, the southernmost structure of the District, had to be partially opened during the beginning of the wet season due to the impact of a June storm in the south Dade area. During this event, as much as 2,500 cubic feet per second was discharged through this structure. Structure S-197 was opened again in August and October to release the runoff generated by heavy rains.

The June 18-26, 1995 storm caused some street and yard flooding in Dade, Broward, Lee, Okeechobee and St. Lucie Counties, but no house flooding was reported. The first August storm also caused some yard and street flooding in Collier, Okeechobee, Palm Beach and St. Lucie Counties.

The second storm event of August 1995 (August 23-26), however, necessitated some evacuation and there was widespread house flooding in Lee County. Additionally, extensive flooding of streets yards and agricultural fields were reported in Collier, Lee, Hendry, Martin, Okeechobee, Palm Beach and St. Lucie Counties.

The first storm of October (October 7, 1995) necessitated evacuation in Lee County (the Southwest Coast) where there was widespread flooding of homes. There was also extensive flooding of streets, yards and agricultural fields in Collier, Lee and Okeechobee Counties, and commercial sites were flooded in Highlands County. The second storm of October caused flooding of streets, yards and agricultural fields, and hundreds of floors in homes were flooded. Collier, Glades, Highlands, Martin, Okeechobee, Palm Beach and St. Lucie Counties were all impacted by this storm.

High discharge (at about 3 times the long-term average) from the Caloosahatchee River, combined with high runoff from the basin, decreased the salinity in San Carlos to below 20 ppt (parts per thousand) for extended periods. Abundance of shoal grass (*Halodule*) was depressed during the months of August, September and October relative to previous years. Inflows to the St. Lucie Estuary from August through November period violated recommended salinity levels to the point that the entire estuary was fresh water for those four months. These inputs were sufficient to continue adverse salinity fluctuations, loss of sea grasses, accumulation of sediments and degraded water quality for the St. Lucie and Indian River Estuary systems.

The unusually high rainfall during 1995 resulted in record levels of freshwater inflows to Florida Bay for the 1995 season. Salinity continued a general pattern of

decline and reached record low levels in several areas of the Bay. Algal blooms and areas of high turbidity persist in the central Bay, but are not thought to be directly caused by high volumes of freshwater discharge into the system. In the northeastern portion of the Bay, little change was seen in turtle grass abundance, but shoal grass tended to decline in abundance. Releases of freshwater from S-197 appear to have had little impact on the sea grasses in Manatee Bay or Barnes Sound.

Most increases in nutrient loads from the Kissimmee River can be attributed to high flow volumes, and loads fell within the range of values seen in earlier years. The frequency of algal blooms for Lake Okeechobee was not unusually high for 1995, although nutrient loading from the watershed was driven up by large runoff volumes. Loading values for phosphorus exceeded the mandated target to a degree reminiscent of previous years, an increase not unexpected in such a wet year. Water moving southward from the Lake also carried higher nutrient loads than have been seen in recent years.

For the most recent period 1994-5, the Everglades Agricultural Area (EAA) achieved a 31% phosphorus load reduction for water moving primarily southward. Material loads moving into WCA-1 showed no consistent pattern of response to the 1995 wet season, and phosphorus loading from the EAA to WCA-2 was somewhat lower than historical levels. High nitrogen loads moving from Area 2 into WCA-3 were recorded early in 1996, but were not accompanied by similar increases in phosphorus loading. As in previous years, remarkable reductions in nutrient concentrations were recorded for water moving between the inflow and outflow of WCA-3. In 1995, water flow into Everglades National Park was the highest documented for the period of record. However, thanks to a continuing decline in concentrations, nutrient loading to the Park during 1995 remained close to that seen in 1994.

An expert panel examined the information available on high water impacts in the Everglades National Park and found it to be incomplete. From the data available, the panel concluded that forested habitats in Everglades National Park do not appear to have been seriously affected by prolonged inundation and the impacts on key species appear to have been mixed. For example, some fish populations benefitted from high water, while the alligators and the Cape Sable Sparrow were among those species being negatively affected. For Water Conservation Areas 2 and 3, the Florida Game and Freshwater Fish Commission found serious impacts to tree island habitat. They concluded that most tree and shrub species should recover quickly. The deer population and other mammalian wildlife were severely impacted and will probably take 5 to 10 years to recover. Studies of the impact of the 1994-95 high water levels in the southern Everglades are continuing as this report is written.

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CHAPTER 1

INTRODUCTION

The South Florida Water Management District (SFWMD), created by the Florida Water Resources Act of 1972 (Chapter 373, FS), has been charged with determining how to resolve the complex water resource questions facing the region. The Mission of the District is to manage the natural resources of the 16 county area within its jurisdiction for the purpose of environmental enhancement, flood protection and water supply for multiple user groups. In order to carry out its Mission, one of the primary functions of the District's water resources management is to operate the system of levees, canals and water control structures in an optimal manner to accomplish peak efficiency during normal conditions, flood control during above normal conditions, and water supply during below normal or drought conditions. The agency's success will depend on its ability to summarize data on water resources and system operation, and use this information to manage water and related resources in an adaptive manner.

The SFWMD has analyzed water resources data and developed technical reports on various storms, as well as wet and dry season conditions, since the 1960s. These reports inform the general public and decision-makers on the status on water resources, provide a systematic record of rainfall events and associated District operations, and analyze the consequences of the District's management in terms of impacts on South Florida ecosystems and area protection from floods.

The objective of this 1995 Wet Season Report is to compile and analyze available provisional data on hydrometeorology, water quality and the environment, as well as provide quantitative descriptions of different areas that were impacted by the above average 1995 wet season rainfall associated with the severe storm and Hurricane events.

The 1995 Wet Season report begins in Chapter 2 by summarizing the meteorological conditions found during the 1995 season. This chapter also provides a brief description of meteorologic phenomenon which triggered the tropical depressions, storms and hurricanes in the District area. Chapter 3 describes the characteristics of rainfall received during the wet season of 1995, as well as an analysis of the return frequencies or relative severity of rainfall amounts recorded during this year. This section of the report also provides information on the distribution of rainfall within thirteen areas (sub-basins) of the District, such as the Water Conservation Areas (WCAs), Everglades Agricultural Area and Lake Okeechobee. This chapter closes with a summary of subbasin rainfall by month, year, season and major event.

A summary of the District's operation of the Central and South Florida Flood Control Project is described in Chapter 4. This important chapter provides information on

the stages and flows for major components of the entire water management system, as well as the particular stages and flows during tropical storms and hurricanes. Operational responses to the season's rainfall events is also included in Chapter 4, as is an explanation of the unusually high water levels recorded in Water Conservation Area 3A during 1995.

Floods are common in South Florida due to the area's flat topography and low elevations. During the wet months of 1995, some areas of the District were flooded due to higher than average rainfall received in the area. Chapter 5 chronicles complaints concerning flooding received during the storm events from individual home owners, district permit holders, etc., for the 1995 wet season.

The impacts of wet season stages and flows on the Caloosahatchee, St. Lucie and Florida Bay Estuaries are recorded in Chapter 6, while Chapter 7 describes the water quality conditions for the entire District area during 1995. The data presented in Chapter 7 on many key structures in the District cover the entire period of record since 1978. This approach to data analysis allows the reader to see how conditions in 1995 fit into the long-term pattern for each particular location.

CHAPTER 2

METEOROLOGICAL DESCRIPTION OF 1995

The June through October period was generally wet, varying from above average in the driest basins to excessively wet in others. Overall, 46.52 inches (135% of average) of rain fell. Rainfall ranged from 38.87 inches (110% of average) over the Eastern Everglades Agricultural Area, to 61.73 inches (163% of average) for the Southwest Coast (Figure 2-1). Rainfall was above average for all months except one.

During the dry months (from November through April) high pressure typically dominates the weather pattern except for occasional disturbances, such as cold fronts, which bring rainfall episodes. During the wet months (from June through September) warm tropical air is resident over the region, allowing a regular daily cycle of thunderstorms to develop. Superimposed over this daily cycle are enhanced rain days, generated by disturbances such as upper-level lows and tropical cyclones. May and October are transitional months between the two seasons. For this discussion, the 1995 wet season is defined as June through October; May is excluded due to the lack of wet season characteristics and resulting rainfall, while October is included. In an average wet season, three-quarters of the annual rainfall will occur during the 5-month period.

Table 2-1 below lists measured rainfall and the climatological mean, and states the percentage of normal for the period for each of the three 1994-95 rainfall periods. The three periods are defined as the end of the dry season (May), the first portion of the wet season (June and July), and the second portion of the wet season (August through October). Each period is discussed below.

TABLE 2-1. Rainfall Distribution: May-October 1995.

Rainfall	May	Jun-Jul	Aug-Oct
Measured	2.97"	18.27"	28.25"
Climatological Mean	4.86"	15.28"	19.11"
Percent of Normal	61%	119%	148%

The 94-95 dry season began wet but finished with about a two-inch rainfall deficit by the end of May. The District's wet season began in early June with Tropical Storm/Hurricane Allison which dropped two and one-half inches of rainfall over four days. Allison and three other heavy rainfall periods, each lasting from three to five days, added to the daily cycle of thunderstorms through July and were responsible for the 3-inch above-average rains over the first two months of the season. The most

1995 WET SEASON RAINFALL

June 1 - October 31

Figure 1

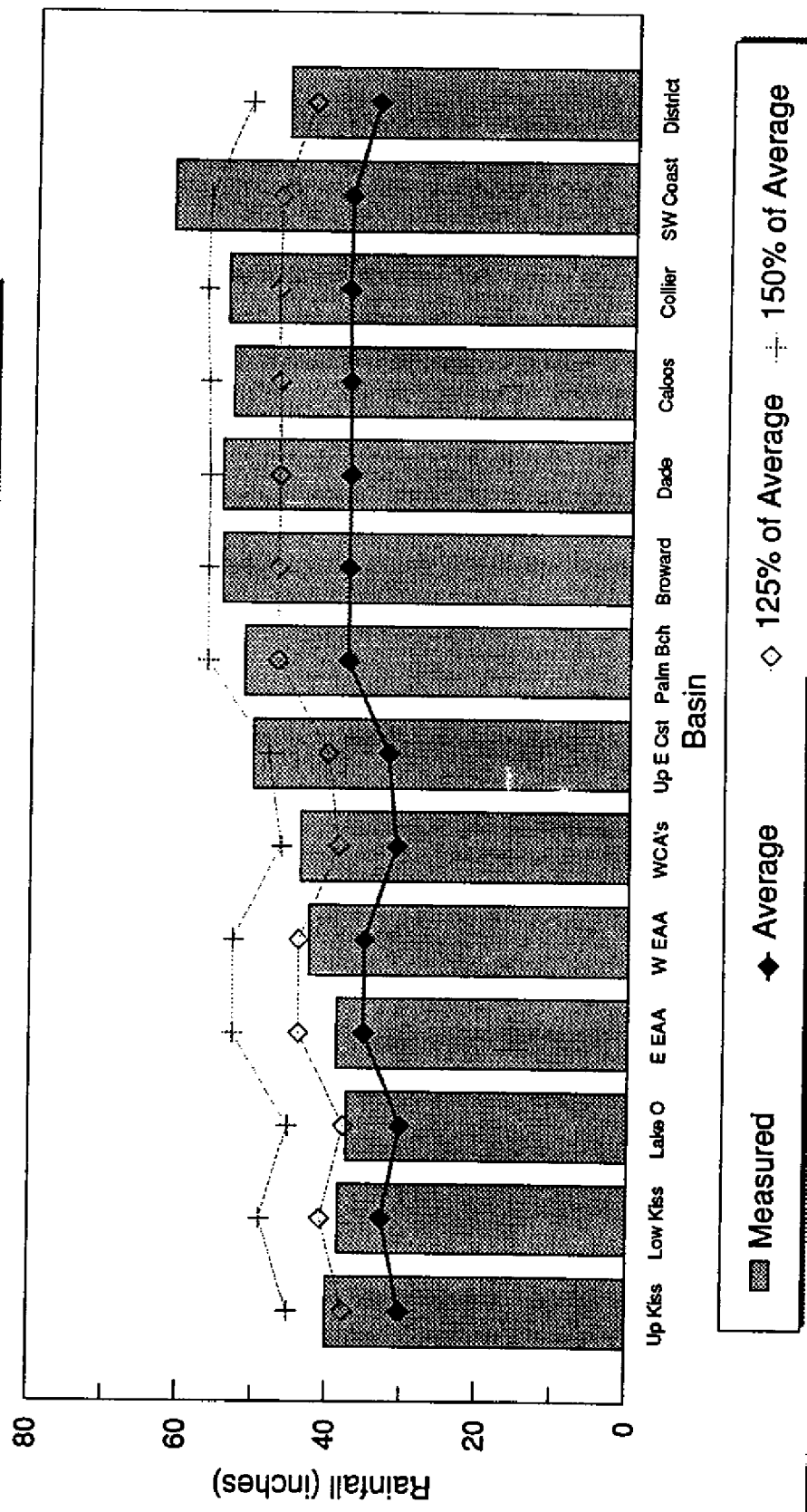


FIGURE 2-1. 1995 Wet Season Rainfall (June 1- October 31)

significant event occurred from June 20-23, as the weather pattern over the Gulf of Mexico combined with rich tropical moisture, resulting in heavy to excessive rains over the most southerly part of South Florida. This 96-hour period accounts for all of the above-average rain over the District, especially in Dade County, for the 2-month period.

Heavy rains from Hurricanes Erin and Opal, along with excessive rains from Tropical Storm Jerry and an end-of-season frontal boundary, fell District-wide, dropping over twelve inches of average rainfall from August through October 1995. These events not only accounted for the above-average rainfall during this period, but were responsible for one-fifth of the entire annual rainfall.

August began with Hurricane Erin. Rains focused near its eye as Erin moved inland in the vicinity of Vero Beach and progressed through Central Florida. Rains averaged more than two inches over the Upper East Coast and extended to the entire Kissimmee Valley by the morning of August 2. Rains refocused over the Lower East Coast and averaged about four inches in a 72-hour period, ending by August 5, as feeder bands expanded to the east of exiting Erin. Below average rains then fell from August 5-22, followed by the onset of Tropical Storm Jerry.

Tropical Storm Jerry (August 22-25) produced one of the heaviest 72-hour rain events in the District's history. Excessive rains began on August 23 when the tropical depression was upgraded to Tropical Storm Jerry. Over ten inches of rain fell in some local areas by the morning of August 24, with the heaviest focus extending from southern Collier County through Broward County, eastern Palm Beach County, and the upper east coast area. Rains averaged four to six inches over these areas. Excessive rains continued to pound the District on August 24 as Jerry drifted slowly northwestward. An additional ten inches of rain fell over Charlotte, Lee, and Collier Counties by the morning of August 25, and another one and one-half to two inches fell along the Southwest Coast and the Caloosahatchee Basin. The District's 72-hour storm total averaged five and one-half inches, with the Southwest Coast averaging nine inches through the period. From the end of August through early September, above average rains continued over the western and southern sections of the District. They were followed by a three-week period of below-average rains prior to the arrival of Hurricane Opal in early October.

While Hurricane Opal hit the panhandle of Florida, associated moisture and banding activity east of the storm brought heavy to excessive rains to the west. An average of over five inches of rain fell over the Caloosahatchee Basin and the Southwest Coast on October 2-5. Rains decreased but continued to be above average from October 6-13.

The wet season ended with a front in the middle of October. This front combined with an upper-level low and a tropical wave to generate moderate to heavy rains averaging around one and one-half inches District-wide on October 14. The area of rainfall decreased, but rain continued to be from moderate to locally heavy as the front pushed into southern sections of the District on October 15. As the front stalled in its east/west movement across Palm Beach County on October 16, a wave of heavy rain moved northward from Broward County through coastal Palm Beach County. Rains became very

heavy overnight as an impulse moved eastward along the frontal boundary, producing seven inches over northeast Palm Beach County by dawn on October 17. Excessive rains developed during the morning as strong, low-level convergence and massive, upper-level divergence allowed heavy showers and thunderstorms to continually redevelop over the same area. Rainfall reached from twelve to twenty inches over extreme Northeastern Palm Beach County and Southeastern Martin County by late evening. Light to moderate rains remained focused over this same area over October 18-19, and a swift moving cold front ushered in the dry season on October 20.

Figure 2-2 depicts a running total of above-average rainfall from May 1 through October 31. Most peaks on this graph correspond to rainfall events which have been discussed in this summary. The 1995 Atlantic Hurricane Season was well above its climatological mean, and the District was either directly or indirectly affected by four tropical storms or hurricanes between June and October. These systems, combined with periodic upper-level disturbances and stalled fronts, produced one of the wettest wet seasons on record. These rains were most pronounced in the Upper East Coast, the Lower East Coast, and the Lower West Coast. From an historical perspective, the season was the wettest since the C&SF Flood Project took shape in 1962; it was also the wettest since records began in the Upper East Coast and the Lower West Coast. This information is summarized in Table 2-2 (below).

District-wide Surplus Rainfall

May 1995 - October 1995

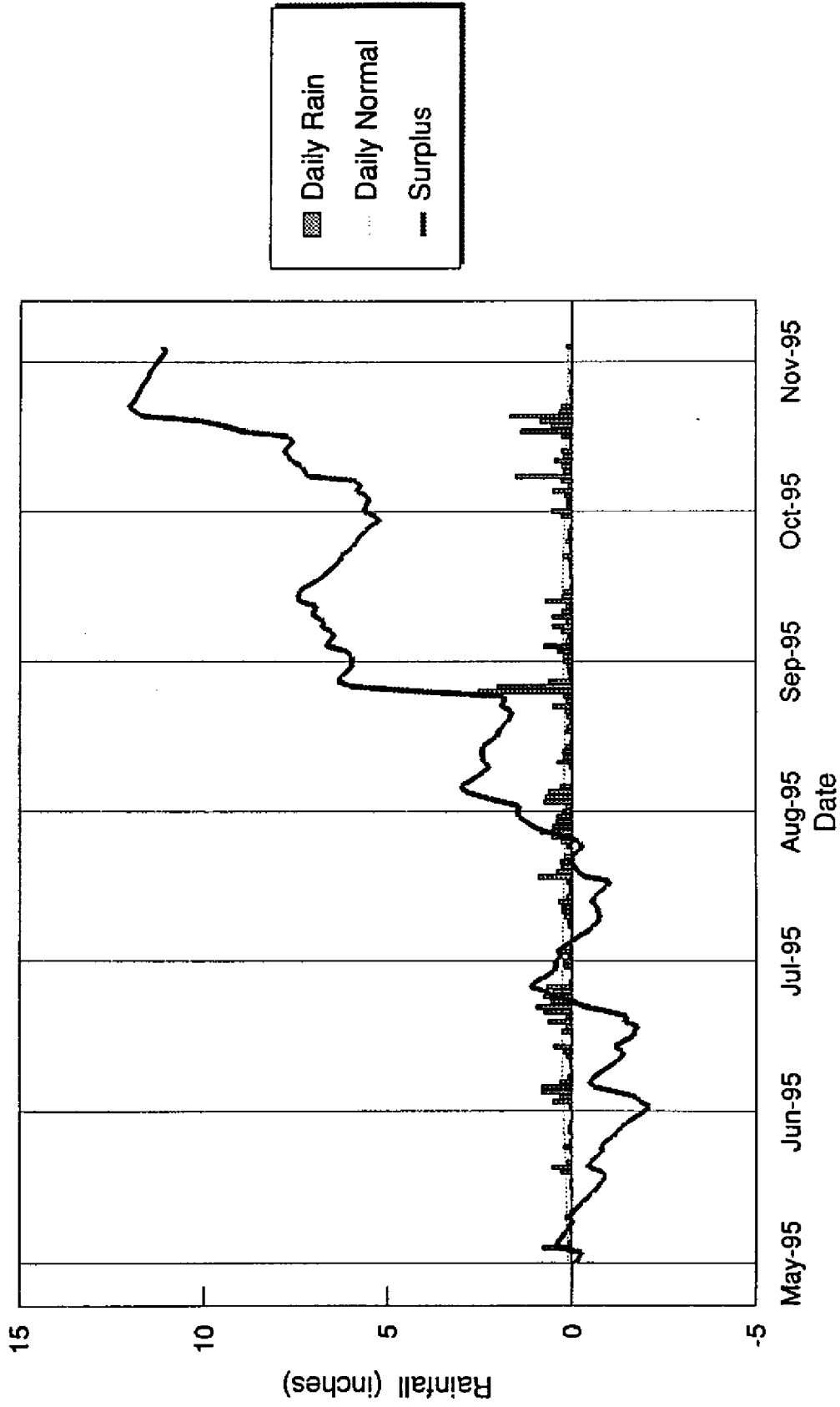


FIGURE 2-2. District-wide Surplus Rainfall (May 1995- October 1995)

TABLE 2-2. Historical Perspective of 1995 Wet Season Rainfall.

BASIN	SEASON RAINFALL	HEAVIEST SINCE ¹	RANK SINCE 1962 ²	RANK SINCE 1949 ³
Upper Kissimmee	40"	1960	1st	5th
Lower Kissimmee	38.5"	1960	1st	5th
Lake Okeechobee	37.5"	1953	1st	4th
Water Conservation Areas	44"	<1963 ⁴	1st	N/A
Upper East Coast	50"	<1915	1st	1st
Lower East Coast	54"	1947	1st	1st
Lower West Coast ⁵	54"	<1927	1st	1st

NOTES:

1. Using data from SFWMD Technical Publication 86-6, *Frequency Analysis of SFWMD Rainfall*.
2. "Phase two, the remaining works of the original Comprehensive Plan, was authorized by the Flood Control Act of September 3, 1954. Improvements in Hendry County and Nicodemus Slough...were added to the project in the Flood Control Acts of July 3, 1958, and July 14, 1960 respectively. Improvements in Boggy Creek, Shingle Creek, Cutler Drain Area, South Dade County, and the West Palm Beach Canal were added in The Flood Control Act of October 1962. Improvements in Southwest Dade County were added in the Flood Control Act of October 27, 1965; the same act modified the 1958 authorization for the Hendry County Improvements.." (Huser, *Into the Fifth Decade*, p25)
3. The year (1949) that the Florida Legislature enacted Chapter 378 Florida Statutes to cooperate with the United States Government on authorized projects. Also the year that another law, Chapter 25270, was enacted to create the Central and Southern Florida Flood Control District (C&SFFCD). "It established the FCD's boundaries and abolished the Okeechobee Flood Control District (OFCD)." (Huser, *Into the Fifth Decade*, p12)
4. Seasonal records for the WCAs extend back only to 1963.
5. Not a part of the C&SF Project, except for C-43.

CHAPTER 3

RAINFALL ANALYSIS

INTRODUCTION

Characteristics of the South Florida Climate

The boundaries of the South Florida Water Management District (the District) encompass a large portion of the southern peninsula of Florida located between latitudes 25° and 28° North. Due to the low latitude, South Florida is considered a subtropical region. As is characteristic of subtropical regions, the District usually receives rainfall throughout the entire year. The average annual rainfall for South Florida is approximately 52 inches (*Tech Pub 86-6, Frequency Analysis of the South Florida Water Management District, Sculley*). Rainfall is produced when convective thunderstorms and frontal systems develop over the area. However, the amount of rainfall occurring varies considerably and is dependent upon the season.

The District experiences a bimodal rainfall pattern which means it can be separated into two statistical modes. This distinct bimodal pattern leads to what is typically referred to in south Florida as two-rainfall seasons: wet (summer) and dry (winter). From a statistical viewpoint, the wet season usually begins in May and lasts through the end of October. The months of May and October are considered transitional months between the seasons and, in some years, exhibit relatively little rainfall. The dry season typically begins in November and ends in April of the following year.

During the usual wet season, South Florida receives almost 75 % of the total annual rainfall. Rainfall during this period is attributed to daily convective thunderstorms and other weather systems such as tropical storms, depressions, and even hurricanes. Daily thunderstorms in South Florida usually lead to highly localized rainfall events in contrast to the more widespread, intense rainfall associated with the more severe summer weather systems such as tropical storms and hurricanes. Frontal systems are the main reason for rainfall during the dry season months in South Florida, and produce relatively light amounts of rainfall.

Rainfall Measuring Stations within District Subbasins

Currently, there are 138 rainfall measuring stations in the District's precipitation gauging network used for water resource management purposes (Figure 3-1). This network enables District engineers to sufficiently manage water levels in the primary

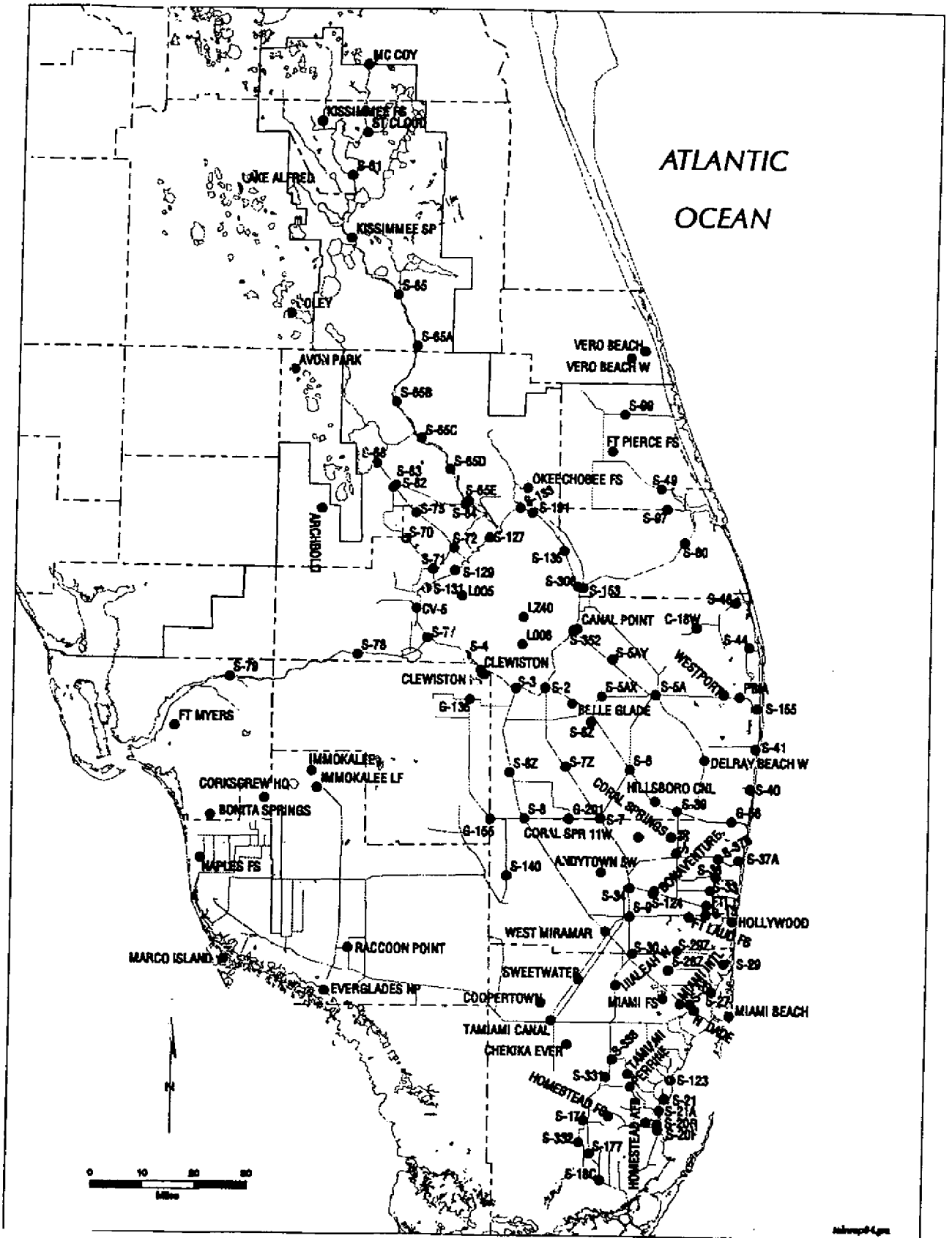


FIGURE 3-1. Rainfall Measuring Stations within Subbasins of the District

canal system, lakes, and water catchment areas to accept surges in discharge as a result of runoff from storm events. Rainfall data from this network are collected by the Operations and Maintenance Department (OMD), grouped by subbasins, and reported to the general public on a daily basis.

The Operations and Maintenance Department (OMD) divides the District area into 13 subbasins (Figure 3-2). These are: (1) the Upper Kissimmee, (2) the Lower Kissimmee, (3) Lake Okeechobee, (4) EAA East, (5) EAA West, (6) the Conservation Areas, (7) Martin-St. Lucie, (8) Palm Beach County, (9) Broward County, (10) Dade County, (11) the Caloosahatchee, (12) Collier County, and (13) the Southwest Coast. The Martin-St. Lucie subbasin is also referred to sometimes as the Upper East Coast (UEC), and Palm Beach, Broward, and Dade counties are collectively referred to as the Lower East Coast (LEC).

ANALYSIS FOR THE 1995 WET SEASON

Rainfall

Part of the 1995 wet-season analysis consisted of determining the overall amount and distribution of rainfall in the District area for the entire 1995 wet season (May-October), as well as for the shorter duration storm events occurring in the individual wet season months. To accomplish this analysis, daily rainfall data were retrieved from the OMD data base for the period May 1, 1995 to December 31, 1995. A fairly detailed record of the daily precipitation amounts for each rainfall measuring station within the 13 subbasins was compiled, and from these amounts the monthly values were summed for the wet season period (May through October) to get the wet season total. Rainfall amounts for the months of November and December were also totaled.

In doing the rainfall analysis, the total 1995 wet season rainfall amount was also compared against the average of the long-term wet season totals for the 13 subbasins described above. If any subbasin total exceeded the long-term average, the monthly rainfall amount was subjected to a frequency analysis to determine the expected return period.

A return period is also referred to as a recurrence interval, and represents the chance or probability of an event occurring during any specified time interval. For example, if a rainfall measuring station records a maximum three-day rainfall magnitude of 11.10 inches, and has an expectancy of at least a 10-year return period, this means that there is a 1-in-10 chance that the rainfall station will get at least 11.10 inches of rain during any three consecutive days in any given year.

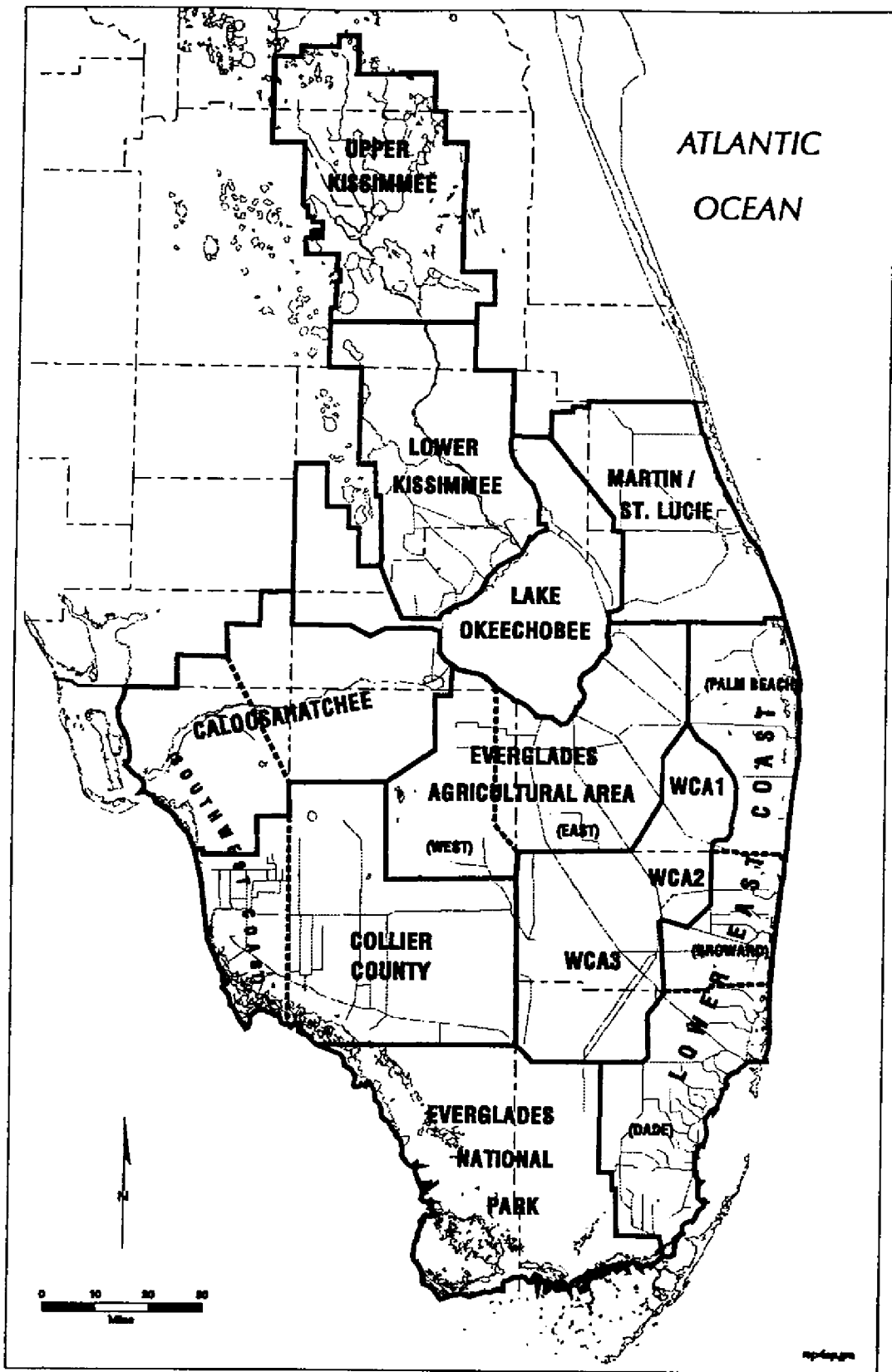


FIGURE 3-2. Daily and Monthly Rainfall Reporting Areas

If a rainfall amount for a specific subbasin during a wet season month exceeds the historical average for that subbasin, then this amount is said to have a return period of more than one year. Another way of expressing this is that an equal amount of rainfall is not expected to occur in that subbasin during that wet season month every year. The average basin rainfall has a return period of close to two years (a 1-in-2 chance of recurring in any given year); it follows that larger amounts of rainfall occurring over shorter periods of time have longer return periods (occur less frequently). To determine the return period, the total amount of rainfall received within different areas (subbasins) of the District was first calculated.

Data from some of the rainfall stations among the subbasins was duplicated, but this was necessary to determine the "average" amount of rain falling during a particular time interval within each subbasin. An arithmetic average method was used in the analysis to derive average rainfall amounts for a majority of the results presented. The actual subbasin monthly rainfall and the long-term subbasin averages (Table 3-1) were calculated using the Thiessen weighting method.

Rainfall Distribution and Frequency Analysis

Rainfall intensities, durations, and amounts vary considerably throughout the District area. In general, higher amounts of rainfall are received in the southern coastal areas of the District, and lighter amounts are evident in the Upper Kissimmee area. The frequency of occurrence of distributed rainfall amounts can be determined through frequency analysis procedures. The procedures involve examining rainfall distributions for an individual station or the average rainfall distribution derived from multiple stations in a subbasin area, and statistically determining the associated return period for a particular amount of rainfall occurring during a specified time interval.

Return periods for monthly rainfall totals for some subbasins during the wet season months (May-October) were determined using the same Rainfall Frequency Analysis Procedure (RFAP) currently in use in the Hydrologic Projection Model. The RFAP is accomplished by fitting various theoretical frequency distributions to the historic series (1952-1991) of monthly rainfall events. Additionally, the Kolmogorov-Smirnov test and a visual check of the plotted frequency distributions are used to select the best fitting distribution to the monthly data. The return period for the selected 1995 monthly rainfall was determined from the fitted distribution. Only those months of 1995 for which rainfall exceeded the long term rainfall average were analyzed, and only basins for which the current Operations and Maintenance Department (OMD) geographical definition agrees with the RFAP geographical basin definition were the subject of frequency analyses.

TABLE 3-1. SFWMD Normal Rainfall vs. Actual Rainfall (Source of Normal Rainfall: ref Tech Pub 86-6, Frequency Analysis of SFWMD Rainfall, December 1986).

	Upper Kiss	Lower Kiss	Lake Okeech	East EAA	West EAA	WCAs	Martin/St. Lucie	Palm Beach	Broward	DaDe	LEC	Colloosa	Collier	SW Coast	District
JAN	mean	2.07	1.99	1.86	1.73	1.73	2.24	2.41	2.41	2.41	2.41	1.8	1.67	2.08	1.94
	actual	1.79	2.25	2.58	2.57	3.38	2.28	3.1	3.63	2.62	2.99	3.4	3.81	4.09	2.84
FEB	mean	2.72	2.43	2.25	1.91	2.26	2.39	2.19	2.19	2.19	2.19	2.45	1.96	2.34	2.26
	actual	1.99	3.16	2.34	2.05	1.87	2.23	1.61	2.47	1.18	1.59	1.83	1.52	1.65	2.03
MAR	mean	3.21	2.67	2.82	2.79	2.32	2.9	2.7	2.7	2.7	2.7	3.18	2.18	2.73	2.73
	actual	2.5	3.18	3.86	2.22	1.84	3.08	2.58	2.68	2.22	2.44	2.06	1.33	0.79	2.4
APR	mean	2.71	2.68	2.15	2.66	1.83	3.03	3.43	3.43	3.43	3.43	2.27	2.41	1.82	2.59
	actual	2.29	3.85	2.53	1.81	2.29	3.81	2.57	3.09	3.73	3.2	4.99	3.24	5.8	3.12
MAY	mean	4.29	4.28	4.82	5.05	5.02	4.46	5.87	5.87	5.87	5.87	4.5	4.95	4.48	4.86
	actual	3.11	2.22	2.97	2.88	2.97	2.11	1.49	1.91	3.79	2.61	1.71	5.51	2.21	2.97
JUN	mean	7.37	7.48	7.26	8.64	8.45	6.31	8.1	8.1	8.1	8.1	9.17	9.1	9.38	8.1
	actual	8.33	8.01	7.43	7.55	8.62	6.46	8.45	14.65	17.4	13.76	11.7	12.67	13.68	10.1
JUL	mean	6.29	7.7	6.59	7.35	6.23	6.22	6.41	6.41	6.41	6.41	8.38	8.66	8.54	7.18
	actual	8.82	6.6	7.01	8.22	7.79	5.89	7.22	8.36	6.6	7.23	11.4	10.06	11.69	8.22
AUG	mean	6.9	6.98	6.22	7.26	6.38	5.73	6.83	6.83	6.83	6.83	8.07	7.59	8.6	6.97
	actual	11.35	10.72	8.1	9.59	11.59	16.63	14.57	14.21	11.26	13	11.9	12.47	13.8	11.7
SEP	mean	6.38	6.91	6.25	7.74	6.13	7.5	8.52	8.52	8.52	8.52	8.23	8.64	8.2	7.49
	actual	5.83	4.85	5.71	4.62	5.74	5.91	6.26	7.48	8.57	7.55	7.89	8.04	9.33	6.43
OCT	mean	3.2	3.65	3.96	4.24	3.81	6.37	7.84	7.84	7.84	7.84	3.98	4.15	3.2	4.65
	actual	5.7	8.32	9.24	8.89	10.94	15.49	15.06	10.01	11.03	12.2	10.6	11.16	13.23	10.2
NOV	mean	1.8	1.64	1.43	1.85	2	2.48	2.94	2.94	2.94	2.94	1.54	1.65	1.76	1.94
	actual	1.67	0.85	0.44	0.6	0.36	0.54	1.1	1.74	1.42	1.38	0.76	0.53	0.68	0.84
DEC	mean	2.04	1.55	1.66	1.72	1.6	1.87	2.02	2.02	2.02	2.02	1.66	1.5	1.58	1.73
	actual	0.67	0.53	0.47	0.69	0.9	0.82	1.52	1.01	0.92	1.14	0.92	0.7	1.1	0.78
Year to date	mean	48.98	49.96	47.27	52.94	47.76	51.5	59.26	59.26	59.26	59.26	55.2	54.46	54.71	52.4
	actual	54.05	54.54	52.68	51.4	56.72	57.1	65.25	71.24	70.74	69.09	69.1	71.04	78.05	61.5

A rainfall frequency analysis study prepared by MacVicar (Technical Publication 81-3, *Frequency Analysis of Rainfall Maximums for Central and South Florida*) was used to determine the return period of the daily point rainfall measured in each subbasin during any of the major storm events that impacted the District area during the 1995 wet season months. The frequency analysis was conducted by bench marking the magnitudes of the daily rainfall values (point rainfall) recorded at individual stations occurring during the 1995 storm events for selected durations, such as the 1-day, 2-day, 3-day, and 5-day maximums, against the isocontour patterns depicted in the isohyetal maps in the MacVicar study. These durations represent the maximum amount of rainfall which fell during a 24, 48, 72, or 120 hour period. This enabled a determination of the return period associated with a particular rainfall magnitude occurring during a specified time interval or duration.

A method was developed to aid in evaluating a specified rainfall duration or time interval and the associated magnitude of the rainfall event against selected return periods based on the Isohyetal maps. Depicted in Table 3-2 are ranges of rainfall values which could have possible return periods of three years or more for various time durations.

TABLE 3-2: Minimum and Maximum Rainfall Magnitudes for Selected Return Periods and Time Durations.*

Duration	Return Period	Minimum	Maximum	Duration	Return Period	Minimum	Maximum
1-DAY MAX	3 YR	≥ 3.7 in.	≤ 6.8 in.	3-DAY MAX	3 YR	≥ 5.2 in.	≤ 8.8 in.
	5 YR	≥ 4.5 in.	≤ 8.5 in.		5 YR	≥ 6.3 in.	≤ 10.5 in.
	10 YR	≥ 4.8 in.	≤ 11 in.		10 YR	≥ 7.3 in.	≤ 13.1 in.
	25 YR	≥ 5.8 in.	≤ 14 in.		25 YR	≥ 8.6 in.	≤ 16.5 in.
	50 YR	≥ 6.5 in.	≤ 17 in.		50 YR	≥ 9.5 in.	≤ 18.5 in.
	100 YR	≥ 6.8 in.	≤ 19 in.		100 YR	≥ 11 in.	≤ 21 in.
2-DAY MAX	3 YR	≥ 4.8 in.	≤ 8.4 in.	5-DAY MAX	3 YR	≥ 6.2 in.	≤ 9.6 in.
	5 YR	≥ 5.6 in.	≤ 10.2 in.		5 YR	≥ 6.8 in.	≤ 11.8 in.
	10 YR	≥ 6.6 in.	≤ 12.3 in.		10 YR	≥ 8.4 in.	≤ 14.5 in.
	25 YR	≥ 7.6 in.	≤ 15.3 in.		25 YR	≥ 10 in.	≤ 17.5 in.
	50 YR	≥ 8.5 in.	≤ 18 in.		50 YR	≥ 11 in.	≤ 19.8 in.
	100 YR	≥ 9.5 in.	≤ 20.5 in.		100 YR	≥ 12 in.	≤ 21 in.

* Criteria was developed from MacVicar (Tech. Pub. 81-3, *Frequency Analysis of Rainfall Maximums for Central and South Florida*)

If the magnitudes of the 1-day, 2-day, 3-day, or 5-day storm totals for each rainfall measuring station were between the minimum and maximum amount shown in Table 3-2 above, then the isohyetal maps were evaluated to check if the rainfall amount from that recording station had a recurrence interval greater than the amount reported in MacVicar's study (Technical Publication 81-3). Only return periods greater than 3 years are identified, because the return frequency of average daily rainfall, as stated earlier, is approximately 2.2 years.

Due to the spatial (spacewise) variability of rainfall across South Florida, the ranges merely indicate that a specified rainfall amount may have a recurrence interval of at least 3, 5, 10, 25, 50, or 100 years. Whether a rainfall amount has a return period associated with exceeding the normal amount of rainfall is completely dependent on the location of the measuring station, and how the isocountour patterns depict rainfall concentrations around the rainfall station.

For instance, if a rainfall station measured four inches of rain in the Upper Kissimmee subbasin over a 24-hour period, which represented the maximum 1-day amount during a storm event, then it might have a return period greater than 3 years. However, rainfall patterns in the Upper Kissimmee River valley show smaller rainfall magnitudes than the Lower East Coast. Therefore, the same amount measured as a 1-day maximum at a rainfall station in Broward County would probably not have exceeded the normal amount of rainfall, and would not have any return period of 3 or more years.

DISTRICT-WIDE RAINFALL

For the 1995 wet season, the highest amounts of rainfall falling on South Florida were the result of several synoptic weather systems which impacted the District. These occurred during the months of June through October, as a result of a severe storm during June 18-26, Hurricane Erin (August 2-5), Tropical Storm Jerry (August 23-26), Hurricane Opal (October 5-7), and a severe storm event during October 14-19.

A large percentage of the wet season rainfall was derived from these five major storm events in contrast to daily thunderstorm activity. Overall, the 1995 wet season rainfall amount accounted for approximately 80 % of the total annual rainfall. Additionally, the rainfall produced from these storm events exceeded the normal amount of rainfall for many locations throughout the District. In many instances, the amounts of rainfall measured had recurrence intervals of between 3 and 25 years. Two storm events in particular (June 18-26 and October 14-19) produced such large amounts of rainfall over the course of 1 to 5 days, that the expectancy or recurrence of the amount of rainfall corresponded to a chance of 1 in 100 (a 100-year return period).

Additionally, Hurricane Allison (June 3-7) contributed an average of four inches of rain to various parts of South Florida, and produced an average of 2.5 inches District-wide. However, the data for Hurricane Allison show relatively smaller rainfall amounts and no extreme point rainfall in contrast to the other five major rain events mentioned. The impact from this event was not as significant as other events because it occurred during the beginning of the wet season when groundwater storage capacity was high due to relatively dry soil conditions; therefore it was not analyzed in detail.

As stated earlier, actual monthly subbasin precipitation averages are compared to the long-term monthly subbasin averages (Table 3-1). The actual rainfall values reported in Table 3-1 are derived using the Thiessen averaging method used by the Operations and Maintenance Department (OMD); in this method, the long-term averages are derived using the Thiessen method developed by Sculley (Tech Pub 86-6). For instance, Table 3-1 depicts that, during the month of June, the actual average basin rainfall was higher than the long term monthly averages for most of the subbasins within the District area. For example, the Lower East Coast (LEC), comprised of the Palm Beach County, Broward County, and Dade County subbasins, showed actual monthly rainfall amounts of 8.45, 14.65, and 17.40 inches, respectively, in comparison to the long term LEC average of 8.10 inches. This resulted in the subbasin receiving an average of 170 % of the normal monthly rainfall. In the southwest Coast (comprised of the coastal areas of Lee, Collier, and a small portion of Charlotte County) the actual monthly basin average was 13.68 inches in contrast to a long term monthly average of 9.38 inches, representing 146% of normal.

During the month of August, all the subbasins experienced higher actual rainfall than the long-term monthly averages. The Martin-St. Lucie subbasin (UEC) received 16.63 inches of average rainfall in comparison to 5.73 inches for the long term average, which represented 290% of normal. The Southwest Coast again experienced higher than normal rainfall of 13.80 inches compared to the long term average of 8.60 inches. This represented 160% of normal.

Again during October all subbasins in the District received higher than normal rainfall. In October, some of the greatest amounts of rainfall occurred in the Caloosahatchee subbasin, which received an average rainfall amount of 10.61 inches compared to the long term average of 3.98 inches. This represented 266% of normal. Additionally, the Martin-St. Lucie subbasin received a substantial amount of rainfall. The average basin-wide rainfall amount was 15.5 inches versus 6.8 inches for the long-term average (228% of normal). A monthly summary for each rainfall measuring station within the 13 subbasins is provided in Tables A-1 through A-13 in Appendix A. These tables summarize the monthly rainfall values for each of the 13 subbasins within the District for the months of May through December 1995. In addition, these tables show the total wet season rainfall (May-October) as well as the total for the months of

May through December. The tables also show the 1995 monthly basin average rainfall derived by averaging the rainfall values from the stations within the subbasins. Average monthly values for 1995, as a percentage of the long term average, were also derived. In order to provide a reasonable approximation of the "average" amount of subbasin rainfall, an arithmetic mean method was used. A compiled record of the daily precipitation amounts, the monthly totals, and the maximum monthly 1-day, 2-day, 3-day, and 5-day duration intervals for each station is presented (for each subbasin in Appendix B) for the months of May through December 1995.

KISSIMMEE AND LAKE OKEECHOBEE BASINS

This rainfall reporting area includes the Upper and Lower Kissimmee, and Lake Okeechobee subbasins. Included in this area are portions of Orange, Osceola, Polk, Highlands, Okeechobee, and Glades Counties lying within the District area. Presented for each subbasin are the results of the detailed analysis of the major storm events showing the distribution of point rainfall at measuring stations, and the associated return periods for any extreme events.

Upper Kissimmee Subbasin

Measured rainfall in the subbasin during Tropical Storm Jerry (August 23-26) and Hurricane Opal (October 5-7) was relatively minor in comparison to other affected basins, and these events are not included in the analysis in this subbasin section.

For the June 18-26 storm event (Table 3-3), rainfall totals from the measuring stations ranged from 2.97 to 6.94 inches, with the subbasin receiving an average of 5.25 inches. Most of the measured rainfall was recorded during the last four days of this event. The 1-day maximum rainfall amount ranged from 1.93 inches (S65) at the outlet of Lake Kissimmee to a maximum of 3.50 inches (ST. CLOUD). The 2-day maximum rainfall ranged from 2.78 to 4.00 inches, and the 3-day maximum ranged from 2.78 to 4.48 inches. There were no extreme rainfall amounts associated with the point rainfall, or the 1-, 2-, and 3-day durations.

Rainfall totals from Hurricane Erin (August 2-5) ranged from 2.58 to 4.83 inches, and the 4-day basin-wide average was 3.59 inches (Table 3-4). The 1-day maximum rainfall amount ranged from 1.50 (KISSIMMEE SP) to a maximum of 4.06 inches (ST. CLOUD). The 2-day maximum rainfall ranged from 2.15 to 4.83 inches, and the 3-day maximum ranged from 2.15 to 4.83 inches. Higher than normal rainfall was measured at the S-65A station for both the 1-day maximum (4.05 inches) and the 2-day maximum (4.83 inches), with the measured rainfall amounts for these durations having recurrence intervals of at least three years.

TABLE 3-3. Daily Rainfall (Inches) Summary, Storm Durations and Return Period (Years) for the Storm Events in the Upper Kissimmee Subbasin (June 18-26, 1995).

STATIONS	6/18	6/19	6/20	6/21	6/22	6/23	6/24	6/25	6/26	STORM DURATION (RETURN PERIOD)			
										STORM TOTAL (in)	1-DAY MAX	2-DAY MAX	3-DAY MAX
COLEY	.00	1.58	.00	.13	.40	.35	.56	.56	3.36	6.94	3.36	3.92	4.48
KISSIMMEE FS	.00	.62	.00	.00	.19	.30	.50	1.50	2.09	5.20	2.09	3.59	4.09
KISSIMMEE SP	.00	.15	.00	.10	.60	2.00	.82	.25	2.25	6.17	2.25	2.82	3.42
LAKE ALFRED	-1.00	-1.00	.00	-1.00	.42	.07	-1.00	-1.00	2.63	-	-	-	-
MC COY	.00	.00	.00	.00	-1.00	.19	.00	.82	1.96	2.97M	1.96M	2.78M	2.78M
S-61	.00	.08	.00	.04	.33	.45	.50	.60	2.80	4.80	2.80	3.40	3.90
S-65	.08	.00	.00	.06	.63	1.75	.88	1.15	1.93	6.48	1.93	3.08	3.96
S-65A	.00	.15	.00	.00	.10	.10	.94	.35	2.93	4.57	2.93	3.28	4.22
ST CLOUD	.00	.00	.00	.00	.09	.31	.35	.50	3.50	4.75	3.50	4.00	4.35

Note: 1) No Return Periods greater than 3 years. 2) Storm Duration and Storm Totals may include missing data identified by "M" tag.
 3) Missing Values on a particular day are identified by "-1.00".

TABLE 3-4. Daily Rainfall (Inches) Summary, Storm Durations and Return Period (Years) for the Storm Events in the Upper Kissimmee Subbasin (August 2 - 5, 1995).

STATIONS	8/02	8/03	8/04	8/05	STORM TOTAL (in)	STORM DURATION (RETURN PERIOD)		
						1-DAY MAX	2-DAY MAX	3-DAY MAX
COLEY	1.25	.90	.00	1.15	3.30	1.25	2.15	2.15
KISSIMMEE FS	2.10	2.15	.02	.04	4.31	2.15	4.25	4.27
KISSIMMEE SP	1.50	1.00	.08	.00	2.58	1.50	2.50	2.58
LAKE ALFRED	-1.00	1.12	.03	-1.00	-	-	-	-
MC COY	1.64	1.04	.00	.24	2.92	1.64	2.68	2.68
S-61	1.69	1.32	.01	.09	3.11	1.69	3.01	3.02
S-65	1.85	.86	.00	.42	3.13	1.85	2.71	2.71
S-65A	4.05	.78	.00	.00	4.83	4.05(>3)	4.83(>3)	4.83
ST CLOUD	4.06	.47	.03	.03	4.59	4.06	4.53	4.56

Note: 1) Return Periods shown in parenthesis are in years. 2) Storm Duration and Storm Totals may include missing data identified by "M" tag.
 3) Missing Values on a particular day are identified by "-1.00".

The Upper Kissimmee subbasin experienced very little rain as a result of the October 14-19 storm event (Table 3-5). Rainfall totals from measuring stations ranged from 1.24 to 2.47 inches, and the 6-day basin-wide average was 1.83 inches. The 1-day maximum rainfall amount ranged from 0.7 inches (KISSIMMEE FS) to a maximum of 1.25 (KISSIMMEE SP). There were no extreme rainfall amounts associated with the point rainfall, or the 1-, 2-, 3-, and 5-day durations.

Lower Kissimmee Subbasin

Measured rainfall in this subbasin during Tropical Storm Jerry (August 23-26) and Hurricane Opal (October 5-7) was relatively minor compared to other affected basins, and these events are not included in the analysis in this subbasin section.

For the June 18-26 storm event (Table 3-6), rainfall totals from the measuring stations ranged from 2.65 to 8.73 inches, with the subbasin receiving an average of 5.29 inches. Most of the measured rainfall was recorded during the last four days of this event. The 1-day maximum rainfall amount ranged from 0.67 (CV-5) to a maximum of 3.90 inches (S-71). The 2-day maximum rainfall ranged from 1.05 to 5.14 inches, and the 3-day maximum ranged from 1.37 to 5.85 inches. There were several stations with measured rainfall amounts for the 1-, 2-, and 3-day durations having return periods of at least 3 years.

The daily point rainfall resulting from Hurricane Erin (August 2-5) recorded at the 23 measuring stations ranged from 0.84 to 9.01 inches, and the 4-day basin-wide average was 2.70 inches (Table 3-7). The 1-day maximum rainfall amount ranged from 0.45 (S-129) to a max of 4.50 inches (S-65B). The 2-day maximum rainfall ranged from 0.85 to 5.60 inches, and the 3-day maximum ranged from 0.74 to 5.65 inches. Higher than normal rainfall was measured at S-65A, S-65B, and S-84. The measured 1-day duration rainfall at S-65B had a recurrence interval of at least 3 years, and the 2-day duration was at least 5 years.

The Lower Kissimmee subbasin received heavy amounts of rain as a result of the October 14-19 storm event. Rainfall totals from measuring stations ranged from 1.59 to 11.73 inches, and the 6-day basin-wide average was 4.93 inches (Table 3-8). The 1-day maximum rainfall amount ranged from 0.84 (COLEY) to a max of 6.38 inches (S-75). The 2-day maximum ranged from 1.13 inches to 8.45 inches (S-75). The 3-day maximum ranged from 1.14 (COLEY) to 8.47 inches (S-75), and 1.59 to 11.72 inches (S-75) for the 5-day maximum. There were many extreme rainfall

TABLE 3-5. Daily Rainfall (Inches) Summary, Storm Durations and Return Period (Years) for the Storm Events in the Upper Kissimmee Subbasin (October 14-19, 1995).

STATIONS	10/14	10/15	10/16	10/17	10/18	10/19	STORM TOTAL (in)	STORM DURATION			(RETURN PERIOD)			
								1-DAY	2-DAY	3-DAY	1-DAY	2-DAY	3-DAY	
								MAX	MAX	MAX	MAX	MAX	MAX	
COLEY	.00	.45	.00	.01	.84	.29	1.59	0.84	1.13	1.14	1.59			
KISSIMMEE FS	.03	.50	.00	.00	.01	.70	1.24	0.70	0.71	0.71	1.21			
KISSIMMEE SP	.12	1.25	.10	.00	.70	.30	2.47	1.25	1.37	1.47	2.35			
LAKE ALFRED	-1.00	-1.00	-1.00	.00	.17	.17	0.34M							
MC COY	.03	.53	.00	.00	.00	.72	1.28	0.72	0.72	0.72	1.25			
S-61	.04	.80	.00	.00	.07	.33	1.24	0.80	0.84	0.84	1.20			
S-65	.00	.81	.00	.02	.65	.90	2.38	0.90	1.55	1.57	2.38			
S-65A	.05	.77	.00	.18	.80	.38	2.18	0.80	1.18	1.36	2.13			
ST CLOUD	.00	.90	.03	.00	.30	1.03	2.26	1.03	1.33	1.33	2.26			

Note: 1) No Return Periods greater than 3 years. 2) Storm Duration and Storm Totals may include missing data identified by "M" tag.
3) Missing Values on a particular day are identified by "-1.00".

TABLE 3-6. Daily Rainfall (Inches) Summary, Storm Durations and Return Period (Years) for the Storm Events in the Lower Kissimmee Subbasin (June 18-26, 1995).

STATIONS	6/18 6/19 6/20 6/21 6/22 6/23 6/24 6/25 6/26										STORM TOTAL (in)	STORM DURATION (RETURN PERIOD)					
												1-DAY		2-DAY		3-DAY	
												MAX	MAX	MAX	MAX		
ARCHBOLD	.00	.08	.22	.08	.90	.60	2.46	.10	1.08	5.52	2.46	3.06	3.96				
AVON PARK	-1.00	.72	.00	.22	.23	.32	.78	.49	3.15	5.91M	3.15M	3.64M	4.42M				
COLEY	.00	1.58	.00	.13	.40	.35	.56	.56	3.36	6.94	3.36	3.92	4.48				
CV-5	.09	.30	.48	.13	.51	.19	.67	.38	.11	2.86	0.67	1.05	1.37				
OKECHOOBEE FS	.00	1.61	.01	.15	.75	.16	.49	1.10	2.50	6.77	2.50	3.60	4.09				
S-127	.01	.29	.00	.10	.32	.09	.40	1.60	3.27	6.08	3.27	4.87(>3)	5.27(>3)				
S-129	.00	.18	.00	.17	.43	.20	.40	1.22	.72	3.32	1.22	1.94	2.34				
S-131	.44	.21	.15	.17	.35	.11	.32	.90	.83	3.48	0.90	1.73	2.05				
S-133	.00	1.42	.00	.11	.99	.20	.47	2.50	2.64	8.33	2.64	5.14(>3)	5.61(>3)				
S-65	.08	.00	.00	.06	.63	1.75	.88	1.15	1.93	6.48	1.93	3.08	3.96				
S-65A	.00	.15	.00	.00	.10	.10	.94	.35	2.93	4.57	2.93	3.28	4.22				
S-65B	.00	.35	.00	.02	.10	.05	.76	.02	1.35	2.65	1.35	1.37	2.13				
S-65C	.03	.33	.00	.43	.02	.10	.95	.10	1.30	3.26	1.30	1.40	2.35				
S-65D	.00	1.20	.00	.10	.10	.21	1.70	.45	1.15	4.91	1.70	2.15	3.30				
S-65E	.24	.82	.03	.16	.25	.38	.89	1.09	2.82	6.68	2.82	3.91	4.80				
S-68	.00	.50	.00	.15	.25	.00	1.05	.10	1.15	3.20	1.15	1.25	2.30				
S-70	.01	.13	.09	.03	.23	.07	1.04	.55	1.06	3.21	1.06	1.61	2.65				
S-71	1.01	.39	.02	.30	1.00	.37	1.43	.31	3.90	8.73	3.90(>3)	4.21	5.64(>3)				
S-72	.11	.49	.07	.10	.20	.03	.47	.50	2.48	4.45	2.48	2.98	3.45				
S-75	.00	2.51	.04	.05	.47	.22	1.38	.76	1.23	6.66	2.51	2.55	3.37				
S-82	.00	.52	.00	.02	.26	.21	1.16	.90	1.75	4.82	1.75	2.65	3.81				
S-83	.00	1.26	.00	.07	.35	.00	.00	1.15	1.35	4.18	1.35	2.50	2.50				
S-84	.36	1.43	.05	.15	.26	.30	1.96	1.46	2.43	8.40	2.43	3.89	5.85(>3)				

Note: 1) Return Periods shown in parenthesis are in years. 2) Storm Duration and Storm Totals may include missing data identified by "M" tag. 3) Missing values on a particular day are identified by "+1.00".

TABLE 3-7. Daily Rainfall (Inches) Summary, Storm Durations and Return Period (Years) for the Storm Events in the Lower Kissimmee Subbasin (August 2-5, 1995).

STATIONS	8/02	8/03	8/04	8/05	STORM TOTAL (in)	STORM DURATION (RETURN PERIOD)					
						1-DAY		2-DAY		3-DAY	
						MAX	MIN	MAX	MIN	MAX	MIN
ARCHBOLD	.91	.36	.03	.00	1.30	0.91	1.27	1.30	1.30	1.30	1.30
AVON PARK	-1.00	.42	.00	.70	1.12M	0.70M	-	-	-	-	-
COLEY	1.25	.90	.00	1.15	3.30	1.25	2.15	2.15	2.15	2.15	2.15
CV-5	.14	.60	.00	.10	0.84	0.60	0.74	0.74	0.74	0.74	0.74
OKEECHOBEE FS	1.75	.91	.13	.21	3.00	1.75	2.66	2.66	2.66	2.66	2.66
S-127	1.00	.92	.00	.20	2.12	1.00	1.92	1.92	1.92	1.92	1.92
S-129	.32	.45	.03	.20	1.00	0.45	0.77	0.77	0.77	0.77	0.77
S-131	.45	.40	.00	.05	0.90	0.45	0.85	0.85	0.85	0.85	0.85
S-133	1.43	.60	.19	.22	2.44	1.43	2.03	2.03	2.03	2.03	2.03
S-65	1.85	.86	.00	.42	3.13	1.85	2.71	2.71	2.71	2.71	2.71
S-65A	4.05	.78	.00	.00	4.83	4.05(>3)	4.83(>3)	4.83(>3)	4.83(>3)	4.83	4.83
S-65B	4.50	1.10	.05	3.36	9.01	4.50(>3)	5.60(>5)	5.60(>5)	5.60(>5)	5.65	5.65
S-65C	2.93	.97	.02	.26	4.18	2.93	3.90	3.90	3.90	3.92	3.92
S-65D	2.10	.34	.10	.02	2.56	2.10	2.44	2.44	2.44	2.54	2.54
S-65E	1.22	.75	.06	.20	2.23	1.22	1.97	1.97	1.97	2.03	2.03
S-68	1.40	.15	.05	.15	1.75	1.40	1.55	1.55	1.55	1.60	1.60
S-70	.51	.42	.08	.01	1.02	0.51	0.93	0.93	0.93	1.01	1.01
S-71	1.39	.63	.36	.02	2.40	1.39	2.02	2.02	2.02	2.38	2.38
S-72	.77	.47	.10	.39	1.73	0.77	1.24	1.24	1.24	1.34	1.34
S-75	1.66	.76	.07	.06	2.55	1.66	2.42	2.42	2.42	2.49	2.49
S-82	.48	.49	.02	.07	1.06	0.49	0.97	0.97	0.97	0.99	0.99
S-83	2.37	.92	.01	.35	3.65	2.37	3.21	3.21	3.21	3.30	3.30
S-84	3.02	2.31	.05	.55	5.93	3.02	5.33(>3)	5.33(>3)	5.33(>3)	5.38	5.38

Note: 1) Return Periods shown in parenthesis are in years. 2) Storm Duration and Storm Totals may include missing data identified by "M" tag. 3) Missing Values on a particular day are identified by "-1.00".

TABLE 3-8. Daily Rainfall (Inches) Summary, Storm Durations and Return Period (Years) for the Storm Events in the Lower Kissimmee Area (October 14-19, 1995).

STATIONS	10/14	10/15	10/16	10/17	10/18	10/19	STORM TOTAL (in)	STORM DURATION			(RETURN PERIOD)			
								1-DAY	2-DAY	3-DAY	5-DAY			
								MAX	MAX	MAX	MAX	MAX	MAX	
ARCHBOLD	.09	.98	.00	.38	2.68	.01	4.14	2.68	3.06	3.07	4.13			
AVON PARK	.17	.43	.00	.06	.26	1.61	2.53	1.61	1.87	1.93	2.36			
COLEY	.00	.45	.00	.01	.84	.29	1.59	0.84	1.13	1.14	1.59			
CV-5	.00	2.81	.00	.00	.76	.01	3.58	2.81	2.81	2.81	3.58			
ORECHOBEE FS	.14	1.00	.00	.45	3.02	.03	4.64	3.02	3.47	3.50	4.61			
S-127	.03	1.11	.00	.81	2.88	.22	5.05	2.88	3.69	3.91	5.02			
S-129	.08	1.95	.00	1.25	2.10	.00	5.38	2.10	3.35	3.35	5.38			
S-131	.00	1.65	.00	.60	3.25	.00	5.50	3.25	3.85	3.85	5.50			
S-133	.25	.75	.18	.20	4.21	.00	5.59	4.21(>3)	4.41	4.59	5.59			
S-65	.00	.81	.00	.02	.65	.90	2.38	0.90	1.55	1.57	2.38			
S-65A	.05	.77	.00	.18	.80	.38	2.18	0.80	1.18	1.36	2.13			
S-65B	.03	.56	.00	1.15	.40	.35	2.49	1.15	1.55	1.90	2.46			
S-65C	.02	.78	.00	1.15	1.16	.01	3.12	1.16	2.31	2.32	3.11			
S-65D	.20	1.40	.00	.50	2.20	.15	4.45	2.20	2.70	2.85	4.30			
S-65E	.10	1.28	.02	.66	2.93	2.23	7.22	2.93	5.16(>3)	5.82(>3)	7.12(>5)			
S-68	.03	.57	.00	.90	1.15	.10	2.75	1.15	2.05	2.15	2.72			
S-70	.00	.95	.00	.35	3.93	.00	5.23	3.93(>3)	4.28	4.28	5.23			
S-71	.00	2.12	.04	.39	3.24	.40	6.19	3.24	3.64	4.03	6.19			
S-72	.06	1.33	.00	1.20	4.65	.00	7.24	4.65(>5)	5.85(>5)	5.85(>3)	7.24(>5)			
S-75	.69	2.56	.02	2.07	6.38	.01	11.73	6.38(>25)	8.45(>25)	8.47(>10)	11.72(>50)			
S-82	.00	.63	.00	.37	2.22	.03	3.25	2.22	2.59	2.62	3.25			
S-83	.04	1.49	.00	.89	5.44	.08	7.94	5.44(>10)	6.33(>5)	6.41(>3)	7.90(>5)			
S-84	.34	2.21	.00	.62	3.16	2.96	9.29	3.16	6.12(>5)	6.74(>5)	8.95(>10)			

Note: 1) Return Periods shown in parenthesis are in years. 2) Storm Duration and Storm Totals may include missing data identified by "M" tag. 3) Missing Values on a particular day are identified by "-1.00".

amounts associated with the 1-, 2-, 3-, and 5-day duration intervals and return periods ranged from 3 to 50 years. Approximately ten miles northwest of Lake Okeechobee (S-75), the rainfall data indicate that the maximum 1- and 2-day rainfall amounts recorded (6.38 and 8.45 inches) were associated with recurrence intervals of at least 25 years, and the maximum 5-day rainfall amount (11.72 inches) had a recurrence interval of at least 50 years.

Lake Okeechobee Subbasin

Measured rainfall in this subbasin during Hurricane Erin (August 2-5) and Hurricane Opal (October 5-7) was relatively minor in comparison to other affected basins, and these events are not included in the analysis in this subbasin section.

For the June 18-26 storm event (Table 3-9), rainfall totals from the measuring stations ranged from 0.56 to 8.73 inches, with the subbasin receiving an average of 4.32 inches. The 1-day maximum rainfall amount ranged from 0.36 (S-153) to a maximum of 3.90 inches (S-71). The 2-day maximum rainfall ranged from 0.4 to 5.40 inches, and the 3-day maximum ranged from 0.45 to 5.68 inches. There were several stations with measured rainfall amounts for the 1-, 2-, and 3-day durations that have return periods of at least 3 years.

During Tropical Storm Jerry (August 23-26), rainfall totals from the 30 measuring stations ranged from 0.51 to 6.40 inches, and the 4-day basin-wide average was 3.61 inches (Table 3-10). The 1-day maximum rainfall amount ranged from 0.20 (S-191) to a maximum of 4.55 inches (CANAL POINT). The 2-day maximum rainfall ranged from 0.40 to 5.95 inches, and the 3-day maximum ranged from 0.51 to 6.35 inches. Higher than normal rainfall was measured at three rainfall measuring stations with the rainfall amounts having a recurrence interval of at least 3 years. The 5-day maximum ranged from 1.73 to 7.47 inches (S-308) on the eastern side of Lake Okeechobee.

The daily point rainfall resulting from the October 14-19 storm event ranged from 1.73 to 8.01 inches, and the 6-day basin-wide average was 5.41 inches (Table 3-11). The 1-day maximum rainfall amount ranged from 1.04 (S-79) to a maximum of 4.65 inches (S-72). There were several extreme rainfall amounts associated with the point rainfall, and the 1-, 2-, 3-, and 5-day durations with return periods ranging from 3 to 5 years.

TABLE 3-9. Daily Rainfall (Inches) Summary, Storm Durations and Return Period (Years) for the Storm Events in the Lake Okechobee Subbasin (June 18-26, 1995).

STATIONS	6/18 6/19 6/20 6/21 6/22 6/23 6/24 6/25 6/26										STORM DURATION (RETURN PERIOD)			
											TOTAL	1-DAY	2-DAY	3-DAY
											(in)	MAX	MAX	MAX
ARCHBOLD	.00	.08	.22	.08	.90	.60	2.46	.10	1.08	5.52	2.46	3.06	3.96	
AVON PARK	-1.00	.72	.00	.22	.23	.32	.78	.49	3.15	5.91M	3.15M	3.64M	4.42M	
CANAL POINT	-1.00	1.19	.00	1.12	.17	.21	-1.00	-1.00	.28	2.97M	1.19M	1.29M	2.31M	
CLEWISTON	.00	1.37	.06	.36	2.37	.15	-1.00	.52	.03	4.86M	2.37M	2.73M	2.88M	
CLEWISTON FS	.00	.66	.08	.58	1.92	.08	.50	.10	.02	3.94	1.92	2.50	2.58	
CV-5	.09	.30	.48	.13	.51	.19	.67	.38	.11	2.86	0.67	1.05	1.37	
FT PIERCE FS	.01	.10	.00	.13	.08	.08	.10	.75	1.50	2.75	1.50	2.25	2.35	
L005	.00	.10	.00	.11	.49	.05	.17	.88	.49	2.29	0.88	1.37	1.54	
L006	.00	.99	.00	.35	.34	.11	.19	.36	.04	2.38	0.99	0.99	1.34	
LZ40	.21	.14	.04	.13	.35	.15	.05	1.24	.00	2.31	1.24	1.29	1.44	
OKECHOBBE FS	.00	1.61	.01	.15	.75	.16	.49	1.10	2.50	6.77	2.50	3.60	4.09	
S-127	.01	.29	.00	.10	.32	.09	.40	1.60	3.27	6.08	3.27	4.87(>3)	5.27(>3)	
S-129	.00	.18	.00	.17	.43	.20	.40	1.22	.72	3.32	1.22	1.94	2.34	
S-131	.44	.21	.15	.17	.35	.11	.32	.90	.83	3.48	0.90	1.73	2.05	
S-133	.00	1.42	.00	.11	.99	.20	.47	2.50	2.64	8.33	2.64	5.14(>3)	5.61(>3)	
S-135	.48	.52	.02	.16	.20	.11	.02	1.04	1.78	4.33	1.78	2.82	2.84	
S-153	.00	.36	.04	.05	.04	.03	.02	.01	.01	0.56	0.36	0.40	0.45	
S-191	.00	1.96	.00	.11	.15	.02	.28	1.98	3.42	7.92	3.42	5.40(>3)	5.68(>3)	
S-2	.00	2.13	.02	1.12	.14	.63	.40	.05	.00	4.49	2.13	2.15	3.27	
S-3	.00	1.85	.03	.70	.70	.30	.60	.05	.00	4.23	1.85	1.88	2.58	
S-308	.00	2.36	.00	.15	.14	.21	.10	.58	.60	4.14	2.36	2.36	2.51	
S-352	.01	.78	.00	.28	.15	.17	.37	.27	.14	2.17	0.78	0.79	1.06	
S-4	.00	1.96	.02	.23	.51	.05	.47	1.25	.00	4.49	1.96	1.98	2.21	
S-65D	.00	1.20	.00	.10	.10	.21	1.70	.45	1.15	4.91	1.70	2.15	3.30	
S-70	.01	.13	.09	.03	.23	.07	1.04	.55	1.06	3.21	1.06	1.61	2.65	
S-71	1.01	.39	.02	.30	1.00	.37	1.43	.31	3.90	8.73	3.90(>3)	4.21	5.64(>3)	
S-72	.11	.49	.07	.10	.20	.03	.47	.50	2.48	4.45	2.48	2.98	3.45	
S-77	.00	.83	.21	.22	1.55	.50	.28	.00	.02	3.61	1.55	2.05	2.33	
S-78	.21	2.76	.10	.17	.19	.31	.79	.35	.08	4.96	2.76	2.97	3.07	
S-79	.00	.08	.27	.42	.04	.06	2.84	.05	.01	3.77	2.84	2.90	2.95	

Note: 1) Return Periods shown in parenthesis are in years. 2) Storm Duration and Storm Totals may include missing data identified by "M" tag.
 3) Missing Values on a particular day are identified by ".1.00".

TABLE 3-10. Daily Rainfall (Inches) Summary, Storm Durations and Return Period (Years) for the Storm Events in Lake Okeechobee Subbasin (August 23-26, 1995).

STATIONS	8/23	8/24	8/25	8/26	STORM TOTAL (in)	STORM DURATION (RETURN PERIOD)		STORM DURATION (RETURN PERIOD)	
						1-DAY MAX	2-DAY MAX	1-DAY MAX	2-DAY MAX
ARCHBOLD	.00	.21	3.85	1.10	5.16	3.85(>3)	4.95	5.16	5.16
AVON PARK	.00	.33	.23	1.24	1.80	1.24	1.47	1.80	1.80
CANAL POINT	.24	4.55	1.40	-1.00	6.19M	4.55M(>3)	5.95M(>3)	6.19M(>3)	6.19M(>3)
CLEWISTON	.00	3.00	1.19	-1.00	4.19M	3.00M	4.19M	4.19M	4.19M
CLEWISTON FS	.00	2.76	1.52	.15	4.43	2.76	4.28	4.43	4.43
CV-5	.09	1.46	.60	.70	2.85	1.46	2.06	2.76	2.76
FT PIERCE FS	.05	4.22	1.64	.49	6.40	4.22(>3)	5.86(>3)	6.35(>3)	6.35(>3)
L005	.00	1.50	1.25	-1.00	2.75M	1.50M	2.75M	2.75M	2.75M
L006	.00	2.24	.94	.06	3.24	2.24	3.18	3.24	3.24
LZ40	.00	3.02	1.14	.13	4.29	3.02	4.16	4.29	4.29
OKEECHOBEE FS	.00	1.01	.65	.60	2.26	1.01	1.66	2.26	2.26
S-127	.04	.92	.84	.86	2.66	0.92	1.76	2.62	2.62
S-129	.00	1.05	.54	1.02	2.61	1.05	1.59	2.61	2.61
S-131	.10	1.36	.25	.78	2.49	1.36	1.61	2.39	2.39
S-133	.02	.97	1.08	.86	2.93	1.08	2.05	2.91	2.91
S-135	.12	3.21	1.50	.14	4.97	3.21	4.71	4.85	4.85
S-153	.01	4.18	1.05	.03	5.27	4.18(>3)	5.23	5.26	5.26
S-191	.00	.20	.20	.11	0.51	0.20	0.40	0.51	0.51
S-2	.00	2.30	1.90	.60	4.80	2.30	4.20	4.80	4.80
S-3	.00	1.50	1.50	.20	3.20	1.50	3.00	3.20	3.20
S-308	.00	3.52	1.27	.09	4.88	3.52	4.79	4.88	4.88
S-352	.24	3.54	1.05	.34	5.17	3.54	4.59	4.93	4.93
S-4	.00	1.67	1.08	.20	2.95	1.67	2.75	2.95	2.95
S-65D	.01	1.10	.45	1.00	2.56	1.10	1.55	2.55	2.55
S-70	.60	.44	.48	1.02	2.54	1.02	1.50	1.94	1.94
S-71	.01	1.29	.66	1.07	3.03	1.29	1.95	3.02	3.02
S-72	.00	.49	.61	.71	1.81	0.71	1.32	1.81	1.81
S-77	.08	1.50	1.25	.83	3.66	1.50	2.75	3.58	3.58
S-78	.47	1.03	.87	1.12	3.49	1.12	1.99	3.02	3.02
S-79	.01	.66	2.08	2.33	5.08	2.33	4.41	5.07	5.07

Note: 1) Return Periods shown in parenthesis are in years. 2) Storm Duration and Storm Totals may include missing data identified by "M" tag. 3) Missing Values on a particular day are identified by "-1.00".

TABLE 3-11. Daily Rainfall (Inches) Summary, Storm Durations and Return Period (Years) for the Storm Events in the Lake Okeechobee Subbasin (October 14-19, 1995).

STATIONS	10/14					10/15					10/16					10/17					10/18					10/19					STORM TOTAL (in)	STORM DURATION			(RETURN PERIOD)		
	1-DAY MAX					1-DAY MAX					1-DAY MAX					1-DAY MAX					1-DAY MAX					1-DAY MAX			3-DAY MAX			5-DAY MAX					
	MAX	MAX	MAX	MAX	MAX	MAX	MAX	MAX	MAX	MAX	MAX	MAX	MAX	MAX	MAX	MAX	MAX	MAX	MAX	MAX	MAX	MAX	MAX	MAX	MAX	MAX	MAX	MAX	MAX	MAX		MAX	MAX	MAX	MAX		
ARCHBOLD	.09	.98	.00	.38	2.68	.01	4.14	2.53	1.61	1.61	1.87	3.06	3.07	4.13																							
AVON PARK	.17	.43	.00	.06	.26	1.61	2.53	1.87	1.93	1.93	1.87	1.93	1.93	2.36																							
CANAL POINT	-1.00	-1.00	1.36	1.05	2.80	.00	5.21M	2.80M	3.85M	3.85M	3.85M	3.85M	3.85M	-																							
CLEWISTON	.10	2.00	1.00	2.17	1.57	.03	6.87	2.17	3.74	3.74	5.17	5.17	6.84(>3)																								
CLEWISTON FS	.03	2.00	.35	2.90	1.75	.01	7.04	2.90	4.65	4.65	5.25	5.25	7.03(>3)																								
CV-5	.00	2.81	.00	.00	.76	.01	3.58	2.81	2.81	2.81	2.81	2.81	3.58																								
FT PIERCE FS	.60	1.50	.14	.34	4.49	.02	7.09	4.49(>3)	4.83	4.83	4.97	4.97	7.07(>3)																								
L005	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-	-	-	-	-	-	-	-																							
L006	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-	-	-	-	-	-	-	-																							
LZ40	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-	-	-	-	-	-	-	-																							
OKEECHOBEE FS	.14	1.00	.00	.45	3.02	.03	4.64	3.02	3.47	3.47	3.50	3.50	4.61																								
S-127	.03	1.11	.00	.81	2.88	.22	5.05	2.88	3.69	3.69	3.91	3.91	5.02																								
S-129	.08	1.95	.00	1.25	2.10	.00	5.38	2.10	3.35	3.35	3.35	3.35	5.38																								
S-131	.00	1.65	.00	.60	3.25	.00	5.50	3.25	3.85	3.85	3.85	3.85	5.50																								
S-133	.25	.75	.18	.20	4.21	.00	5.59	4.21(>3)	4.41	4.41	4.59	4.59	5.59																								
S-135	.04	.80	.16	.77	2.90	.27	4.94	2.90	3.67	3.67	3.94	3.94	4.90																								
S-153	.00	.95	.05	1.10	4.01	.20	6.31	4.01(>3)	5.11	5.11	5.31	5.31	6.31																								
S-191	.05	.38	.02	.05	3.67	.11	4.28	3.67	3.78	3.78	3.83	3.83	4.23																								
S-2	.20	1.40	.60	.97	1.05	.00	4.22	1.40	2.02	2.02	2.97	2.97	4.22																								
S-3	.05	2.25	.70	2.22	1.39	.00	6.61	2.25	3.61	3.61	5.17	5.17	6.61																								
S-308	.54	.67	1.26	1.42	3.47	.65	8.01	3.47	4.89	4.89	6.15(>3)	6.15(>3)	7.47(>3)																								
S-352	.06	1.37	1.01	.92	2.48	.01	5.85	2.48	3.40	3.40	4.41	4.41	5.84																								
S-4	.05	1.50	.20	2.00	1.29	.03	5.07	2.00	3.29	3.29	3.70	3.70	5.04																								
S-65D	.20	1.40	.00	.50	2.20	.15	4.45	2.20	2.70	2.70	2.85	2.85	4.30																								
S-70	.00	.95	.00	.35	3.93	.00	5.23	3.93(>3)	4.28	4.28	4.28	4.28	5.23																								
S-71	.00	2.12	.04	.39	3.24	.40	1.19	3.24	3.64	3.64	4.03	4.03	6.19																								
S-72	.06	1.33	.00	1.20	4.65	.00	7.24	4.65(>5)	5.85(>5)	5.85(>5)	5.85(>3)	5.85(>3)	7.24(>5)																								
S-77	.51	2.97	.00	1.05	1.08	.02	5.63	2.97	3.48	3.48	4.02	4.02	5.61																								
S-78	.06	1.15	.00	.18	.34	.00	1.73	1.15	1.21	1.21	1.33	1.33	1.73																								
S-79	.91	1.04	.00	.05	.31	.01	2.32	1.04	1.95	1.95	1.95	1.95	2.31																								

Note: 1) Return Periods shown in parenthesis are in years. 2) Storm Duration and Storm Totals may include missing data identified by "M" tag.
3) Missing Values on a particular day are identified by "-1.00".

EVERGLADES AGRICULTURAL AREA (EAA EAST AND WEST)

EAA East Subbasin

Measured rainfall in the EAA East subbasin during Hurricane Erin (August 2-5) and Hurricane Opal (October 5-7) was relatively minor in comparison to other affected basins, and these events are not included in the analysis in this subbasin section.

For the June 18-26 storm event (Table 3-12), rainfall totals from the measuring stations ranged from 0.56 to 5.89 inches, with the subbasin receiving an average of 3.27 inches. The 1-day maximum rainfall amount ranged from 0.36 (S-153) to a maximum of 2.65 inches (G-136). The 2-day maximum rainfall ranged from 0.4 to 3.22 inches, and the 3-day maximum ranged from 0.45 to 4.50 inches. There were no extreme rainfall amounts associated with the individual stations, or the 1-, 2-, and 3-day durations.

During Tropical Storm Jerry (August 23-26), rainfall totals from the 23 measuring stations ranged from 2.38 (S-5AY) to 8.39 inches (S-7), and the 4-day basin-wide average was 4.89 inches (Table 3-13). The 1-day maximum rainfall amount ranged from 1.46 (S-6Z) to a maximum of 5.80 inches (S-7). The 2-day maximum rainfall ranged from 2.35 to 7.50 inches, the 3-day maximum ranged from 2.37 to 8.32 inches, and 2.82 to 11.76 inches (10 year return period) for the 5-day maximum. Higher than normal rainfall was measured at seven rainfall measuring stations with the rainfall amounts having a recurrence interval of at least 3 or 5 years for the 1-, 2-, 3-, and 5-day maximums.

The daily point rainfall resulting from the October 14-19 storm event ranged from 2.83 to 11.77 inches, and the 6-day basin-wide average was 6.09 inches (Table 3-14). The 1-day maximum rainfall amount ranged from 0.89 (S-8Z) to a maximum of 5.06 inches (S-5A). There were several extreme rainfall amounts associated with the individual stations, or the 1-, 2-, 3-, and 5-day durations with associated return periods ranging from 3 to 10 years.

TABLE 3-12. Daily Rainfall (Inches) Summary, Storm Durations and Return Period (Years) for the Storm Events in EAA (East) Subbasin (June 18-26, 1995).

STATIONS	6/18	6/19	6/20	6/21	6/22	6/23	6/24	6/25	6/26	STORM TOTAL (in)	STORM DURATION (RETURN PERIOD)						
											1-DAY		2-DAY		3-DAY		
											MAX	MAX	MAX	MAX	MAX		
BELLE GLADE	.05	.88	.00	.65	.27	.45	.11	.30	.45	3.16	0.88	0.93	1.53				
C-18W	.00	.16	.00	.23	.59	.18	.56	2.92	1.02	5.66	2.92	3.94	4.50				
CANAL POINT	-1.00	1.19	.00	1.12	.17	.21	-1.00	-1.00	.28	2.97M	1.19M	1.29M	2.31M				
CLEWISTON	.00	1.37	.06	.36	2.37	.15	-1.00	.52	.03	4.86M	2.37M	2.73M	2.88M				
CLEWISTON FS	.00	.66	.08	.58	1.92	.08	.50	.10	.02	3.94	1.92	2.50	2.58				
G-136	.00	1.48	.04	.57	2.65	.39	.15	.58	.03	5.89	2.65	3.22	3.61				
G-155	.03	.79	.03	.60	.48	.11	.01	.29	.00	2.34	0.79	1.08	1.42				
G-201	.06	.35	.18	.38	.38	.38	.01	.11	.03	1.88	0.38	0.76	1.14				
L006	.00	.99	.00	.35	.34	.11	.19	.36	.04	2.38	0.99	0.99	1.34				
S-153	.00	.36	.04	.05	.04	.03	.02	.01	.01	0.56	0.36	0.40	0.45				
S-2	.00	2.13	.02	1.12	.14	.63	.40	.05	.00	4.49	2.13	2.15	3.27				
S-3	.00	1.85	.03	.70	.70	.30	.60	.05	.00	4.23	1.85	1.88	2.58				
S-352	.01	.78	.00	.28	.15	.17	.37	.27	.14	2.17	0.78	0.79	1.06				
S-4	.00	1.96	.02	.23	.51	.05	.47	1.25	.00	4.49	1.96	1.98	2.21				
S-5A	.19	.23	.01	.37	.37	.62	.20	.80	.40	3.19	0.80	1.20	1.62				
S-5AX	.01	1.41	.00	.38	.50	.20	.04	.16	.48	3.18	1.41	1.42	1.79				
S-5AY	.07	.18	.00	.39	.23	.07	.12	.97	.45	2.48	0.97	1.42	1.54				
S-6	.00	.56	.52	.18	.66	.77	.00	.95	.03	3.67	0.95	1.43	1.72				
S-6Z	.00	.47	.00	.47	.29	.49	.03	.05	.09	1.89	0.49	0.78	1.25				
S-7	.30	.67	.12	.15	.86	.78	.27	.12	.00	3.27	0.86	1.64	1.91				
S-7Z	.40	1.61	.01	.47	.36	.27	.01	.01	.12	3.26	1.61	2.01	2.09				
S-8	.00	1.00	.05	.50	.50	.22	.00	.50	.21	2.78	1.00	1.05	1.55				
S-8Z	.06	.79	.01	.61	.29	.56	.03	.01	.01	2.37	0.79	0.90	1.46				

Note. 1) No Return Periods greater than 3 years. 2) Storm Duration and Storm Totals may include missing data identified by "M" tag. 3) Missing Values on a particular day are identified by "-1.00".

TABLE 3-13. Daily Rainfall (Inches) Summary, Storm Durations and Return Period (Years) for the Storm Events in EAA (East) Subbasin (August 23-26, 1995).

STATIONS	8/23	8/24	8/25	8/26	STORM TOTAL (in)	STORM DURATION (RETURN PERIOD)		
						1-DAY MAX	2-DAY MAX	3-DAY MAX
BELLE GLADE	.13	3.56	1.41	.03	5.13	3.56	4.97	5.10
C-18W	.15	4.21	.72	.90	5.98	4.21	4.93	5.83
CANAL POINT	.24	4.55	1.40	-1.00	6.19M	4.55M(>3)	5.95M(>3)	6.19M(>3)
CLEWISTON	.00	3.00	1.19	-1.00	4.19M	3.00M	4.19M	4.19M
CLEWISTON FS	.00	2.76	1.52	.15	4.43	2.76	4.28	4.43
G-136	.00	2.40	2.03	.43	4.86	2.40	4.43	4.86
G-155	.00	4.05	3.01	.13	7.19	4.05(>3)	7.06(>5)	7.19(>5)
G-201	.07	2.39	1.56	1.56	5.58	2.39	3.95	5.51
L006	.00	2.24	.94	.06	3.24	2.24	3.18	3.24
S-153	.01	4.18	1.05	.03	5.27	4.18(>3)	5.23	5.26
S-2	.00	2.30	1.90	.60	4.80	2.30	4.20	4.80
S-3	.00	1.50	1.50	.20	3.20	1.50	3.00	3.20
S-352	.24	3.54	1.05	.34	5.17	3.54	4.59	4.93
S-4	.00	1.67	1.08	.20	2.95	1.67	2.75	2.95
S-5A	.00	1.83	.73	.63	3.19	1.83	2.56	3.19
S-5AX	.03	1.70	.90	.20	2.83	1.70	2.60	2.80
S-5AY	.02	1.74	.61	.01	2.38	1.74	2.35	2.37
S-6	.55	4.36	.62	1.44	6.97	4.36	4.98	6.42(>3)
S-6Z	.86	1.46	1.11	.04	3.47	1.46	2.57	3.43
S-7	.07	5.80	1.70	.82	8.39	5.80(>5)	7.50(>5)	8.32(>5)
S-7Z	.60	2.16	1.55	.53	4.84	2.16	3.71	4.31
S-8	.00	3.05	2.25	.70	6.00	3.05	5.30(>3)	6.00(>3)
S-8Z	.00	3.29	2.67	.18	6.14	3.29	5.96(>3)	6.14(>3)

Note: 1) Return Periods shown in parenthesis are in years. 2) Storm Duration and Storm Totals may include missing data identified by "M" tag. 3) Missing Values on a particular day are identified by ".1.00".

TABLE 3-14. Daily Rainfall (Inches) Summary, Storm Durations and Return Period (Years) for the Storm Events in the EAA (East) Subbasin (October 14-19, 1995).

STATIONS	STORM TOTAL (in)									STORM DURATION			(RETURN PERIOD)		
	10/14	10/15	10/16	10/17	10/18	10/19	TOTAL	1-DAY MAX	2-DAY MAX	3-DAY MAX	5-DAY MAX				
							(in)								
BELLE GLADE	.17	1.12	.80	.85	1.65	.12	4.71	1.65	2.50	3.30	4.59				
C-18W	.14	1.85	.87	3.92	4.98	.01	11.77	4.98	8.90(>5)	9.77(>10)	11.76(>10)				
CANAL POINT	-1.00	-1.00	1.36	1.05	2.80	.00	5.21M	2.80M	3.85M	-	-				
CLEWISTON	.10	2.00	1.00	2.17	1.57	.03	6.87	2.17	3.74	5.17	6.84(>3)				
CLEWISTON FS	.03	2.00	.35	2.90	1.75	.01	7.04	2.90	4.65	5.25	7.03(>3)				
G-136	.58	1.28	1.46	3.49	.66	.00	7.47	3.49	4.95	6.23(>3)	7.47(>3)				
G-155	.00	.87	2.74	.97	1.43	.55	6.56	2.74	3.71	5.14	6.56				
G-201	.20	1.18	1.28	.48	1.01	1.01	5.16	1.28	2.46	2.94	4.96				
L006	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-	-	-	-	-				
S-153	.00	.95	.05	1.10	4.01	.20	6.31	4.01(>3)	5.11	5.31	6.31				
S-2	.20	1.40	.60	.97	1.05	.00	4.22	1.40	2.02	2.97	4.22				
S-3	.05	2.25	.70	2.22	1.39	.00	6.61	2.25	3.61	5.17	6.61				
S-352	.06	1.37	1.01	.92	2.48	.01	5.85	2.48	3.40	4.41	5.84				
S-4	.05	1.50	.20	2.00	1.29	.03	5.07	2.00	3.29	3.70	5.04				
S-5A	.39	1.08	1.78	5.06	2.45	.26	11.02	5.06(>3)	7.51(>3)	9.29(>5)	10.76(>10)				
S-5AX	.08	1.09	.82	1.17	1.65	.36	5.17	1.65	2.82	3.64	5.09				
S-5AY	.07	.95	.34	1.68	1.94	.11	5.09	1.94	3.62	3.96	5.02				
S-6	.30	.53	2.29	1.70	.91	.55	6.28	2.29	3.99	4.90	5.98				
S-6Z	.16	.86	.50	.89	1.17	.01	3.59	1.17	2.06	2.56	3.58				
S-7	.47	1.48	1.56	.63	1.67	.46	6.27	1.67	3.04	3.86	5.81				
S-7Z	.01	1.24	1.33	.53	.94	.07	4.12	1.33	2.57	3.10	4.11				
S-8	.25	.75	1.40	1.60	1.68	1.10	6.78	1.68	3.28	4.68	6.53				
S-8Z	.01	.60	.89	.72	.58	.03	2.83	0.89	1.61	2.21	2.82				

Note: 1) Return Periods shown in parenthesis are in years. 2) Storm Duration and Storm Totals may include missing data identified by "M" tag.
3) Missing Values on a particular day are identified by "-1.00".

EAA West Subbasin

Measured rainfall in the subbasin during Hurricane Erin (August 2-5) and Hurricane Opal (October 5-7) was relatively minor in comparison to other affected basins, and these events are not included in the analysis in this subbasin section.

For the June 18-26 storm event (Table 3-15), rainfall totals from the measuring stations ranged from 2.34 to 5.89 inches, with the subbasin receiving an average of 3.93 inches. The 1-day maximum rainfall amount ranged from 0.79 (G-155) to a maximum of 2.65 inches (G-136). The 2-day maximum rainfall ranged from 0.9 to 2.73 inches, and the 3-day maximum ranged from 1.42 to 3.61 inches. There were no extreme rainfall amounts associated with the individual stations, or the 1-, 2-, and 3-day durations.

Rainfall amounts received during Tropical Storm Jerry (August 23-26) recorded at 9 measuring stations ranged from 2.95 to 7.19 inches, and the 4-day basin-wide average was 5.17 inches (Table 3-16). The 1-day maximum rainfall amount ranged from 1.50 (S-77) to a maximum of 4.05 inches (G-155). The 2-day maximum rainfall ranged from 2.75 to 7.06 inches, and the 3-day maximum ranged from 2.95 to 7.19 inches. Higher than normal rainfall was measured at three rainfall measuring stations with the rainfall amounts having a recurrence interval of at least 3 or 5 years.

The daily point rainfall resulting from the October 14-19 storm event ranged from 2.46 to 7.41 inches, and the 6-day basin-wide average was 5.40 inches (Table 3-17). The 1-day maximum rainfall amount ranged from 0.89 (S-8Z) to a maximum of 3.49 inches (G-136). The 3-day maximum rainfall ranged from 2.21 to 6.23 inches, and 2.82 to 7.47 inches for the 5-day maximum. There were several extreme rainfall amounts associated with the 3- and 5-day durations with return periods of at least 3 years.

TABLE 3-15. Daily Rainfall (Inches) Summary, Storm Durations and Return Period (Years) for the Storm Events in the EAA (West) Subbasin (June 18-26, 1995).

STATIONS	6/18	6/19	6/20	6/21	6/22	6/23	6/24	6/25	6/26	STORM TOTAL (in)	STORM DURATION (RETURN PERIOD)	
											1-DAY MAX	2-DAY MAX
CLEWISTON	.00	1.37	.06	.36	2.37	.15	-1.00	.52	.03	4.86M	2.37M	2.88M
CLEWISTON FS	.00	.66	.08	.58	1.92	.08	.50	.10	.02	3.94	1.92	2.58
G-136	.00	1.48	.04	.57	2.65	.39	.15	.58	.03	5.89	2.65	3.61
G-155	.03	.79	.03	.60	.48	.11	.01	.29	.00	2.34	0.79	1.42
IMMOKALEE	-1.00	1.16	.97	.14	.60	.00	-1.00	-1.00	.00	2.87M	1.16M	2.27M
IMMOKALEE LF	.04	.95	1.10	.25	.65	.44	1.33	.20	.00	4.96	1.33	2.42
S-4	.00	1.96	.02	.23	.51	.05	.47	1.25	.00	4.49	1.96	2.21
S-77	.00	.83	.21	.22	1.55	.50	.28	.00	.02	3.61	1.55	2.33
S-8Z	.06	.79	.01	.61	.29	.56	.03	.01	.01	2.37	0.79	1.46

Note: 1) No Return Periods greater than 3 years. 2) Storm Duration and Storm Totals may include missing data identified by "M" tag.
 3) Missing Values on a particular day are identified by "-1.00".

TABLE 3-16. Daily Rainfall (Inches) Summary, Storm Durations and Return Period (Years) for the Storm Events in the EAA (West) Subbasin (August 23-26, 1995).

STATIONS	8/23	8/24	8/25	8/26	STORM TOTAL (in)	STORM DURATION (RETURN PERIOD)	
						1-DAY MAX	2-DAY MAX
CLEWISTON	.00	3.00	1.19	-1.00	4.19M	3.00M	4.19M
CLEWISTON FS	.00	2.76	1.52	.15	4.43	2.76	4.43
G-136	.00	2.40	2.03	.43	4.86	2.40	4.86
G-155	.00	4.05	3.01	.13	7.19	4.05(>3)	7.19(>5)
IMMOKALEE	1.15	3.40	1.52	-1.00	6.07M	3.40M	6.07M(>3)
IMMOKALEE LF	.45	3.85	2.50	.25	7.05	3.85(>3)	6.35(>5)
S-4	.00	1.67	1.08	.20	2.95	1.67	2.95
S-77	.08	1.50	1.25	.83	3.66	1.50	3.58
S-8Z	.00	3.29	2.67	.18	6.14	3.29	6.14(>3)

Note: 1) Return Periods shown in parenthesis are in years. 2) Storm Duration and Storm Totals may include missing data identified by "M" tag.
 3) Missing Values on a particular day are identified by "-1.00".

TABLE 3-17. Daily Rainfall (Inches) Summary, Storm Durations and Return Period (Years) for the Storm Events in the EAA (West) Area (October 14-19, 1995).

STATIONS	10/14	10/15	10/16	10/17	10/18	10/19	STORM TOTAL (in)	STORM DURATION			(RETURN PERIOD)		
								1-DAY	2-DAY	3-DAY	1-DAY	3-DAY	5-DAY
								MAX	MAX	MAX	MAX	MAX	MAX
CLEWISTON	.10	2.00	1.00	2.17	1.57	.03	6.87	2.17	3.74	5.17	6.84(>3)		
CLEWISTON FS	.03	2.00	.35	2.90	1.75	.01	7.04	2.90	4.65	5.25	7.03(>3)		
G-136	.58	1.28	1.46	3.49	.66	.00	7.47	3.49	4.95	6.23(>3)	7.47(>3)		
G-155	.00	.87	2.74	.97	1.43	.55	6.56	2.74	3.71	5.14	6.56		
IMMOKALEE	-1.00	-1.00	.65	.07	1.64	.10	2.46M	1.64M	1.74M	-	-		
IMMOKALEE LF	.55	2.50	.80	.09	.71	.00	4.65	2.50	3.30	3.85	4.65		
S-4	.05	1.50	.20	2.00	1.29	.03	5.07	2.00	3.29	3.70	5.04		
S-77	.51	2.97	.00	1.05	1.08	.02	5.63	2.97	3.48	4.02	5.61		
S-8Z	.01	.60	.89	.72	.58	.03	2.83	0.89	1.61	2.21	2.82		

Note: 1) Return Periods shown in parenthesis are in years. 2) Storm Duration and Storm Totals may include missing data identified by "M" tag.
 3) Missing Values on a particular day are identified by "-1.00".

WATER CONSERVATION AREAS

Measured rainfall in the subbasin during Hurricane Erin (August 2-5) and Hurricane Opal (October 5-7) was relatively minor in comparison to other affected basins, and these events are not included in the analysis of this subbasin.

For the June 18-26 storm event (Table 3-18), rainfall totals from the measuring stations ranged from 1.84 inches (DELRAY BEACH W) to 14.81 inches (HIALEAH W), with the subbasin receiving an average of 5.87 inches. The 1-day maximum rainfall amount ranged from 0.38 inches (G-201) to 5.41 inches (TAMIAMI CANAL). The 2-day maximum rainfall ranged from 0.76 to 11.49 inches (HIALEAH W), and the 3-day maximum ranged from 1.14 to 13.76 inches (HIALEAH W). There were six stations with measured rainfall amounts for the 1-, 2-, and 3-day durations that had return periods ranging from 3 to 100 years. The rainfall amounts for the 2- and 3-day maximums recorded at the west Hialeah and Tamiami Canal stations had return periods of 50 and 100 years.

During Tropical Storm Jerry (August 23-26), rainfall totals from the 26 measuring stations ranged from 3.11 to 9.37 inches, and the 4-day basin-wide average was 6.17 inches (Table 3-19). The 1-day maximum rainfall amount ranged from 1.65 (CHEKIKI EVER) to 8.08 inches (S-39). The 2-day maximum rainfall ranged from 2.56 to 9.18 inches, and the 3-day maximum ranged from 3.11 to 9.32 inches. Higher than normal rainfall was measured at almost all the rainfall stations with the rainfall amounts having recurrence intervals of 3, 5, or 10 years.

The October 14-19 storm event produced rainfall totals ranging from 2.21 to 11.02 inches, and a 6-day basin-wide average of 4.95 inches (Table 3-20). The 1-day maximum rainfall amount ranged from 0.63 (CORAL SPRINGS) to 5.06 inches (S-A). The 2-day maximum ranged from 1.25 to 7.51 inches (S-A), the 3-day maximum ranged from 1.53 to 9.29 inches (S-A), and the 5-day maximum ranged from 2.21 to 10.76 inches. There were several extreme rainfall amounts associated with the point rainfall, and there were 2-, 3-, and 5-day durations for the S-A station with associated return periods ranging from 3 to 10 years.

TABLE 3-18. Daily Rainfall (Inches) Summary, Storm Durations and Return Period (Years) for the Storm Events in the Water Conservation Areas 1, 2, and 3 (June 18-26, 1995).

STATIONS	STORM TOTAL (in)										STORM DURATION (RETURN PERIOD)		
	6/18	6/19	6/20	6/21	6/22	6/23	6/24	6/25	6/26	TOTAL	1-DAY MAX	2-DAY MAX	3-DAY MAX
	ANDYTOWN SW	.02	.27	.08	.58	1.12	.49	.34	.25	.00	3.15	1.12	1.70
BONAVENTURE	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-	-	-	-
CHEKIKI EVER	.24	.06	.01	3.70	3.52	2.11	.14	.00	.00	9.78	3.70	7.22(>5)	9.33
COOPERTOWN	-1.00	.07	-1.00	-1.00	-1.00	-1.00	.37	.02	-1.00	-	-	-	-
CORAL SPR 11W	.01	.52	.55	.62	1.26	.69	.36	2.69	.09	6.79	2.69	3.05	3.74
CORAL SPRINGS	.03	.11	.00	.86	.95	.74	2.41	2.87	.00	7.97	2.87	5.28	6.02
DELRAY BEACH W	.00	.11	.01	.47	.51	.41	.15	.14	.04	1.84	0.51	0.98	1.39
G-155	.03	.79	.03	.60	.48	.11	.01	.29	.00	2.34	0.79	1.08	1.42
G-201	.06	.35	.18	.38	.38	.38	.01	.11	.03	1.88	0.38	0.76	1.14
HIALEAH W	.05	.03	.10	4.37	7.12	2.27	.63	.24	.00	14.81	7.12(>10)	11.49(>50)	13.76(>100)
HILLSBORO CNL	.02	.31	.69	.46	.99	.37	.24	.42	.01	3.51	0.99	1.45	2.14
S-124	.01	.16	.15	.84	1.24	1.02	.69	.14	.00	4.25	1.24	2.26	3.10
S-140	.02	.87	.03	1.55	.75	.35	.00	.00	.02	3.59	1.55	2.30	2.65
S-30	.01	.29	.01	2.60	3.61	.63	.48	.00	.00	7.63	3.61	6.21(>3)	6.84(>3)
S-338	.74	.09	.06	4.99	3.81	1.59	.31	.00	.00	11.59	4.99(>3)	8.80(>5)	10.39(>10)
S-34	.09	.27	.14	.93	1.66	.96	.79	.00	.00	4.84	1.66	2.62	3.55
S-38	.02	.35	.37	1.05	1.16	1.09	1.25	2.79	.00	8.08	2.79	4.04	5.13
S-39	.00	.12	.17	.55	.89	.58	1.48	2.67	.00	6.46	2.67	4.15	4.73
S-5A	.19	.23	.01	.37	.37	.62	.20	.80	.40	3.19	0.80	1.20	1.62
S-6	.00	.56	.52	.18	.66	.77	.00	.95	.03	3.67	0.95	1.43	1.72
S-7	.30	.67	.12	.15	.86	.78	.27	.12	.00	3.27	0.86	1.64	1.91
S-8	.00	1.00	.05	.50	.50	.22	.00	.30	.21	2.78	1.00	1.05	1.55
S-9	.00	.08	.05	.53	1.83	1.57	1.00	.02	.00	5.08	1.83	3.40	4.40
SWEETWATER	.05	.02	.00	2.63	.93	.71	.17	.03	.00	4.54	2.63	3.56	4.27
TAMIAMI CANAL	.03	.04	.00	5.41	3.33	2.59	1.03	.02	.01	12.46	5.41(>5)	8.74(>10)	11.33(>50)
WEST MIRAMAR	.00	.00	.00	.98	3.76	1.48	1.06	.00	.00	7.28	3.76	5.24(>3)	6.30(>5)

Note:

- 1) Return Periods shown in parenthesis are in years.
- 2) Storm Duration and Storm Totals may include missing data identified by "M" tag.
- 3) Missing Values on a particular day are identified by "-1.00".

TABLE 3-19. Daily Rainfall Summary, Storm Durations and Return Period for the Storm Events in the water Conservation Areas 1, 2, and 3 (August 23-26, 1995).

STATIONS	8/23	8/24	8/25	8/26	STORM TOTAL (in)	STORM DURATION (RETURN PERIOD)		
						1-DAY MAX	2-DAY MAX	3-DAY MAX
						MAX	MAX	MAX
ANDYTOWN 5W	.32	3.76	1.54	.88	6.50	3.76(>3)	5.30(>3)	6.18(>3)
BONAVENTURE	-1.00	-1.00	-1.00	-1.00	-	-	-	-
CHEKKA EVER	.00	1.65	1.46	.00	3.11	1.65	3.11	3.11
COOPERTOWN	-1.00	-1.00	-1.00	.20	-	-	-	-
CORAL SPR 11W	.48	-1.00	2.69	.14	3.31M	2.69M	-	-
CORAL SPRINGS	.52	5.67	1.00	.06	7.25	5.67(>3)	6.67(>3)	7.19(>3)
DELRAY BEACH W	.10	3.91	.26	.06	4.33	3.91	4.17	4.27
G-155	.00	4.05	3.01	.13	7.19	4.05(>3)	7.06(>5)	7.19(>5)
G-201	.07	2.39	1.56	1.56	5.58	2.39	3.95	5.51
KIALEAH W	.71	2.89	2.44	.13	6.17	2.89	5.33	6.04(>3)
HILLSBORO CNL	.21	6.76	1.39	.00	8.36	6.76(>5)	8.15(>5)	8.36(>5)
S-124	.93	4.64	1.41	.20	7.18	4.64	6.05(>3)	6.98(>3)
S-140	.00	2.78	2.95	.24	5.97	2.95	5.73(>3)	5.97(>3)
S-30	.22	3.91	1.74	.02	5.89	3.91	5.65(>3)	5.87
S-338	.06	1.94	1.18	.00	3.18	1.94	3.12	3.18
S-34	.22	6.64	1.57	.01	8.44	6.64(>5)	8.21(>10)	8.43(>10)
S-38	.90	5.96	1.28	.25	8.39	5.96(>3)	7.24(>3)	8.14(>3)
S-39	.14	8.08	1.10	.05	9.37	8.08(>5)	9.18(>5)	9.32(>5)
S-5A	.00	1.83	.73	.63	3.19	1.83	2.56	3.19
S-6	.55	4.36	.62	1.44	6.97	4.36	4.98	6.42(>3)
S-7	.07	5.80	1.70	.82	8.39	5.80(>5)	7.50(>5)	8.32(>5)
S-8	.00	3.05	2.25	.70	6.00	3.05	5.30(>3)	6.00(>3)
'-9	.24	4.61	1.70	.30	6.85	4.61(>3)	6.31(>5)	6.61(>5)
SWEETWATER	.01	3.21	1.74	.17	5.13	3.21	4.95	5.12
TAMIAMI CANAL	.00	3.03	2.08	.34	5.45	3.03	5.11	5.45
WEST MIRAMAR	.36	3.52	2.11	.00	5.99	3.52	5.63(>3)	5.99(>3)

Note: 1) Return Periods shown in parenthesis are in years. 2) Storm Duration and Storm Totals may include missing data identified by "M" tag. 3) Missing Values on a particular day are identified by "-1.00".

TABLE 3-20. Daily Rainfall Summary, Storm Durations and Return Period for the Storm Events in the Water Conservation Areas 1, 2, and 3 (October 14-19, 1995).

STATIONS	10/14	10/15	10/16	10/17	10/18	10/19	STORM TOTAL (in)	STORM DURATION			(RETURN PERIOD)			
								1-DAY	2-DAY	3-DAY	5-DAY			
								MAX	MAX	MAX	MAX	MAX	MAX	
ANDYTOWN 5W	.32	1.13	.98	.29	1.45	2.64	6.81	2.64	4.09	4.38	6.49			
BONAVENTURE	.63	1.14	.45	.54	1.90	.46	5.12	1.90	2.44	2.90	4.66			
CHEKIKA EVER	.41	1.04	.47	.44	.14	-1.00	2.50M	1.04M	1.51M	1.95M				
COOPERTOWN	-1.00	-1.00	.60	-1.00	-1.00	-1.00	.60M							
CORAL SPR 11W	.36	.92	1.35	.15	.61	1.19	4.58	1.35	2.27	2.63	4.22			
CORAL SPRINGS	.00	.62	.63	.27	.63	.06	2.21	0.63	1.25	1.53	2.21			
DELRAY BEACH W	.73	.43	-1.00	-1.00	1.42	.00	2.58M	1.42M						
G-155	.00	.87	2.74	.97	1.43	.55	6.56	2.74	3.71	5.14	6.56			
G-201	.20	1.18	1.28	.48	1.01	1.01	5.16	1.28	2.46	2.94	4.96			
HIALEAH W	.88	2.90	1.24	1.31	.34	.03	6.70	2.90	4.14	5.45	6.67			
HILLSBORO CNL	.16	.66	1.38	.12	1.48	.50	4.30	1.48	2.04	2.98	4.14			
S-124	.66	.51	.15	.29	1.63	.07	3.31	1.63	1.92	2.07	3.24			
S-140	.12	.68	1.22	1.48	.74	.58	4.82	1.48	2.70	3.44	4.70			
S-30	.52	1.47	1.26	.43	.65	.16	4.49	1.47	2.73	3.25	4.33			
S-338	.08	.26	.68	.89	.71	.82	3.44	0.89	1.60	2.42	3.36			
S-34	.32	1.25	.76	.47	.40	1.45	4.65	1.45	2.01	2.48	4.33			
S-38	.00	1.52	.34	1.09	2.85	.71	6.51	2.85	3.94	4.65	6.51			
S-39	.23	.63	1.02	.19	.57	.05	2.69	1.02	1.65	1.88	2.64			
S-5A	.39	1.08	1.78	5.06	2.45	.26	11.02	5.06(>3)	7.51(>3)	9.29(>5)	10.76(>10)			
S-6	.30	.53	2.29	1.70	.91	.55	6.28	2.29	3.99	4.90	5.98			
S-7	.47	1.48	1.56	.63	1.67	.46	6.27	1.67	3.04	3.86	5.81			
S-8	.25	.75	1.40	1.60	1.68	1.10	6.78	1.68	3.28	4.68	6.53			
S-9	.62	1.90	.68	.35	.68	.05	4.28	1.90	2.58	3.20	4.23			
SWEETWATER	.47	2.05	.67	.30	.18	.11	3.78	2.05	2.72	3.19	3.67			
TAMIAMI CANAL	.40	.86	2.21	.50	.04	.02	4.03	2.21	3.07	3.57	4.01			
WEST MIRAWAR	.07	-1.00	-1.00	-1.00	-1.00	-1.00	0.07M							

Note: 1) Return Periods shown in parenthesis are in years. 2) Storm Duration and Storm Totals may include missing data identified by "M" tag. 3) Missing Values on a particular day are identified by "-1.00".

UPPER EAST COAST (MARTIN-ST. LUCIE SUBBASIN)

Measured rainfall amounts from Hurricane Opal (October 5-7) were relatively small in comparison with other events in the Upper East Coast area and, therefore, an analysis is not presented.

For the June 18-26 storm event (Table 3-21), rainfall totals from the measuring stations ranged from 0.56 to 7.92 inches, with the subbasin receiving an average of 4.16 inches. The 1-day maximum rainfall amount ranged from 0.36 (S-153) to 3.72 inches (S-80). The 2-day maximum rainfall ranged from 0.4 to 5.40 inches, and the 3-day maximum ranged from 0.45 to 5.68 inches. One rainfall station (S-191) measured rainfall amounts for the 2- and 3-day durations that had return periods of at least 3 years.

The resulting daily point rainfalls and various durations for Hurricane Erin (August 2-5) are shown in Table 3-22. The 4-day storm total ranged from 1.27 inches (S-191) to 6.45 inches (S-49). The 3-day maximum rainfall ranged from 1.18 to 6.25 inches (S-49), and a recurrence interval of three years is associated with the maximum 3-day rainfall at S-49.

During Tropical Storm Jerry (August 23-26), rainfall totals from the 14 measuring stations ranged from 0.51 to 11.42 inches, and the 4-day basin-wide average was 5.57 inches (Table 3-23). The 1-day maximum rainfall amount ranged from 0.20 (S-191) to 10.25 inches (S-80). The 2-day maximum rainfall ranged from 0.40 to 10.78 inches, and the 3-day maximum ranged from 0.51 to 11.18 inches. There were several extreme events associated with the individual stations for the 1-, 2-, and 3-day maximums at the S-191 station that had return periods of 25 and 100 years. There were five other stations which had 5 and 10 year return periods for the various durations.

The daily point rainfall resulting from the October 14-19 storm ranged from 4.20 to 19.23 inches, and the 6-day basin-wide average was 8.90 inches (Table 3-24). The 1-day maximum rainfall amount ranged from 2.51 inches (VERO BEACH) to 13.90 inches (S-46). The 2-day maximum ranged from 3.14 inches (VERO BEACH) to 17.01 inches (S-46), the 3-day maximum ranged from 3.37 to 17.73 inches (S-46), and the 5-day maximum duration ranged from 4.14 to 19.23 inches (S-46). There were several extreme rainfall amounts associated with particular stations, and return periods ranged from 3 to over 100 years for the associated 1-, 2-, 3-, and 5-day rainfall durations.

TABLE 3-21. Daily Rainfall (Inches) Summary, Storm Durations and Return Period (Years) for the Storm Events in the Martin-St. Lucie Subbasin (June 18-26, 1995).

STATIONS	6/18	6/19	6/20	6/21	6/22	6/23	6/24	6/25	6/26	STORM DURATION (RETURN PERIOD)											
										TOTAL (in)			1-DAY MAX			2-DAY MAX			3-DAY MAX		
										TOTAL	1-DAY	2-DAY	3-DAY	1-DAY	2-DAY	3-DAY	1-DAY	2-DAY	3-DAY	1-DAY	2-DAY
C-18W	.00	.16	.00	.23	.59	.18	.56	2.92	1.02	5.66	2.92	3.94	4.50								
FT PIERCE FS	.01	.10	.00	.13	.08	.08	.10	.75	1.50	2.75	1.50	2.25	2.35								
OKEECHOBEE FS	.00	1.61	.01	.15	.75	.16	.49	1.10	2.50	6.77	2.50	3.60	4.09								
S-135	.48	.52	.02	.16	.20	.11	.02	1.04	1.78	4.33	1.78	2.82	2.84								
S-153	.00	.36	.04	.05	.04	.03	.02	.01	.01	0.56	0.36	0.40	0.45								
S-191	.00	1.96	.00	.11	.15	.02	.28	1.98	3.42	7.92	3.42	5.40(>3)	5.68(>3)								
S-308	.00	2.36	.00	.15	.14	.21	.10	.58	.60	4.14	2.36	2.36	2.51								
S-46	.21	.15	.00	.11	.38	.27	.34	.81	1.08	3.35	1.08	1.89	2.23								
S-49	.01	.09	.01	.24	.16	.22	.05	.97	1.28	3.03	1.28	2.25	2.30								
S-80	.00	.55	.00	.25	.32	.75	.06	3.72	1.45	7.10	3.72	5.17	5.23								
S-97	.05	.31	.02	.05	.42	.03	.05	1.00	.85	2.78	1.00	1.85	1.90								
S-99	.01	.08	.00	.13	.34	.14	.13	.95	.52	2.30	0.95	1.47	1.60								
VERO BEACH	.18	.10	.00	.06	.06	.52	.23	1.53	.67	3.35	1.53	2.20	2.43								
VERO BEACH W	-1.00	.10	.00	.08	.10	.43	-1.00	-1.00	.57	1.28M	0.57M	0.53M	0.61M								

Note: 1) Return Periods shown in parenthesis are in years. 2) Storm Duration and Storm Totals may include missing data identified by "M" tag. 3) Missing Values on a particular day are identified by "-1.00".

TABLE 3-22. Daily Rainfall (Inches) Summary, Storm Durations and Return Period for the Storm Events in the Martin-St. Lucie Subbasin (August 2-5, 1995).

STATIONS	8/02	8/03	8/04	8/05	STORM DURATION (RETURN PERIOD)											
					TOTAL (in)			1-DAY MAX			2-DAY MAX			3-DAY MAX		
					TOTAL	1-DAY	2-DAY	3-DAY	1-DAY	2-DAY	3-DAY	1-DAY	2-DAY	3-DAY	1-DAY	2-DAY
C-18W	.82	1.20	1.92	.50	4.44	1.92	3.12	3.94								
FT PIERCE FS	2.14	.18	.97	.22	3.51	2.14	2.32	3.29								
OKEECHOBEE FS	1.75	.91	.13	.21	3.00	1.75	2.66	2.79								
S-135	.48	.98	.83	.54	2.83	0.98	1.81	2.35								
S-153	.40	.82	1.18	.83	3.23	1.18	2.01	2.83								
S-191	.78	.30	.10	.09	1.27	0.78	1.08	1.18								
S-308	.34	1.36	.90	.50	3.10	1.36	2.26	2.76								
S-46	.57	1.62	1.88	.22	4.29	1.88	3.50	4.07								
S-49	2.50	1.50	2.25	.20	6.45	2.50	4.00	6.25(>3)								
S-80	1.94	.35	3.50	.57	6.36	3.50	4.07	5.79								
S-97	2.00	1.01	3.04	.18	6.23	3.04	4.05	6.05								
S-99	3.22	.22	2.00	.05	5.49	3.22	3.44	5.44								
VERO BEACH	2.10	1.25	1.03	.45	4.83	2.10	3.35	4.38								
VERO BEACH W	2.70	.44	.86	.14	4.14	2.70	3.14	4.00								

Note: 1) Return Periods shown in parenthesis are in years. 2) Storm Duration and Storm Totals may include missing data identified by "M" tag. 3) Missing Values on a particular day are identified by "-1.00".

TABLE 3-23. Daily Rainfall (Inches) Summary, Storm Durations and Return Period for the Storm Events in the Martin-St. Lucie Subbasin (August 23-26, 1995).

STATIONS	STORM TOTAL (in.)							STORM DURATION (RETURN PERIOD)			
	8/23	8/24	8/25	8/26	TOTAL	1-DAY	2-DAY	3-DAY	MAX	MAX	MAX
	(in.)	(in.)	(in.)	(in.)	(in.)	(in.)	(in.)	(in.)	(in.)	(in.)	(in.)
C-18W	.15	4.21	.72	.90	5.98	4.21	4.93	5.83			
FT PIERCE FS	.05	4.22	1.64	.49	6.40	4.22(>3)	5.86(>3)	6.35(>3)			
OKEECHOBEE FS	.00	1.01	.65	.60	2.26	1.01	1.66	2.26			
S-135	.12	3.21	1.50	.14	4.97	3.21	4.71	4.85			
S-153	.01	4.18	1.05	.03	5.27	4.18(>3)	5.23	5.26			
S-191	.00	.20	.20	.11	0.51	0.20	0.40	0.51			
S-308	.00	3.52	1.27	.09	4.88	3.52	4.79	4.88			
S-46	.26	4.86	.43	.41	5.96	4.86	5.29	5.70			
S-49	.16	6.00	.49	.25	6.90	6.00(>10)	6.49(>5)	6.74(>3)			
S-80	.24	10.25	.53	.40	11.42	10.25(>100)	10.78(>25)	11.18(>25)			
S-97	.14	6.00	.41	.17	6.72	6.00(>10)	6.41(>3)	6.58(>3)			
S-99	.24	5.90	1.24	.44	7.82	5.90(>10)	7.14(>5)	7.58(>5)			
VERO BEACH	.36	2.97	.78	.16	4.27	2.97	3.75	4.11			
VERO BEACH W	.22	3.37	1.01	-1.00	4.60M	3.37M	4.38M	-			

Note: 1) Return Periods shown in parenthesis are in years; 2) Storm Duration and Storm Totals may include missing data identified by "M" tag; 3) Missing Values on a particular day are identified by "-1.00".

TABLE 3-24. Daily Rainfall (Inches) Summary, Storm Durations and Return Period for the Storm Events in the Martin-St. Lucie Subbasin (October 14-19, 1995).

STATIONS	STORM TOTAL (in.)							STORM DURATION (RETURN PERIOD)				
	10/14	10/15	10/16	10/17	10/18	10/19	TOTAL	1-DAY	2-DAY	3-DAY	5-DAY	
	(in.)	(in.)	(in.)	(in.)	(in.)	(in.)	(in.)	(in.)	(in.)	(in.)	(in.)	
C-18W	.14	1.85	.87	3.92	4.98	.01	11.77	4.98	8.90(>5)	9.77(>10)	11.76(>10)	
FT PIERCE FS	.60	1.50	.14	.34	4.49	.02	7.09	4.49(>3)	4.83	4.97	7.07(>3)	
OKEECHOBEE FS	.14	1.00	.00	.45	3.02	.03	4.64	3.02	3.47	3.50	4.61	
S-135	.04	.80	.16	.77	2.90	.27	4.94	2.90	3.67	3.94	4.90	
S-153	.00	.95	.05	1.10	4.01	.20	6.31	4.01(>3)	5.11	5.31	6.31	
S-191	.05	.38	.02	.05	3.67	.11	4.28	3.67	3.78	3.83	4.23	
S-308	.54	.67	1.26	1.42	3.47	.65	8.01	3.47	4.89	6.15(>3)	7.47(>3)	
S-46	.26	1.24	.72	3.11	13.90	.00	19.23	13.90(>100)	17.01(>100)	17.73(>100)	19.23(>100)	
S-49	.70	2.00	.00	1.00	5.60	.76	10.06	5.60(>5)	6.60(>5)	7.36(>5)	9.36(>10)	
S-80	.28	1.45	.52	1.59	10.77	.06	14.67	10.77(>100)	12.36(>100)	12.88(>50)	14.61(>100)	
S-97	.50	1.90	.15	.75	8.25	2.00	13.55	8.25(>50)	10.25(>25)	11.00(>25)	13.05(>50)	
S-99	.12	2.21	.32	.60	3.00	.70	6.95	3.00	3.70	4.30	6.83	
VERO BEACH	.06	.72	.05	.63	2.51	.23	4.20	2.51	3.14	3.37	4.14	
VERO BEACH W	1.00	-1.00	.03	.91	1.92	.49	3.35M	1.92M	2.83M	-	-	

Note: 1) Return Periods shown in parenthesis are in years; 2) Storm Duration and Storm Totals may include missing data identified by "M" tag; 3) Missing Values on a particular day are identified by "-1.00".

LOWER EAST COAST (PALM BEACH, BROWARD, AND DADE SUBBASINS)

The rainfall subbasins in the Lower East Coast cover the urbanized areas of Palm Beach, Broward, and Dade Counties. The reporting area does not include the western portions of these counties that fall within the boundaries of the Water Conservation Areas (WCAs); they are discussed with the WCA subbasin.

Palm Beach County Subbasin

Hurricane Opal (October 5-7) produced relatively minor rainfall amounts in comparison with other Lower East Coast area events, thus no analysis is presented.

For the June 18-26 storm event (Table 3-25), rainfall totals from the measuring stations ranged from 1.84 to 6.46 inches; the subbasin received an average of 4.05 inches. The 1-day maximum rainfall amount ranged from 0.51 inches (DEFRAY BEACH W) to 3.92 inches (C-18W); the 2-day maximum rainfall ranged from 0.98 to 4.15 inches, and the 3-day maximum ranged from 1.39 to 4.73 inches. No stations had measured rainfall amounts for the 1-, 2-, or 3-day durations that had return periods greater than 3 years.

Daily point rainfalls and various durations for Hurricane Erin (August 2-5) are shown in Table 3-26. The 4-day storm total ranged from 1.68 inches (S-5AY) to 7.10 inches (S-41); the basin-wide average during this storm event was 4.89 inches. The 3-day maximum rainfall ranged from 1.53 to 6.87 inches (S-5AY), with no higher than normal rainfall amounts observed during the 4-day storm in this subbasin.

During Tropical Storm Jerry (August 23-26), rainfall totals from the 13 measuring stations ranged from 2.38 to 9.37 inches, and the 4-day basin-wide average was 6.54 inches (Table 3-27). The 1-day maximum rainfall amount ranged from 1.74 inches (S-5AY) to 8.08 inches (S-39). The 2-day maximum rainfall ranged from 2.35 to 9.18 inches, and the 3-day maximum ranged from 2.37 to 9.32 inches. Higher than normal rainfall was measured at six rainfall measuring stations with the rainfall amounts having recurrence intervals of at least 3 and 5 years.

The October 14-19 storm event produced rainfall totals that ranged from 2.69 to 19.23 inches, and a 6-day basin-wide average of 10.07 inches (Table 3-28). The 1-day maximum rainfall amount ranged from 1.02 inches (S-39) to 13.98 inches (S-46). The 2-day maximum ranged from 1.65 to 17.01 inches, the 3-day maximum ranged from 1.88 to 17.73 inches, and the 5-day maximum ranged from 2.64 to 19.23 inches. The minimum and maximum rainfall amount for all duration intervals were recorded at S-39 and S-46, respectively. There were several extreme rainfall amounts associated with individual stations, and the 2-, 3-, and 5-day durations. Associated return periods ranged from 3 to 5 years. Also, return periods of 25 and 100 years were associated with the rainfall amount measured at the S-44 and S-46 rainfall stations.

TABLE 3-25. Daily Rainfall (Inches) Summary, Storm Durations and Return Period (Years) for the Storm Events in the Palm Beach County Subbasin (June 18-26, 1995).

STATIONS	6/18	6/19	6/20	6/21	6/22	6/23	6/24	6/25	6/26	STORM TOTAL (in)	STORM DURATION (RETURN PERIOD)								
											1-DAY			2-DAY			3-DAY		
											MAX	MAX	MAX	MAX	MAX	MAX	MAX	MAX	MAX
C-W	.00	.16	.00	.23	.59	.18	.56	2.92	1.02	5.66	2.92	3.94	4.50						
DEFRAY BEACH W	.00	.11	.01	.47	.51	.41	.15	.14	.04	1.84	0.51	0.98	1.39						
G-56	.08	.45	.14	1.42	1.00	1.37	.27	.37	.00	5.10	1.42	2.42	3.79						
FBIA	.56	.05	.02	.77	.37	.20	.10	.46	1.26	3.79	1.26	1.72	1.82						
S-155	.76	.06	.03	1.45	.62	.55	.26	.85	1.85	6.43	1.85	2.70	2.96						
S-39	.00	.12	.17	.55	.89	.58	1.48	2.67	.00	6.46	2.67	4.15	4.73						
S-40	.06	.28	.01	.80	.74	1.54	.27	.11	.01	3.82	1.54	2.28	3.08						
S-41	.39	.24	.01	.86	.77	.40	.30	.29	.01	3.27	0.86	1.63	2.03						
S-44	.76	.04	.00	.78	.44	.20	.56	.65	.73	4.16	0.78	1.38	1.94						
S-46	.21	.15	.00	.11	.38	.27	.34	.81	1.08	3.35	1.08	1.89	2.23						
S-5A	.19	.23	.01	.37	.37	.62	.20	.80	.40	3.19	0.80	1.20	1.62						
S-5AY	.07	.18	.00	.39	.23	.07	.12	.97	.45	2.48	0.97	1.42	1.54						
WESTPORT	.35	.20	.00	.20	.90	.45	.20	.55	.23	3.08	0.90	1.35	1.55						

Note: 1) No Return Periods greater than 3 years. 2) Storm Duration and Storm Totals may include missing data identified by "M" tag. 3) Missing Values on a particular day are identified by "-1.00".

TABLE 3-26. Daily Rainfall (Inches) Summary, Storm Durations and Return Period (Years) for the Storm Events in the Palm Beach County Subbasin (August 2-5, 1995).

STATIONS	8/02	8/03	8/04	8/05	8/05	8/05	8/05	8/05	8/05	STORM TOTAL (in)	STORM DURATION (RETURN PERIOD)								
											1-DAY			2-DAY			3-DAY		
											MAX	MAX	MAX	MAX	MAX	MAX	MAX	MAX	MAX
C-18W	.82	1.20	1.92	.50	4.44	1.92	3.12	3.94											
DEFRAY BEACH W	-1.00	-1.00	-1.00	-1.00															
G-56	.04	1.94	3.02	1.48	6.48	3.02	4.96	6.44											
FBIA	.42	2.10	1.01	.13	3.66	2.10	3.11	3.53											
S-155	.52	4.86	.57	.40	6.35	4.86	5.43	5.95											
S-39	.07	.89	2.91	.43	4.30	2.91	3.80	4.23											
S-40	.09	3.04	1.53	2.05	6.71	3.04	4.57	6.62											
S-41	.23	4.65	1.40	.82	7.10	4.65	6.05	6.87											
S-44	.53	2.87	1.35	.24	4.99	2.87	4.22	4.75											
S-46	.57	1.62	1.88	.22	4.29	1.88	3.50	4.07											
S-5A	.15	.62	2.12	.26	3.15	2.12	2.74	3.00											
S-5AY	.27	.17	1.09	.15	1.68	1.09	1.26	1.53											
WESTPORT	.50	2.25	2.25	.50	5.50	2.25	4.50	5.00											

Note: 1) No Return Periods greater than 3 years. 2) Storm Duration and Storm Totals may include missing data identified by "M" tag. 3) Missing Values on a particular day are identified by "-1.00".

TABLE 3-27. Daily Rainfall (Inches) Summary, Storm Durations and Return Period (Years) for the Storm Events in the Palm Beach County Subbasin (August 23 - 26, 1995).

STATIONS	STORM TOTAL (in)						STORM DURATION (RETURN PERIOD)					
	8/23	8/24	8/25	8/26	TOTAL	(in)	1-DAY MAX	2-DAY MAX	3-DAY MAX	MAX	MAX	
C-18W	.15	4.21	.72	.90	5.98	4.21	4.93	5.83				
DELRAY BEACH W	.10	3.91	.26	.06	4.33	3.91	4.17	4.27				
G-56	.49	4.81	1.44	.00	6.74	4.81	6.25	6.74				
PBIA	.56	7.90	.30	.24	9.00	7.90(>5)	8.46(>5)	8.76(>5)				
S-155	.33	6.59	.52	.01	7.45	6.59(>3)	7.11(>3)	7.44				
S-39	.14	8.08	1.10	.05	9.37	8.08(>5)	9.18(>5)	9.32(>5)				
S-40	.23	6.85	1.62	.33	9.03	6.85(>3)	8.47(>3)	8.80(>3)				
S-41	.03	6.60	1.14	.17	7.94	6.60(>3)	7.74(>3)	7.91(>3)				
S-44	1.20	7.31	.43	.10	9.04	7.31(>5)	8.51(>5)	8.94(>5)				
S-46	.26	4.86	.43	.41	5.96	4.86	5.29	5.70				
S-5A	.00	1.83	.73	.63	3.19	1.83	2.56	3.19				
S-5AY	.02	1.74	.61	.01	2.38	1.74	2.35	2.37				
WESTPORT	-1.00	3.75	.45	.35	4.55M	3.75M	4.20M	4.55M				

Note: 1) Return Periods shown in parenthesis are in years. 2) Storm Duration and Storm Totals may include missing data identified by "M" tag. 3) Missing Values on a particular day are identified by "-1.00".

TABLE 3-28. Daily Rainfall (Inches) Summary, Storm Durations and Return Period (Years) for the Storm Events in the Palm Beach County Subbasin (October 14-19, 1995).

STATIONS	STORM TOTAL (in)									STORM DURATION (RETURN PERIOD)								
	10/14	10/15	10/16	10/17	10/18	10/19	TOTAL	1-DAY MAX	2-DAY MAX	3-DAY MAX	5-DAY MAX	MAX	MAX	MAX	MAX			
C-18W	.14	1.85	.87	3.92	4.98	.01	11.77	4.98	8.90(>5)	9.77(>10)	11.76(>10)							
DELRAY BEACH W	.73	.43	-1.00	-1.00	1.42	.00	2.58M	1.42M	1.42M	1.16M	1.16M							
G-56	.04	1.13	2.12	1.00	1.25	.24	5.78	2.12	3.25	4.37	5.74							
PBIA	.31	1.70	.88	2.70	2.88	.11	8.58	2.88	5.58	6.46	8.47							
S-155	.34	1.48	.87	3.05	2.18	.16	8.08	3.05	5.23	6.10	7.92							
S-39	.23	.63	1.02	.19	.57	.05	2.69	1.02	1.65	1.88	2.64							
S-40	.04	2.18	3.21	4.53	1.01	.58	11.55	4.53	7.74(>3)	9.92(>5)	11.51(>5)							
S-41	.54	1.51	1.31	3.38	2.93	.02	9.69	3.38	6.31	7.62	9.67(>3)							
S-44	.12	1.67	.83	5.64	10.49	.02	19.77	10.49(>25)	16.13(>100)	16.96(>100)	18.75(>100)							
S-46	.26	1.24	.72	3.11	13.90	.00	19.23	13.90(>100)	17.01(>100)	17.73(>100)	19.23(>100)							
S-5A	.39	1.08	1.78	5.06	2.45	.26	11.02	5.06(>3)	7.51(>3)	9.29(>5)	10.76(>10)							
S-5AY	.07	.95	.34	1.68	1.94	.11	5.09	1.94	3.62	3.96	5.02							
WESTPORT	.60	1.50	.90	3.80	1.30	.60	8.70	3.80	5.10	6.20	8.10							

Note: 1) Return Periods shown in parenthesis are in years. 2) Storm Duration and Storm Totals may include missing data identified by "M" tag. 3) Missing Values on a particular day are identified by "-1.00".

Broward County Subbasin

There were no significant amounts of rainfall in the Broward County subbasin due to Hurricane Opal (October 5-7), and an analysis is not presented for this subbasin.

For the June 18-26 storm event (Table 3-29), rainfall totals from the measuring stations ranged from 4.25 inches (S-124) near Bonaventure to 15.41 inches (S-29) in North Miami, with the subbasin receiving an average of 7.43 inches. The 1-day maximum rainfall amount ranged from .24 inches (S-124) to 6.28 inches (S-29). The 2-day maximum rainfall ranged from 2.26 to 8.78 inches, and the 3-day maximum ranged from 3.10 to 13.12 inches. There were several stations with measured rainfall amounts for the 1-, 2-, and 3-day durations that had return periods of at least 3, 5, and 10 years.

The resulting daily point rainfalls and various durations for Hurricane Erin (August 2-5) are shown in Table 3-30. The 4-day storm total ranged from 1.68 inches (S-34) to 7.93 inches (S-33). The basin-wide average during this storm event was 4.70 inches. The 3-day maximum rainfall ranged from 1.13 to 7.75 inches (S-33). There were no higher-than-normal rainfall amounts observed during the course of the storm over four days in this subbasin.

Table 3-31 shows the daily point rainfall resulting from Tropical Storm Jerry (August 23-26). Rainfall totals from the 20 measuring stations ranged from 3.23 to 9.37 inches, and the 4-day basin-wide average was 6.25 inches. The 1-day maximum rainfall amount ranged from 1.3 (S-37A) to 8.08 inches (S-39). The 2-day maximum rainfall ranged from 2.39 to 9.18 inches, and the 3-day maximum ranged from 2.89 to 9.23 inches. Higher than normal rainfall was measured at eight rainfall measuring stations for various durations with the rainfall amounts having a recurrence interval of at least 3, 5, or 10 years.

Table 3-32 shows the daily point rainfall resulting from the October 14-19 storm event. Rainfall totals from measuring stations ranged from 0.59 to 8.96 inches, and the 6-day basin-wide average was 5.20 inches. The 1-day maximum rainfall amount ranged from 0.22 inches (S-28Z) to 3.86 inches (S-37A). The highest amount of rainfall was measured in the coastal areas of Broward County at stations S-37A and S-37B, however there were no extreme rainfall amounts associated with the individual stations or the 1-, 2-, 3-, and 5-day durations.

TABLE 3-29. Daily Rainfall (Inches) Summary, Storm Durations and Return Period (Years) for the Storm Events in the Broward County Subbasin (June 18-26, 1995).

STATIONS	6/18 6/19 6/20 6/21 6/22 6/23 6/24 6/25 6/26										STORM TOTAL (in)	STORM DURATION (RETURN PERIOD)			STORM DURATION (RETURN PERIOD)		
												1-DAY MAX	2-DAY MAX	3-DAY MAX	5-DAY MAX		
BONAVENTURE	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-	-	-	-	-	-	-
CORAL SPRINGS	.03	.11	.00	.86	.95	.74	2.41	2.87	.00	-1.00	7.97	2.87	5.28	6.02	-	-	7.83
FT LAUD FS	.75	.20	.13	2.12	1.91	2.40	.11	.00	.00	.00	7.62	2.40	4.31	6.43	6.43	6.43	6.76
FTL	.05	.16	.56	2.10	1.86	1.81	.39	.02	.00	.00	6.95	2.10	3.96	5.77	5.77	5.77	6.72
G-56	.08	.45	.14	1.42	1.00	1.37	.27	.37	.00	.00	5.10	1.42	2.42	3.79	3.79	3.79	4.43
HOLLYWOOD	.14	.77	.46	2.29	1.70	5.22	1.14	.40	.02	.02	12.14	5.22	6.92	9.21(>3)	10.81(>5)	10.81(>5)	10.81(>5)
S-124	.01	.16	.15	.84	1.24	1.02	.69	.14	.00	.00	4.25	1.24	2.26	3.10	3.10	3.10	3.94
S-13	.65	.02	.30	2.10	1.50	2.60	.40	.00	.00	.00	7.57	2.60	4.10	6.20	6.20	6.20	6.90
S-28Z	.01	.01	.03	4.00	2.29	3.50	1.70	.09	.00	.00	11.63	4.00	6.29	9.79(>5)	11.58(>10)	11.58(>10)	11.58(>10)
S-29	.53	.67	.68	5.28	2.50	4.34	.41	.00	.00	.00	15.41	6.28(>3)	8.78(>5)	13.12(>10)	14.47(>25)	14.47(>25)	14.47(>25)
S-29Z	.01	.06	.07	2.79	1.77	3.39	1.08	.01	.00	.00	9.18	3.39	5.16	7.95(>3)	9.10(>3)	9.10(>3)	9.10(>3)
S-30	.01	.29	.01	2.60	3.61	.63	.48	.00	.00	.00	7.63	3.61	6.21(>3)	6.84(>3)	7.33(>3)	7.33(>3)	7.33(>3)
S-33	.10	.05	.31	1.33	1.27	2.10	.18	.00	.00	.00	5.34	2.10	3.37	4.70	4.70	4.70	5.19
S-34	.09	.27	.14	.93	1.66	.96	.79	.00	.00	.00	4.84	1.66	2.62	3.55	4.48	4.48	4.48
S-36	.30	.04	.38	.89	1.25	2.54	.25	.01	.00	.00	5.66	2.54	3.79	4.68	5.31	5.31	5.31
S-37A	.00	.00	.22	.65	1.06	2.65	.91	.06	.00	.00	5.55	2.65	3.71	4.62	5.49	5.49	5.49
S-37B	.04	.16	.30	.96	1.10	1.82	.28	.12	.01	.01	4.79	1.82	2.92	3.88	4.46	4.46	4.46
S-38	.01	.35	.37	1.05	1.16	1.09	1.25	2.79	.00	.00	8.07	2.79	4.04	5.13	7.34	7.34	7.34
S-39	.00	.12	.17	.55	.89	.58	1.48	2.67	.00	.00	6.46	2.67	4.15	4.73	6.17	6.17	6.17
S-9	.00	.08	.05	.53	1.83	1.57	1.00	.02	.00	.00	5.08	1.83	3.40	4.40	4.40	4.40	4.98

Note: 1) Return Periods shown in parenthesis are in years. 2) Storm Duration and Storm Totals may include missing data identified by "M" tag. 3) Missing Values on a particular day are identified by "-1.00".

TABLE 3-30. Daily Rainfall (Inches) Summary, Storm Durations and Return Period (Years) for the Storm Event in the Broward County Subbasin (August 2-5, 1995).

STATIONS	8/02	8/03	8/04	8/05	STORM TOTAL (in)	STORM DURATION (RETURN PERIOD)		
						1-DAY	2-DAY	3-DAY
						MAX	MAX	MAX
BONAVENTURE	-1.00	-1.00	-1.00	-1.00	-	-	-	-
CORAL SPRINGS	.12	.89	2.69	.41	4.11	2.69	3.58	3.99
FT LAUD FS	.03	1.15	3.15	.60	4.93	3.15	4.30	4.90
FTL	.20	1.21	4.03	.86	6.30	4.03	5.24	6.10
G-56	.04	1.94	3.02	1.48	6.48	3.02	4.96	6.44
HOLLYWOOD	.11	.12	4.89	.90	6.02	4.89	5.79	5.91
S-124	.17	1.04	1.81	.15	3.17	1.81	2.85	3.02
S-13	.00	1.10	3.88	1.00	5.98	3.88	4.98	5.98
S-28Z	.01	.82	2.30	.76	3.89	2.30	3.12	3.88
S-29	-1.00	-1.00	2.36	.45	2.81M	2.36M	-	-
S-29Z	.05	.72	2.80	.95	4.52	2.80	3.75	4.47
S-30	.05	.56	.76	.65	2.02	0.76	1.41	1.97
S-33	.18	1.30	5.45	1.00	7.93	5.45	6.75	7.75
S-34	.03	.60	.85	.20	1.68	0.85	1.45	1.65
S-36	.24	1.44	3.54	1.50	6.72	3.54	5.04	6.48
S-37A	.12	.83	3.01	1.98	5.94	3.01	4.99	5.82
S-37B	.25	1.28	2.54	1.27	5.34	2.54	3.82	5.09
S-38	.16	1.47	3.89	.60	6.12	3.89	5.36	5.96
S-39	.07	.89	2.91	.43	4.30	2.91	3.80	4.23
S-9	.00	.08	.80	.25	1.13	0.80	1.05	1.13

Note: 1) No Return Periods greater than 3 years. 2) Storm Duration and Storm Totals may include missing data identified by "M" tag. 3) Missing Values on a particular day are identified by "-1.00".

TABLE 3-31. Daily Rainfall (Inches) Summary, Storm Durations and Return Period (Years) for the Storm Events in the Broward County Subbasin (August 23-26, 1975).

STATIONS	8/23	8/24	8/25	8/26	STORM TOTAL (in)	STORM DURATION (RETURN PERIOD)		
						1-DAY MAX	2-DAY MAX	3-DAY MAX
BONAVENTURE	-1.00	-1.00	-1.00	-1.00	-	-	-	-
CORAL SPRINGS	.52	5.67 (>3)	1.00	.06	7.25	5.67 (>3)	6.67 (>3)	7.19 (>3)
FT LAUD FS	.21	3.33	1.07	.00	4.61	3.33	4.40	4.61
FTL	1.11	2.68	1.67	.19	5.65	2.68	4.35	5.46
G-56	.49	4.81	1.44	.00	6.74	4.81	6.25	6.74
HOLLYWOOD	1.08	3.32	3.22	1.75	9.37	3.32	6.54	8.29 (>3)
S-124	.93	4.64	1.41	.20	7.18	4.64	6.05 (>3)	6.98 (>3)
S-13	.25	3.50	1.55	.24	5.54	3.50	5.05	5.30
S-28Z	.50	1.53	.86	.43	3.32	1.53	2.39	2.89
S-29	.11	1.78	2.54	1.94	6.37	2.54	4.48	6.26
S-29Z	.13	2.00	.86	.09	3.08	2.00	2.86	2.99
S-30	.22	3.91	1.74	.02	5.89	3.91	5.65 (>3)	5.87
S-33	.85	2.69	1.14	.02	4.70	2.69	3.83	4.68
S-34	.22	6.64 (>5)	1.57	.01	8.44	6.64 (>5)	8.21 (>10)	8.43 (>5)
S-36	.78	2.92	1.73	.20	5.63	2.92	4.65	5.43
S-37A	.09	1.22	1.32	.60	3.23	1.32	2.54	3.14
S-37B	1.05	4.32	1.61	.10	7.08	4.32	5.93	6.98
S-38	.90	5.96 (>3)	1.28	.25	8.39	5.96 (>3)	7.24 (>3)	8.14 (>3)
S-39	.14	8.08 (>5)	1.10	.05	9.37	8.08 (>5)	9.18 (>5)	9.32 (>5)
S-9	.24	4.61 (>3)	1.70	.30	6.85	4.61 (>3)	6.31 (>5)	6.61 (>3)

Note: 1) Return Periods shown in parenthesis are in years. 2) Storm Duration and Storm Totals may include missing data identified by "M" tag. 3) Missing Values on a particular day are identified by "-1.00".

TABLE 3-32. Daily Rainfall (Inches) Summary, Storm Durations and Return Period (Years) for the Storm Events in the Broward County Area (October 14-19, 1995).

STATIONS	10/14					10/15					10/16					10/17					10/18					10/19					STORM TOTAL (in)			STORM DURATION (RETURN PERIOD)			
																										1-DAY			2-DAY			3-DAY			5-DAY		
	MAX					MAX					MAX					MAX					MAX					MAX			MAX			MAX			MAX		
BONAVENTURE	.63	1.14	.45	.54	1.90	.46	5.12	1.90	.46	.54	1.90	.46	5.12	1.90	.46	.54	1.90	.46	5.12	1.90	.46	.54	1.90	.46	5.12	1.90	.46	.54	1.90	5.12	1.90	2.44	2.90	4.66			
CORAL SPRINGS	.00	.62	.63	.27	.63	.06	2.21	.63	.06	.27	.63	.06	2.21	.63	.06	.27	.63	.06	2.21	.63	.06	.27	.63	.06	2.21	.63	.06	.27	.63	2.21	0.63	1.25	1.53	2.21			
FT LAUD FS	.80	.90	.50	.63	1.37	.03	4.23	1.37	.03	.63	1.37	.03	4.23	1.37	.03	.63	1.37	.03	4.23	1.37	.03	.63	1.37	.03	4.23	1.37	.03	.63	1.37	4.23	1.37	2.00	2.50	4.20			
FTL	.93	1.38	.96	1.25	2.41	.32	7.25	2.41	.32	1.25	2.41	.32	7.25	2.41	.32	1.25	2.41	.32	7.25	2.41	.32	1.25	2.41	.32	7.25	2.41	.32	1.25	2.41	7.25	2.41	3.66	4.62	6.93			
G-56	.04	1.13	2.12	1.00	1.25	.24	5.78	1.25	.24	1.00	1.25	.24	5.78	1.25	.24	1.00	1.25	.24	5.78	1.25	.24	1.00	1.25	.24	5.78	1.25	.24	1.00	1.25	5.78	2.12	3.25	4.37	5.74			
HOLLYWOOD	1.05	1.21	.63	1.72	2.37	.03	7.01	2.37	.03	1.72	2.37	.03	7.01	2.37	.03	1.72	2.37	.03	7.01	2.37	.03	1.72	2.37	.03	7.01	2.37	.03	1.72	2.37	7.01	2.37	4.09	4.72	6.98			
S-124	.66	.51	.15	.29	1.63	.07	3.31	1.63	.07	.29	1.63	.07	3.31	1.63	.07	.29	1.63	.07	3.31	1.63	.07	.29	1.63	.07	3.31	1.63	.07	.29	1.63	3.31	1.63	1.92	2.07	3.24			
S-13	1.00	1.10	1.25	1.15	2.15	.05	6.70	2.15	.05	1.15	2.15	.05	6.70	2.15	.05	1.15	2.15	.05	6.70	2.15	.05	1.15	2.15	.05	6.70	2.15	.05	1.15	2.15	6.70	2.15	3.30	4.55	6.65			
S-28Z	.12	.13	.22	.09	.02	.01	0.59	.02	.01	.09	.02	.01	0.59	.02	.01	.09	.02	.01	0.59	.02	.01	.09	.02	.01	0.59	.02	.01	.09	.02	0.59	0.22	0.35	0.47	0.58			
S-29	.13	1.39	.29	.94	1.73	.15	4.63	1.73	.15	.94	1.73	.15	4.63	1.73	.15	.94	1.73	.15	4.63	1.73	.15	.94	1.73	.15	4.63	1.73	.15	.94	1.73	4.63	1.73	2.67	2.96	4.50			
S-29Z	.22	1.52	.11	1.29	3.94	.02	7.10	3.94	.02	1.29	3.94	.02	7.10	3.94	.02	1.29	3.94	.02	7.10	3.94	.02	1.29	3.94	.02	7.10	3.94	.02	1.29	3.94	7.10	3.94	5.23	5.34	7.08			
S-30	.52	1.47	1.26	.43	.65	.16	4.49	.65	.16	.43	.65	.16	4.49	.65	.16	.43	.65	.16	4.49	.65	.16	.43	.65	.16	4.49	.65	.16	.43	.65	4.49	1.47	2.73	3.25	4.33			
S-33	.50	.91	.48	.94	1.32	.28	4.43	1.32	.28	.94	1.32	.28	4.43	1.32	.28	.94	1.32	.28	4.43	1.32	.28	.94	1.32	.28	4.43	1.32	.28	.94	1.32	4.43	1.32	2.26	2.74	4.15			
S-34	.32	1.25	.76	.47	.40	1.45	4.65	.40	1.45	.47	.40	1.45	4.65	.40	1.45	.47	.40	1.45	4.65	.40	1.45	.47	.40	1.45	4.65	.40	1.45	.47	.40	4.65	1.45	2.01	2.48	4.33			
S-36	.17	1.15	1.02	.90	2.32	.26	5.82	2.32	.26	.90	2.32	.26	5.82	2.32	.26	.90	2.32	.26	5.82	2.32	.26	.90	2.32	.26	5.82	2.32	.26	.90	2.32	5.82	2.32	3.22	4.24	5.65			
S-37A	.03	1.22	1.16	3.86	1.57	.44	8.28	1.57	.44	3.86	1.57	.44	8.28	1.57	.44	3.86	1.57	.44	8.28	1.57	.44	3.86	1.57	.44	8.28	1.57	.44	3.86	1.57	8.28	3.86	5.43	6.59	8.25			
S-37B	.01	1.51	1.59	2.08	3.18	.59	8.96	3.18	.59	2.08	3.18	.59	8.96	3.18	.59	2.08	3.18	.59	8.96	3.18	.59	2.08	3.18	.59	8.96	3.18	.59	2.08	3.18	8.96	3.18	5.26	6.85	8.95			
S-38	.00	1.52	.34	1.09	2.85	.71	6.51	2.85	.71	1.09	2.85	.71	6.51	2.85	.71	1.09	2.85	.71	6.51	2.85	.71	1.09	2.85	.71	6.51	2.85	.71	1.09	2.85	6.51	2.85	3.94	4.65	6.51			
S-39	.23	.63	1.02	.19	.57	.05	2.69	.57	.05	.19	.57	.05	2.69	.57	.05	.19	.57	.05	2.69	.57	.05	.19	.57	.05	2.69	.57	.05	.19	.57	2.69	1.02	1.65	1.88	2.64			
S-9	.62	1.90	.68	.35	.68	.05	4.28	.68	.05	.35	.68	.05	4.28	.68	.05	.35	.68	.05	4.28	.68	.05	.35	.68	.05	4.28	.68	.05	.35	.68	4.28	1.90	2.58	3.20	4.23			

Note: 1) No Return Periods greater than 3 years. 2) Storm Duration and Storm Totals may include missing data identified by "M" tag.
 3) Missing Values on a particular day are identified by "-1.00".

Dade County Subbasin.

Measured rainfall in the Dade County subbasin during Tropical Storm Jerry (August 23-26) and Hurricane Opal (October 5-7) was relatively low in comparison to other affected basins, and is not included in the analysis in this subbasin section.

For the June 18-26 storm event (Table 3-33), rainfall totals from the measuring stations ranged from 9.18 to 16.21 inches, with the subbasin receiving an average of 10.27 inches. The majority of this rainfall amount fell from June 21-24. The 1-day maximum rainfall amount ranged from 2.92 inches (S-27) to 6.28 inches (S-29). The 2-day maximum rainfall ranged from 4.97 to 11.49 inches, and the 3-day maximum ranged from 5.45 to 13.76 inches. Maximum rainfall amounts measured over a five day period ranged from 7.56 to 15.93 inches. Almost all of the rainfall stations had measured amounts for the 1-, 2-, 3-, and 5-day durations that had return periods of 3, 5, and 10 years. The stations located in Hialeah and Tamiami Canal had measured rainfall amounts with associated recurrence intervals of 25 and 100 years.

During Hurricane Erin (August 2-5), the rainfall totals from the 28 measuring stations in the Dade County subbasin ranged from 1.53 to 5.30 inches, and the 4-day basin-wide average was 3.30 inches (Table 3-34). The 1-day maximum rainfall amount ranged from 0.68 inches (CHEKIKI EVER) to 3.48 inches (N DADE). The 2-day maximum rainfall ranged from 1.11 to 4.44 inches, and the 3-day maximum ranged from 1.50 to 5.27 inches. There were no observed rainfall amounts which were higher than normal.

Rainfall amounts recorded at measuring stations during the October 14-19 storm event, ranged from 0.59 to 7.94 inches, and the 6-day basin wide average was 4.95 inches (Table 3-35). The 1-day maximum rainfall amount ranged from 0.22 inches (S-28Z) to 3.94 inches (S-29Z). Over the course of this storm event the maximum 5-day duration resulted in a total of 7.74 inches at the S-331 station. This amount was the only measured value which was higher than normal and had a return period of 3 years.

TABLE 3-33. Daily Rainfall (Inches) Summary, Storm Durations and Return Period (Years) for the Storm Events in the Dade County Subbasin (June 18-26, 1995).

STATIONS	STORM DURATION (RETURN PERIOD)										STORM TOTAL (in)	1-DAY			2-DAY			3-DAY			5-DAY		
	6/18	6/19	6/20	6/21	6/22	6/23	6/24	6/25	6/26	MAX		MAX	MAX	MAX	MAX	MAX	MAX	MAX	MAX	MAX	MAX	MAX	
CHEKINA EVER	.24	.06	.01	3.70	3.52	2.11	.14	.00	.00	9.78	3.70	7.22(>5)	9.33(>10)	9.48(>10)									
HIALEAH W	.05	.03	.10	4.37	7.12	2.27	.63	.24	.00	14.81	7.12(>10)	11.49(>50)	13.76(>100)	14.63(>100)									
HOMESTEAD AFB	-1.00	.01	.09	3.67	4.98	1.51	.06	.00	.02	10.34M	4.98M	8.65M(>5)	10.16M(>10)	10.31M(>5)									
HOMESTEAD FS	.00	.10	.35	2.23	4.26	1.52	.00	.00	.00	8.46	4.26	6.49(>3)	8.01(>3)	8.46(>3)									
MIAMI BEACH	.07	.20	.46	3.22	3.21	.70	.20	.00	.00	8.06	3.22	6.43	7.13	7.79									
MIAMI FS	.25	.03	.00	4.62	3.65	2.18	5.44	.04	.00	16.21	5.44(>3)	8.27(>5)	11.27(>10)	15.93(>50)									
MIAMI INTL	.00	.00	.01	4.88	2.78	1.34	1.65	.02	.00	10.68	4.88	7.66(>3)	9.00(>5)	10.67(>5)									
N DADE	.20	.31	.08	3.35	2.29	2.54	1.51	.02	.00	10.30	3.35	5.64	8.18(>3)	9.77(>3)									
PERRINE	.00	.13	.31	5.11	4.39	2.29	.04	.05	.00	12.32	5.11(>3)	9.50(>10)	11.79(>25)	12.23(>10)									
S-123	.13	.05	.27	3.59	2.13	1.46	1.09	.01	.00	8.73	3.59	5.72	7.18	8.54(>3)									
S-174	.00	.18	.67	2.29	4.83	1.48	.01	.21	.00	9.67	4.83(>3)	7.12(>5)	8.60(>5)	9.45(>5)									
S-177	.00	.24	.23	2.33	4.64	.16	.00	.11	.00	7.71	4.64	6.97(>3)	7.20(>3)	7.60									
S-18C	.00	.64	.40	1.58	3.39	.48	.00	.00	.00	6.49	3.39	4.97	5.45	6.49									
S-20F	.01	.98	.56	3.25	4.61	1.19	.00	.07	.00	10.67	4.61	7.86(>5)	9.05(>5)	10.59(>5)									
S-20G	.00	.37	.44	2.65	4.42	1.09	.01	.01	.00	8.99	4.42	7.07(>3)	8.16(>3)	8.97(>3)									
S-21	.17	.10	.34	2.49	3.27	1.36	.00	.01	.00	7.74	3.27	5.76	7.12	7.50									
S-21A	.00	.15	.74	2.24	3.45	1.23	.00	.02	.00	7.83	3.45	5.69	6.92	7.81									
S-26	.01	.10	.09	3.84	2.77	.73	.99	.00	.00	8.53	3.84	6.61	7.34	8.42(>3)									
S-27	.48	2.92	.19	2.90	2.45	.79	.63	.00	.00	10.36	2.92	5.35	6.14	9.25(>3)									
S-28Z	.01	.01	.03	4.00	2.29	3.50	1.70	.09	.00	11.63	4.00	6.29	9.79(>5)	11.58(>10)									
S-29	.53	.67	.68	6.28	2.50	4.34	.41	.00	.00	15.41	6.28(>3)	8.78(>5)	13.12(>10)	14.47(>25)									
S-29Z	.01	.06	.07	2.79	1.77	3.39	1.08	.01	.00	9.18	3.39	5.16	7.95(>3)	9.10(>3)									
S-30	.01	.29	.01	2.60	3.61	.63	.48	.00	.00	7.63	3.61	6.21(>3)	6.84(>3)	7.33(>3)									
S-331	.11	.00	.15	4.00	3.21	2.31	.27	.03	.00	10.08	4.00	7.21(>5)	9.52(>10)	9.94(>5)									
S-332	.01	.12	.12	2.44	5.64	.90	.01	.19	.00	9.43	5.64(>5)	8.08(>5)	8.98(>5)	9.22(>5)									
S-338	.74	.09	.06	4.99	3.81	1.59	.91	.07	.00	11.59	4.99(>3)	8.80(>5)	10.39(>10)	10.76(>100)									
TAMIAMI	.18	.13	.18	4.73	3.97	2.68	.65	.07	.00	12.59	4.73	8.70(>5)	11.38(>10)	12.21(>10)									
TAMIAMI CANAL	.03	.04	.00	5.41	3.33	2.59	1.03	.02	.01	12.46	5.41(>5)	8.74(>10)	11.33(>25)	12.38(>10)									

Note: 1) Return Periods shown in parenthesis are in years. 2) Storm Duration and Storm Totals may include missing data identified by "M" tag.
 3) Missing Values on a particular day are identified by "-1.00"

TABLE 3-34. Daily Rainfall (Inches) Summary, Storm Durations and Return Period (Years) for the Storm Events in the Dade County Area (August 2-5, 1995).

STATIONS	8/02	8/03	8/04	8/05	STORM TOTAL (in)	STORM DURATION (RETURN PERIOD)		
						1-DAY MAX	2-DAY MAX	3-DAY MAX
						0.68	1.11	1.50
CHEKKA EVER	.03	.39	.43	.68	1.53	0.68	1.11	1.50
HIALEAH W	.04	.44	1.58	.55	2.61	1.58	2.13	2.57
HOMESTEAD AFB	.00	.56	1.37	1.92	3.85	1.92	3.29	3.85
HOMESTEAD FS	.00	.20	1.19	1.59	2.98	1.59	2.78	2.98
MIAMI BEACH	-1.00	.02	2.39	.58	2.99M	2.39M	2.97M	2.99M
MIAMI FS	.06	.69	1.05	.69	2.49	1.05	1.74	2.43
MIAMI INTL	.02	.36	1.11	.71	2.20	1.11	1.82	2.18
N DADE	.03	.83	3.48	.96	5.30	3.48	4.44	5.27
PERRINE	.00	.61	1.65	1.50	3.76	1.65	3.15	3.76
S-123	.02	.46	1.56	2.84	4.88	2.84	4.40	4.86
S-174	.01	.48	.99	.94	2.42	0.99	1.93	2.41
S-177	.06	.19	1.59	.61	2.45	1.59	2.20	2.39
S-18C	.05	.08	1.91	.49	2.53	1.91	2.40	2.48
S-20F	.01	.42	1.14	2.65	4.22	2.65	3.79	4.21
S-20G	.03	.30	1.59	2.04	3.96	2.04	3.63	3.93
S-21	.10	.20	2.06	2.24	4.60	2.24	4.30	4.50
S-21A	.04	.46	1.17	1.94	3.61	1.94	3.11	3.57
S-26	.02	.87	1.50	1.19	3.58	1.50	2.69	3.56
S-27	.06	.82	3.26	.66	4.80	3.26	4.08	4.74
S-28Z	.01	.82	2.30	.76	3.89	2.30	3.12	3.88
S-29	-1.00	-1.00	2.36	.45	3.81M	2.36M	-	-
S-29Z	.05	.72	2.80	.95	4.52	2.80	3.75	4.47
S-30	.05	.56	.76	.65	2.02	0.76	1.41	1.97
S-331	.02	.66	.97	1.25	2.90	1.25	2.22	2.88
S-332	.04	.28	1.43	.67	2.42	1.43	2.10	2.38
S-338	.01	.41	1.35	.86	2.63	1.35	2.21	2.62
TAMIAMI	.00	.63	2.49	1.07	4.19	2.49	3.56	4.19
TAMIAMI CANAL	.02	.21	.81	.78	1.82	0.81	1.59	1.80

Note: 1) No Return Periods greater than 3 years. 2) Storm Duration and Storm Totals may include missing data identified by "M" tag. 3) Missing Values on a particular day are identified by "-1.00".

TABLE 3-35. Daily Rainfall (Inches) Summary, Storm Durations and Return Period (Years) for the Storm Events in the Dade County Subbasin (October 14-19, 1995).

STATIONS	10/14	10/15	10/16	10/17	10/18	10/19	STORM TOTAL (in.)	STORM DURATION			(RETURN PERIOD)			
								1-DAY MAX	2-DAY MAX	3-DAY MAX	1-DAY MAX	2-DAY MAX	3-DAY MAX	5-DAY MAX
CHEKICA EVER	.41	1.04	.47	.44	.14	-1.00	2.50M	1.04M	1.51M	1.95M	-	-		
HIALEAH W	.88	2.90	1.24	1.31	.34	.03	6.70	2.90	4.14	5.45	6.67	6.67		
HOMESTEAD AFB	.52	-1.00	.01	.21	1.45	.74	2.93M	1.45M	2.19M	-	-	-		
HOMESTEAD FS	.49	1.00	.00	1.13	1.08	.13	3.83	1.13	2.21	2.34	3.70	3.70		
MIAMI BEACH	.11	1.18	.00	.66	.76	.16	2.87	1.18	1.42	1.84	2.76	2.76		
MIAMI FS	.50	2.00	.57	1.57	.78	.05	5.47	2.00	2.57	4.14	5.42	5.42		
MIAMI INTL	.88	1.93	.33	1.74	1.36	.02	6.26	1.93	3.10	4.00	6.24	6.24		
N DADE	.28	1.91	.55	1.07	2.91	.10	6.82	2.91	3.98	4.53	6.72	6.72		
PERRINE	.71	2.90	.17	2.02	1.05	.05	6.90	2.90	3.61	5.09	6.85	6.85		
S-123	.31	3.74	.02	1.79	1.35	.18	7.39	3.74	4.05	5.55	7.21	7.21		
S-174	.55	1.74	.34	1.03	2.48	.07	6.21	2.48	3.51	3.85	6.14	6.14		
S-177	.70	1.74	.03	.81	2.46	.02	5.76	2.46	3.27	3.30	5.74	5.74		
S-18C	.24	2.56	.03	1.15	1.33	.03	5.34	2.56	2.80	3.74	5.31	5.31		
S-20F	.22	1.75	.06	.78	.73	.58	4.12	1.75	1.97	2.59	3.90	3.90		
S-20G	.35	1.45	.02	.48	.76	1.09	4.15	1.45	1.85	2.33	3.80	3.80		
S-21	.20	1.48	.06	.01	1.55	.06	3.36	1.55	1.68	1.74	3.30	3.30		
S-21A	.04	1.35	.04	.00	1.29	1.53	4.25	1.53	2.82	2.82	4.21	4.21		
S-26	.34	1.85	.69	1.23	1.50	.05	5.66	1.85	2.73	3.77	5.61	5.61		
S-27	.56	2.02	.46	.57	1.14	.03	4.78	2.02	2.58	3.05	4.75	4.75		
S-28Z	.12	.13	.22	.09	.02	.01	0.59	0.22	0.35	0.47	0.58	0.58		
S-29	.13	1.39	.29	.94	1.73	.15	4.63	1.73	2.67	2.96	4.50	4.50		
S-29Z	.22	1.52	.11	1.29	3.94	.02	7.10	3.94	5.23	5.34	7.08	7.08		
S-30	.52	1.47	1.26	.43	.65	.16	4.49	1.47	2.73	3.25	4.33	4.33		
S-331	1.14	1.25	.61	1.53	3.21	.20	7.94	3.21	4.74	5.35	7.74 (>3)	7.74 (>3)		
S-332	.54	1.31	.22	.97	2.38	.04	5.46	2.38	3.35	3.57	5.42	5.42		
S-338	.08	.26	.68	.89	.71	.82	3.44	0.89	1.60	2.42	3.36	3.36		
TAVIAMI	.37	2.67	.29	1.44	.61	.15	5.53	2.67	3.04	4.40	5.38	5.38		
TAVIAMI CANAL	.40	.86	2.21	.50	.04	.02	4.03	2.21	3.07	3.57	4.01	4.01		

Note: 1) Return Periods shown in parenthesis are in years. 2) Storm Duration and Storm Totals may include missing data identified by "M" tag. 3) Missing values on a particular day are identified by "-1.00".

CALOOSAHATCHEE SUBBASIN

The Caloosahatchee subbasin covers the portions of Lee, Hendry, Glades and Southern Charlotte Counties that surround the Caloosahatchee River flowing from Lake Okeechobee to the Gulf of Mexico. Measured rainfall in this area during Hurricanes Erin (August 2-5) and Opal (October 5-7) was relatively minor in comparison to other basins, and an analysis of these events is not presented for this subbasin.

For the June 18-26 storm event (Table 3-36), rainfall totals from the measuring stations ranged from 2.86 to 6.91 inches, with the subbasin receiving an average of 4.65 inches. The 1-day maximum rainfall amount ranged from 0.67 inches (CV-5) to 2.84 inches (S-79). The 2-day maximum rainfall ranged from 1.05 to 3.22 inches, and the 3-day maximum ranged from 1.37 to 3.96 inches. There were no stations which measured heavier than normal amounts of rainfall over the course of one to five days.

During Tropical Storm Jerry (August 23-26), rainfall totals from the 10 measuring stations ranged from 2.85 to 10.01 inches, and the 4-day basin-wide average was 5.91 inches (Table 3-37). The 1-day maximum rainfall amount ranged from 1.12 inches (S-78) to 5.55 inches (FT MYERS). The 2-day maximum rainfall ranged from 1.99 to 7.90 inches, and the 3-day maximum ranged from 2.76 to 9.78 inches. Higher than normal rainfall was measured at five rainfall measuring stations with the rainfall amounts having a recurrence interval of at least 3, 5, or 10 years.

The daily point rainfall resulting from the October 14-19 storm event, ranged from 1.73 to 7.67 inches, and the 6-day basin-wide average was 4.65 inches (Table 3-38). The 1-day maximum rainfall amount ranged from 1.04 inches (S-79) to 4.86 inches (BONITA SPRINGS). The 2-day maximum ranged from 1.21 to 5.52 inches, the 3-day maximum ranged from 1.33 to 6.57 inches, and 1.73 to 7.47 inches for the 5-day maximum. There were several extreme rainfall amounts associated with the individual stations, or the 1, 2, 3, and 5-day durations with associated return periods ranging from 3 to 5 years.

TABLE 3-36. Daily Rainfall (Inches) Summary, Storm Durations and Return Period (Years) for the Storm Events in the Caloosahatchee Subbasin (June 18-26, 1995).

PERIOD) STATIONS	STORM										STORM DURATION (RETURN		
	6/18	6/19	6/20	6/21	6/22	6/23	6/24	6/25	6/26	TOTAL (in)	1-DAY MAX	2-DAY MAX	3-DAY MAX
ARCHBOLD	.00	.08	.22	.08	.90	.60	2.46	.10	1.08	5.52	2.46	3.06	3.96
BONITA SPRINGS	1.31	.21	.00	.92	.44	.72	2.14	.28	.00	6.02	2.14	2.86	3.30
CORKSCREW HQ	.93	.61	1.20	.07	.94	.54	2.37	.25	.00	6.91	2.37	2.91	3.85
CV-5	.09	.30	.48	.13	.51	.19	.67	.38	.11	2.86	0.67	1.05	1.37
FT MYERS	.06	.07	.11	.01	.66	.45	2.70	.03	.00	4.09	2.70	3.15	3.81
G-136	.00	1.48	.04	.57	2.65	.39	.15	.58	.03	5.89	2.65	3.22	3.61
IMMOKALEE	-1.00	1.16	.97	.14	.60	.00	-1.00	-1.00	-1.00	2.87M	1.16M	2.13M	2.27M
S-77	.00	.83	.21	.22	1.55	.50	.28	.00	.02	3.61	1.55	2.05	2.33
S-78	.21	2.76	.10	.17	.19	.31	.79	.35	.08	4.96	2.76	2.97	3.07
S-79	.00	.08	.27	.42	.04	.06	2.84	.05	.01	3.77	2.84	2.90	2.95

Note: 1) No Return Periods greater than 3 years. 2) Storm Duration and Storm Totals may include missing data identified by "M" tag.
3) Missing Values on a particular day are identified by "-1.00".

TABLE 3-37. Daily Rainfall (Inches) Summary, Storm Durations and Return Period (Years) for the Storm Events in the Caloosahatchee Area (August 23-26, 1995).

STATIONS	8/23	8/24	8/25	8/26	STORM TOTAL (in)	STORM DURATION (RETURN PERIOD)		
						1-DAY MAX	2-DAY MAX	3-DAY MAX
ARCHBOLD	.00	.21	3.85	1.10	5.16	3.85(>3)	4.95	5.16
BONITA SPRINGS	.59	.32	5.52	1.71	8.14	5.52(>5)	7.23(>5)	7.55(>3)
CORKSCREW HQ	1.13	3.75	4.45	.68	10.01	4.45(>3)	8.20(>10)	9.33(>10)
CV-5	.09	1.46	.60	.70	2.85	1.46	2.06	2.76
FT MYERS	.00	1.88	5.55	2.35	9.78	5.55(>5)	7.90(>5)	9.78(>10)
G-136	.00	2.40	2.03	.43	4.86	2.40	4.43	4.86
IMMOKALEE	1.15	3.40	1.52	-1.00	6.07M	3.40M	4.92M	6.07M(>3)
S-77	.08	1.50	1.25	.83	3.66	1.50	2.75	3.58
S-78	.47	1.03	.87	1.12	3.49	1.12	1.99	3.02
S-79	.01	.66	2.08	2.33	5.08	2.33	4.41	5.07

Note: 1) Return Periods shown in parenthesis are in years. 2) Storm Duration and Storm Totals may include missing data identified by "M" tag. 3) Missing Values on a particular day are identified by "-1.00".

TABLE 3-38. Daily Rainfall (Inches) Summary, Storm Durations and Return Period (Years) for the Storm Events in the Caloosahatchee Area (October 14-19, 1995).

STATIONS	10/14	10/15	10/16	10/17	10/18	10/19	STORM TOTAL (in)	STORM DURATION			(RETURN PERIOD)			
								1-DAY	2-DAY	3-DAY	1-DAY	2-DAY	3-DAY	
								MAX	MAX	MAX	MAX	MAX	MAX	
ARCHBOLD	.09	.98	.00	.38	2.68	.01	4.14	2.68	3.06	3.07	4.13			
BONITA SPRINGS	.24	4.86	.66	1.05	.56	.30	7.67	4.86(>5)	5.52(>3)	6.57	7.43			
CORKSCREW HQ	1.05	4.15	.17	.20	.76	.56	6.89	4.15(>3)	5.20(>3)	5.37	6.33			
CV-5	.00	2.81	.00	.00	.76	.01	3.58	2.81	2.81	2.81	3.58			
FT MYERS	-1.00	-1.00	-1.00	-1.00	-1.00	.00	-	-	-	-	-			
G-136	.58	1.28	1.46	3.49	.66	.00	7.47	3.49	4.95(>3)	6.23(>3)	7.47(>3)			
IMMOKALEE	-1.00	-1.00	.65	.07	1.64	.10	2.46M	1.64M	1.74M	-	-			
S-77	.51	2.97	.00	1.05	1.08	.02	5.63	2.97	3.48	4.02	5.61			
S-78	.06	1.15	.00	.18	.34	.00	1.73	1.15	1.21	1.33	1.73			
S-79	.91	1.04	.00	.05	.31	.01	2.32	1.04	1.95	1.95	2.31			

Note: 1) Return Periods shown in parenthesis are in years. 2) Storm Duration and Storm Totals may include missing data identified by "M" tag.
 3) Missing Values on a particular day are identified by "-1.00".

COLLIER COUNTY

Measured rainfall in the Collier County subbasin during Hurricanes Erin (August 2-5) and Opal (October 5-7) was relatively minor in comparison to other effected basins, and is not included in the analysis for this subbasin.

For the June 18-26 storm event (Table 3-39), rainfall totals from the measuring stations ranged from 2.34 to 12.18 inches, with the subbasin receiving an average of 6.68 inches. The heaviest amount of rainfall in the subbasin area was recorded at rainfall stations in Everglades National Park and Marco Island. Also, the measured rainfall amounts for these stations for the 1-, 2-, and 3-day durations had return periods of at least 3 or 5 years. The 1-day maximum rainfall amount ranged from 0.79 inches (G-155) to 4.77 inches (EVERGLADES NP). The 2-day maximum rainfall ranged from 1.08 to 8.52 inches, and the 3-day maximum ranged from 1.42 to 9.32 inches.

Tropical Storm Jerry (August 23-26) produced heavy rainfall throughout the subbasin area with rainfall totals from the 11 measuring stations ranging from 5.97 to 13.63 inches and produced a four day basin-wide average of 8.63 inches (Table 3-40). The 1-day maximum rainfall amount ranged from 2.95 inches (S-140) to 4.86 inches (BONITA SPRINGS). The 2-day maximum rainfall ranged from 5.73 to 12.71 inches, and the 3-day maximum ranged from 5.97 to 13.59 inches. Higher than normal rainfall was measured at all of the measuring stations with the rainfall amounts having recurrence intervals ranging from 3 to 25 years.

During the October 14-19 storm event, rainfall totals from measuring stations ranged from 3.38 to 7.67 inches, and the 6-day basin-wide average was 5.64 inches (Table 3-41). The heaviest amount of rain fell in Bonita Springs, and the least amount was recorded for Marco Island. The 1-day maximum rainfall amount ranged from 1.01 inches (MARCO ISLAND) to 4.86 inches (BONITA SPRINGS), and the maximum 5-day amounts ranged from 3.19 to 7.43 inches. Two stations measured rainfall amounts which were higher than normal, and had associated return periods ranging from 3 to 5 years.

TABLE 3-39. Daily Rainfall (Inches) Summary, Storm Durations and Return Period (Years) for the Storm Events in the Collier County Subbasin (June 18-26, 1995).

STATIONS	6/18	6/19	6/20	6/21	6/22	6/23	6/24	6/25	6/26	STORM TOTAL (in.)	STORM DURATION (RETURN PERIOD)		
											1-DAY MAX	2-DAY MAX	3-DAY MAX
BONITA SPRINGS	1.31	.21	.00	.92	.44	.72	2.14	.28	.00	6.02	2.14	2.86	3.30
COOPERTOWN	-1.00	.07	-1.00	-1.00	-1.00	-1.00	.37	.02	-1.00	0.46M	0.37M	0.39M	0.00M
CORKSCREW HQ	.93	.61	1.20	.07	.94	.54	2.37	.25	.00	6.91	2.37	2.91	3.85
EVERGLADES NP	.75	1.40	.50	4.77	3.75	.80	.00	.21	.00	12.18	4.77(>3)	8.52(>5)	9.32(>5)
G-155	.03	.79	.03	.60	.48	.11	.01	.29	.00	2.34	0.79	1.08	1.42
IMMOKALEE	-1.00	1.16	.97	.14	.60	.00	-1.00	-1.00	-1.00	2.87M	1.16M	2.13M	2.27M
IMMOKALEE LF	.04	.95	1.10	.25	.65	.44	1.33	.20	.00	4.96	1.33	2.05	2.42
MARCO ISLAND	1.27	.20	.26	2.08	4.64	1.35	1.36	.12	.00	11.28	4.64(>3)	6.72(>3)	8.07(>3)
NAPLES FS	.00	1.02	1.30	.00	.65	.30	2.41	.00	.00	5.68	2.41	2.71	3.36
RACCOON POINT	.83	2.00	.19	1.72	1.93	.37	.01	.06	.01	7.12	2.00	3.65	4.02
S-140	.02	.87	.03	1.55	.75	.35	.00	.02	.00	3.59	1.55	2.30	2.65

Note: 1) Return Periods shown in parenthesis are in years. 2) Storm Duration and Storm Totals may include missing data identified by "M" tag.
3) Missing Values on a particular day are identified by "-1.00".

TABLE 3-40. Daily Rainfall (Inches) Summary, Storm Durations and Return Period (Years) for the Storm Events in the Collier County Area (August 23-26, 1995).

STATIONS	8/23	8/24	8/25	8/26	STORM TOTAL (in.)	STORM DURATION (RETURN PERIOD)		
						1-DAY MAX	2-DAY MAX	3-DAY MAX
BONITA SPRINGS	.59	.32	5.52	1.71	8.14	5.52(>5)	7.23(>5)	7.55(>3)
COOPERTOWN	-1.00	-1.00	-1.00	.20	-	-	-	-
CORKSCREW HQ	1.13	3.75	4.45	.68	10.01	4.45(>3)	8.20(>10)	9.33(>10)
EVERGLADES NP	.04	3.00	9.71	.88	13.63	9.71(>25)	12.71(>25)	13.59(>25)
G-155	.00	4.05	3.01	.13	7.19	4.05(>3)	7.06(>5)	7.19(>5)
IMMOKALEE	1.15	3.40	1.52	-1.00	6.07M	3.40M	4.92M	6.07M(>3)
IMMOKALEE LF	.45	3.85	2.50	.25	7.05	3.85(>3)	6.35(>3)	6.80(>3)
MARCO ISLAND	.76	2.00	8.34	.00	11.10	8.34(>10)	10.34(>10)	11.10(>10)
NAPLES FS	.23	3.20	6.45	.40	10.28	6.45(>5)	9.65(>10)	10.05(>10)
RACCOON POINT	1.00	1.88	3.90	.05	6.83	3.90(>3)	5.78(>3)	6.78(>3)
S-140	.00	2.78	2.95	.24	5.97	2.95	5.73(>3)	5.97(>3)

Note: 1) Return Periods shown in parenthesis are in years. 2) Storm Duration and Storm Totals may include missing data identified by "M" tag.
3) Missing Values on a particular day are identified by "-1.00".

TABLE 3-41. Daily Rainfall (Inches) Summary, Storm Durations and Return Period (Years) for the Storm Events in the Collier County Subbasin (October 14-19, 1995).

STATIONS	10/14	10/15	10/16	10/17	10/18	10/19	STORM TOTAL (in)	STORM DURATION			(RETURN PERIOD)		
								1-DAY MAX	2-DAY MAX	3-DAY MAX	1-DAY MAX	3-DAY MAX	5-DAY MAX
BONITA SPRINGS	.24	4.86	.66	1.05	.56	.30	7.67	4.86(>5)	5.52(>3)	6.57	7.43		
COOPERTOWN	-1.00	-1.00	.60	-1.00	-1.00	-1.00	-						
CORKSCREW HQ	1.05	4.15	.17	.20	.76	.56	6.89	4.15(>3)	5.20(>3)	5.37	6.33		
EVERGLADES NP	.50	1.50	.52	.21	.75	2.53	6.01	2.53	3.28	3.49	5.51		
G-155	.00	.87	2.74	.97	1.43	.55	6.56	2.74	3.71	5.14	6.56		
IMMOKALEE	-1.00	-1.00	.65	.07	1.64	.10	2.46M	1.64M	1.74M	-	-		
IMMOKALEE LF	.55	2.50	.80	.09	.71	.00	4.65	2.50	3.30	3.85	4.65		
MARCO ISLAND	.19	1.00	.47	.17	.45	1.10	3.38	1.10	1.55	1.72	3.19		
NAPLES FS	.13	3.90	.00	1.40	.20	.35	5.98	3.90	4.03	5.30	5.85		
RACCOON POINT	.57	1.63	1.85	.63	.14	.00	4.82	1.85	3.48	4.11	4.82		
S-140	.12	.68	1.22	1.48	.74	.58	4.82	1.48	2.70	3.44	4.70		

Note: 1) Return Periods shown in parenthesis are in years. 2) Storm Duration and Storm Totals may include missing data identified by "M" tag.
 3) Missing Values on a particular day are identified by "-1.00".

SOUTHWEST COAST SUBBASIN

This subbasin covers the coastal areas of Collier and Lee Counties. Measured rainfall in this subbasin during Hurricane Erin (August 2-5) was relatively minor in comparison to other basins, and is not included in the analysis for this subbasin.

For the June 18-26 storm event (Table 3-42), rainfall totals from the measuring stations ranged from 2.87 to 11.28 inches, with the subbasin receiving an average of 5.80 inches. The heaviest amount of rain was recorded at the Marco Island rainfall station. The 1-day maximum rainfall amount ranged from 1.16 inches (IMMOKALEE) to 4.64 inches (MARCO ISLAND). The 2-day maximum rainfall ranged from 2.13 to 6.72 inches, and the 3-day maximum ranged from 2.27 to 8.07 inches. The Marco Island station measured higher than normal rainfall for the 1-, 2-, and 3-day durations and had return periods of at least 3 years.

For Tropical Storm Jerry (August 23-26), the rainfall totals from the 7 measuring stations ranged from 5.08 to 11.10 inches, and the 4-day basin-wide average was 8.64 inches (Table 3-43). The 1-day maximum rainfall amount ranged from 2.33 inches (S-79) to 8.34 inches (MARCO ISLAND). The 2-day maximum rainfall ranged from 4.41 to 10.34 inches, and the 3-day maximum ranged from 5.07 to 11.10 inches. Almost all of the rainfall stations recorded higher than normal precipitation having recurrence intervals of at least 3, 5, or 10 years.

The measured rainfall from Hurricane Opal (October 5 -7) shows storm totals ranging from 3.84 to 6.59 inches (Table 3-44). The 1-day maximum amounts ranged from 3.35 to 5.81 inches, and the 2-day maximum ranged from 3.84 to 6.58 inches. The Bonita Springs and Naples rainfall stations measured higher than normal precipitation with return periods of at least 3 or 5 years.

During the October 14-19 storm event, rainfall totals from measuring stations ranged from 2.32 to 7.67 inches, and the 6-day basin-wide average was 5.25 inches (Table 3-45). The 1-day maximum rainfall amount ranged from 1.04 inches (S-79) to 4.86 inches. The 5-day maximum ranged that between 2.31 and 7.43 inches. There were several higher than normal rainfall amounts measured at the Bonita Springs and Corkscrew headquarters with associated return periods ranging from 3 to 5 years.

TABLE 3-42. Daily Rainfall (Inches) Summary, Storm Durations and Return Period (Years) for the Storm Events in the Southwest Coast Subbasin (June 18-26, 1995).

STATIONS	6/18	6/19	6/20	6/21	6/22	6/23	6/24	6/25	6/26	STORM TOTAL (in)	STORM DURATION (RETURN PERIOD)		
											1-DAY MAX	2-DAY MAX	3-DAY MAX
BONITA SPRINGS	1.31	.21	.00	.92	.44	.72	2.14	.28	.00	6.02	2.14	2.86	3.30
CORKSCREW HQ	.93	.61	1.20	.07	.94	.54	2.37	.25	.00	6.91	2.37	2.91	3.85
FT MYERS	.06	.07	.11	.01	.66	.45	2.70	.03	.00	4.09	2.70	3.15	3.81
IMMOKALEE	-1.00	1.16	.97	.14	.60	.00	1.00	-1.00	-1.00	2.87M	1.16M	2.13M	2.27M
MARCO ISLAND	1.27	.20	.26	2.08	4.64	1.35	1.36	.12	.00	11.28	4.64(>3)	6.72(>3)	8.07(>3)
NAPLES FS	.00	1.02	1.30	.00	.65	.30	2.41	.00	.00	5.68	2.41	2.71	3.36
S-79	.00	.08	.27	.42	.04	.06	2.84	.05	.01	3.77	2.84	2.90	2.95

Note: 1) Return Periods shown in parenthesis are in years. 2) Storm Duration and Storm Totals may include missing data identified by "M" tag. 3) Missing Values on a particular day are identified by "-1.00".

TABLE 3-43. Daily Rainfall (Inches) Summary, Storm Durations and Return Period (Years) for the Storm Events in the Southwest Coast Subbasin (August 23-26, 1995).

STATIONS	8/23	8/24	8/25	8/26	STORM TOTAL (in)	STORM DURATION (RETURN PERIOD)		
						1-DAY MAX	2-DAY MAX	3-DAY MAX
BONITA SPRINGS	.59	.32	5.52	1.71	8.14	5.52(>5)	7.23(>5)	7.55(>3)
CORKSCREW HQ	1.13	3.75	4.45	.68	10.01	4.45(>3)	8.20(>10)	9.33(>10)
FT MYERS	.00	1.88	5.55	2.35	9.78	5.55(>5)	7.90(>5)	9.78(>10)
IMMOKALEE	1.15	3.40	1.52	-1.00	6.07M	3.40M	4.92M	6.07M(>3)
MARCO ISLAND	.76	2.00	8.34	.00	11.10	8.34(>10)	10.34(>10)	11.10(>10)
NAPLES FS	.23	3.20	6.45	.40	10.28	6.45(>5)	9.65(>10)	10.05(>10)
S-79	.01	.66	2.08	2.33	5.08	2.33	4.41	5.07

Note: 1) Return Periods shown in parenthesis are in years. 2) Storm Duration and Storm Totals may include missing data identified by "M" tag. 3) Missing Values on a particular day are identified by "-1.00".

TABLE 3-44. Daily Rainfall (Inches) Summary, Storm Durations and Return Period (Years) for the Storm Events in the Southwest Coast Subbasin (October 5-7, 1995).

STATIONS	10/05	10/06	10/07	STORM TOTAL (in)	STORM DURATION (RETURN PERIOD)	
	10/05	10/06	10/07		1-DAY MAX	2-DAY MAX
BONITA SPRINGS	.77	5.81	.01	6.59	5.81(>5)	6.58(>3)
CORKSCREW HQ	1.10	3.38	.03	4.51	3.38	4.48
FT MYERS	1.00	-1.00	-1.00	1.00M	-	-
IMMOKALEE	.98	3.23	-1.00	4.21M	3.23M	-
MARCO ISLAND	1.57	3.35	.12	5.04	3.35	4.92
NAPLES FS	1.23	4.74	.28	6.25	4.74(>3)	5.97
S-79	.44	3.40	.00	3.84	3.40	3.84

Note: 1) Return Periods shown in parenthesis are in years. 2) Storm Duration and Storm Totals may include missing data identified by "M" tag. 3) Missing Values on a particular day are identified by "-1.00".

TABLE 3-45. Daily Rainfall Summary, Storm Durations and Return Period for the Storm Events in the Southwest Coast Area (October 14-19, 1995).

STATIONS	10/14	10/15	10/16	10/17	10/18	10/19	STORM TOTAL (in)	STORM DURATION (RETURN PERIOD)		STORM DURATION (RETURN PERIOD)	
	10/14	10/15	10/16	10/17	10/18	10/19		1-DAY MAX	2-DAY MAX	3-DAY MAX	5-DAY MAX
BONITA SPRINGS	.24	4.86	.66	1.05	.56	.30	7.67	4.86(>5)	5.52(>3)	6.57	7.43
CORKSCREW HQ	1.05	4.15	.17	.20	.76	.56	6.99	4.15(>3)	5.20(>3)	5.37	6.33
FT MYERS	-1.00	-1.00	-1.00	-1.00	-1.00	.00	-	-	-	-	-
IMMOKALEE	-1.00	-1.00	.65	.07	1.64	.10	2.46M	1.64M	1.74M	-	-
MARCO ISLAND	.19	1.00	.47	.17	.45	1.10	3.38	1.10	1.55	1.72	3.19
NAPLES FS	.13	3.90	.00	1.40	.20	.35	5.98	3.90	4.03	5.30	5.85
S-79	.91	1.04	.00	.05	.31	.01	2.32	1.04	1.95	1.95	2.31

Note: 1) Return Periods shown in parenthesis are in years. 2) Storm Duration and Storm Totals may include missing data identified by "M" tag. 3) Missing Values on a particular day are identified by "-1.00".

BASIN PRECIPITATION MAPS

The historic monthly rainfall amounts summarized in Table 3-1 are derived from rainfall amounts at individual stations; rainfall is averaged for each basin by Thiessen weighting. These monthly data are plotted for the whole District area to depict rainfall for the various reporting areas for the entire year, including the wet season. These maps provide an overview of the total amount of rainfall and compare the amounts with the long-term averages. The 1995 annual totals by reporting area are shown for the entire District in Figure 3-3. (Figures begin on page 67.) This map shows the variation in total rainfall measured among the various areas in the District. Figure 3-4 summarizes the total yearly rainfall and the long-term averages, by reporting the difference between the two amounts. Figure 3-3 shows that the Upper Kissimmee area received a total of 54.1 inches in contrast to the Southwest Coast and Collier County areas which received a total of 78.1 and 71.0 inches of rain, respectively. This map also shows that the upper and central District areas received an average of 10 to 20 inches less total rainfall than the coastal areas of the District. Figure 3-4 shows that the Southwest Coast area received 23.3 inches more rain than the long term average, and that the Martin-St. Lucie area received 13.8 inches of rain more than normal.

The 1995 wet season total for each area is shown in Figure 3-5, and the comparison to the long term averages is presented in Figure 3-6. Figure 3-5 shows that the wet season brought 40.7 inches of rain to the Lower Kissimmee area, and 58.7 inches to the Dade County area. Higher than normal rainfall was measured in all of the reporting areas for the 1995 wet season. For instance, in Figure 3-6 the Palm Beach County area received 9.5 inches of rain more than normal for the wet season period, and Collier County received 16.8 inches more than normal.

Monthly comparisons of actual rainfall totals and the long term average for each reporting area for individual wet season months are shown in Figures 3-9 through 3-12. This is reported as the difference between the monthly long term average and the actual rainfall totals received in each area. Figure 3-7 depicts the difference between the actual rainfall total (May 1995) and the long term average. This figure shows that all of the reporting areas received less than normal amounts of rainfall, except for Collier County, and indicates a rainfall deficit at the beginning of the wet season.

Figures 3-8, 3-10, and 3-12 show the highest amounts of above average rainfall for the various areas of the District occurring during June, August, and October 1995, respectively. These months received very heavy rainfall amounts from several tropical storms, hurricanes, and enhanced storm events. .

During the month of June 1995 (Figure 3-8) Dade County, Broward County, Southwest Coast, and the Collier County areas received the highest amounts of above average rainfall ranging from 3.6 to 6.5 inches. In August 1995 (Figure 3-10) the highest amounts of above average rain were received in the Southwest Coast, Collier, Broward, Palm Beach, and Martin-St. Lucie subbasins, with above normal amounts ranging from 4.9 to 10.9 inches. The October 1995 (Figure 3-12) map shows above normal rainfall amounts ranging from 7.0 to 10.0 inches were the highest in the Collier, Southwest Coast, Palm Beach , and Martin-St. Lucie subbasins. The September 1995 (Figure 3-11) map shows that most of the subbasins received less than the normal amount of rainfall for this particular month..

During the wet season, there were several storm events which contributed very heavy rains throughout the District area. One storm in particular produced heavy amounts of precipitation falling on the District over the course of six days during October 14-19. The total rainfall amounts received from this storm and the maximum 1-, 2-, 3-, and 5-day time intervals are shown in Figures 3-13 through 3-17. The storm totals for each area is shown in Figure 3-13, and the area averages range from 1.8 inches in the Upper Kissimmee to 8.9 and 10.1 inches in the Palm Beach and Martin-St. Lucie subbasins, respectively. Also shown in this map are selected rainfall totals for some of the highest point rainfall amounts measured at rainfall stations throughout the District during the course of the storm event. Figures 3-14, 3-15, 3-16 and 3-17 also depict selected sites for which some of the highest amounts (maximums) of rainfall were measured over the course of 1, 2, 3, and 5 days. For instance in Figure 3-14, the highest 1-day rainfall amount was measured at station S-46 in northern Palm Beach County, and the average of the 1-day maximum amounts for this county was 4.5 inches.

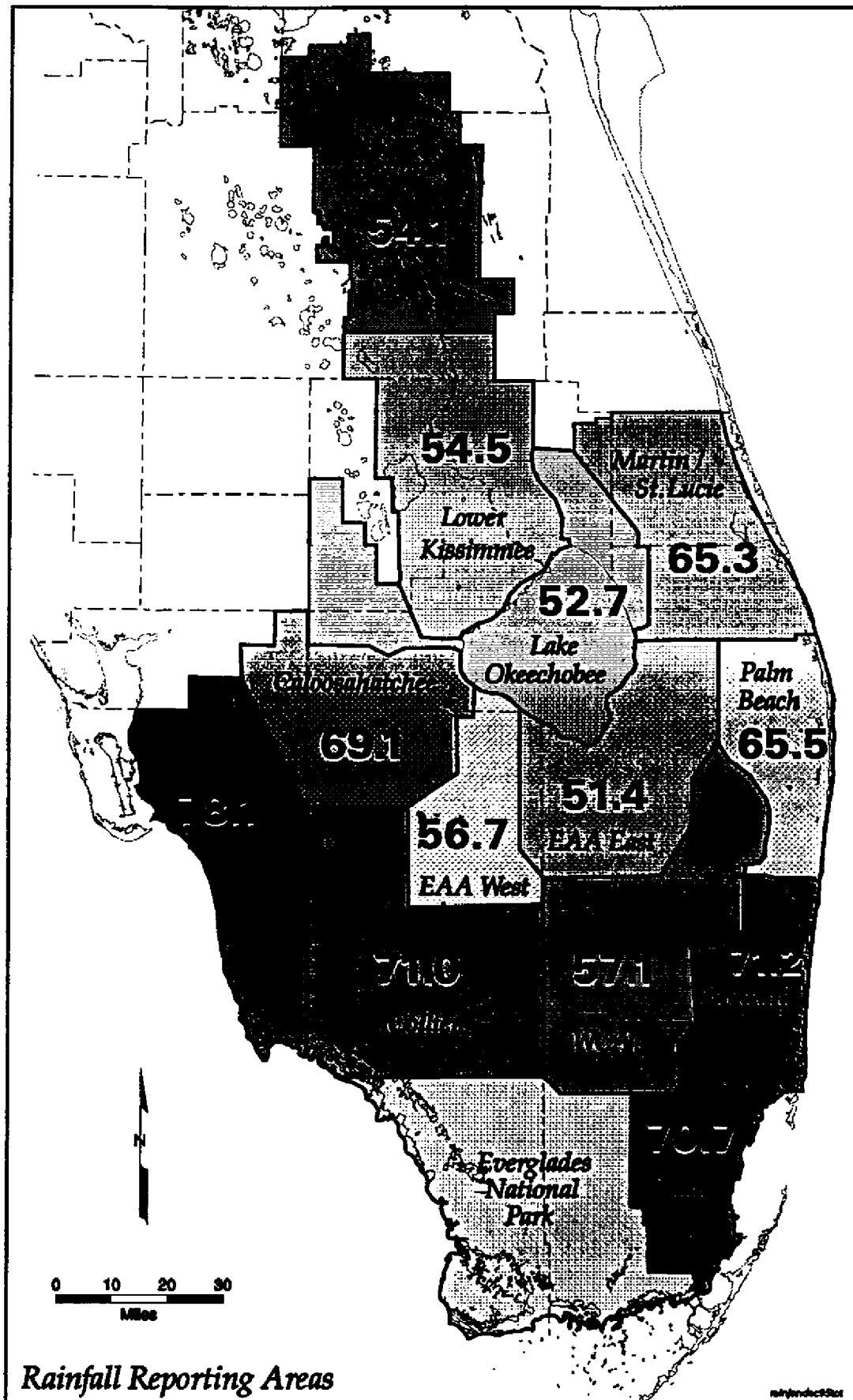


FIGURE 3-3. Total Rainfall in Inches, January-December, 1995.

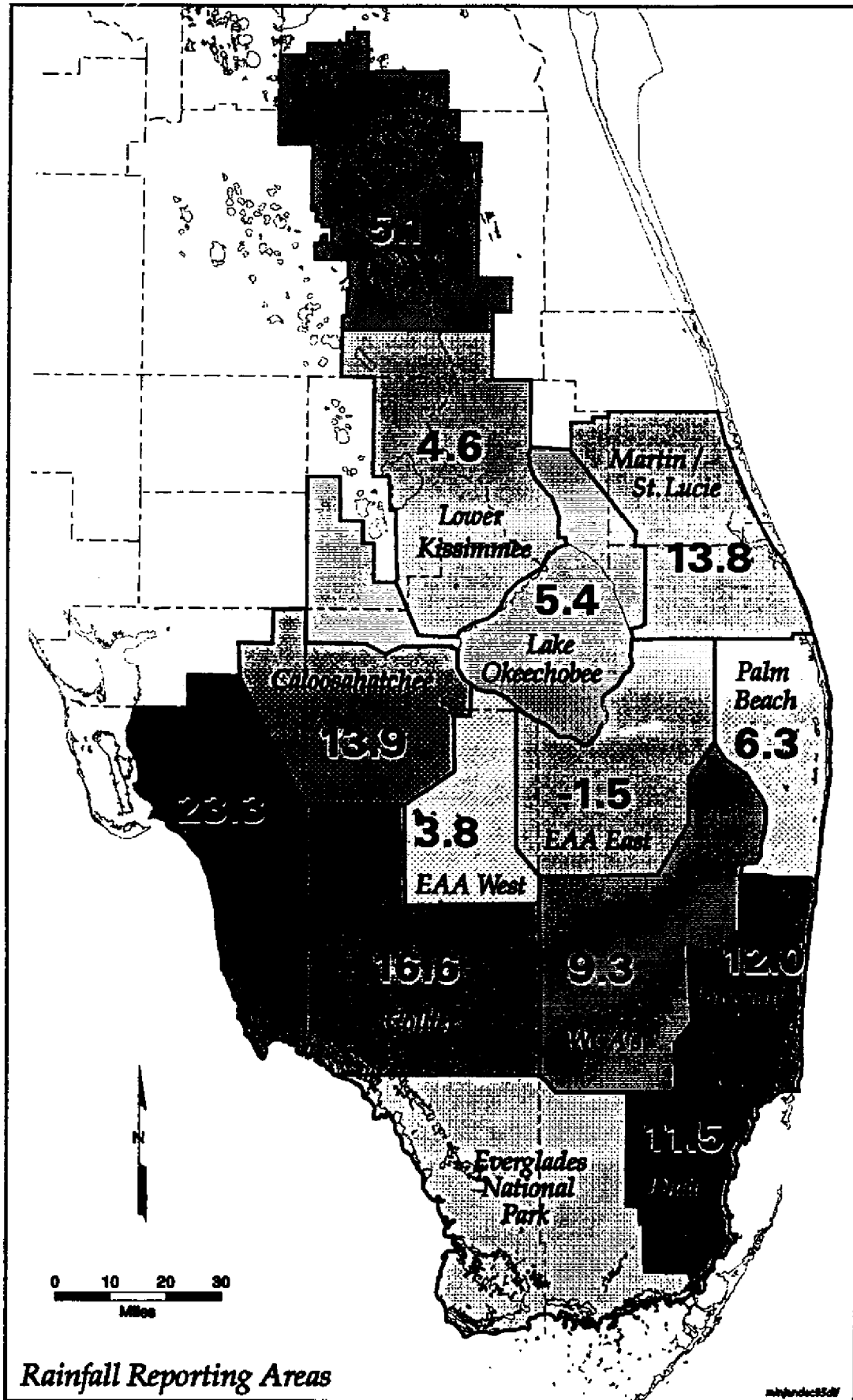


FIGURE 3-4. Rainfall in Inches Above or Below Average, January-December, 1995.

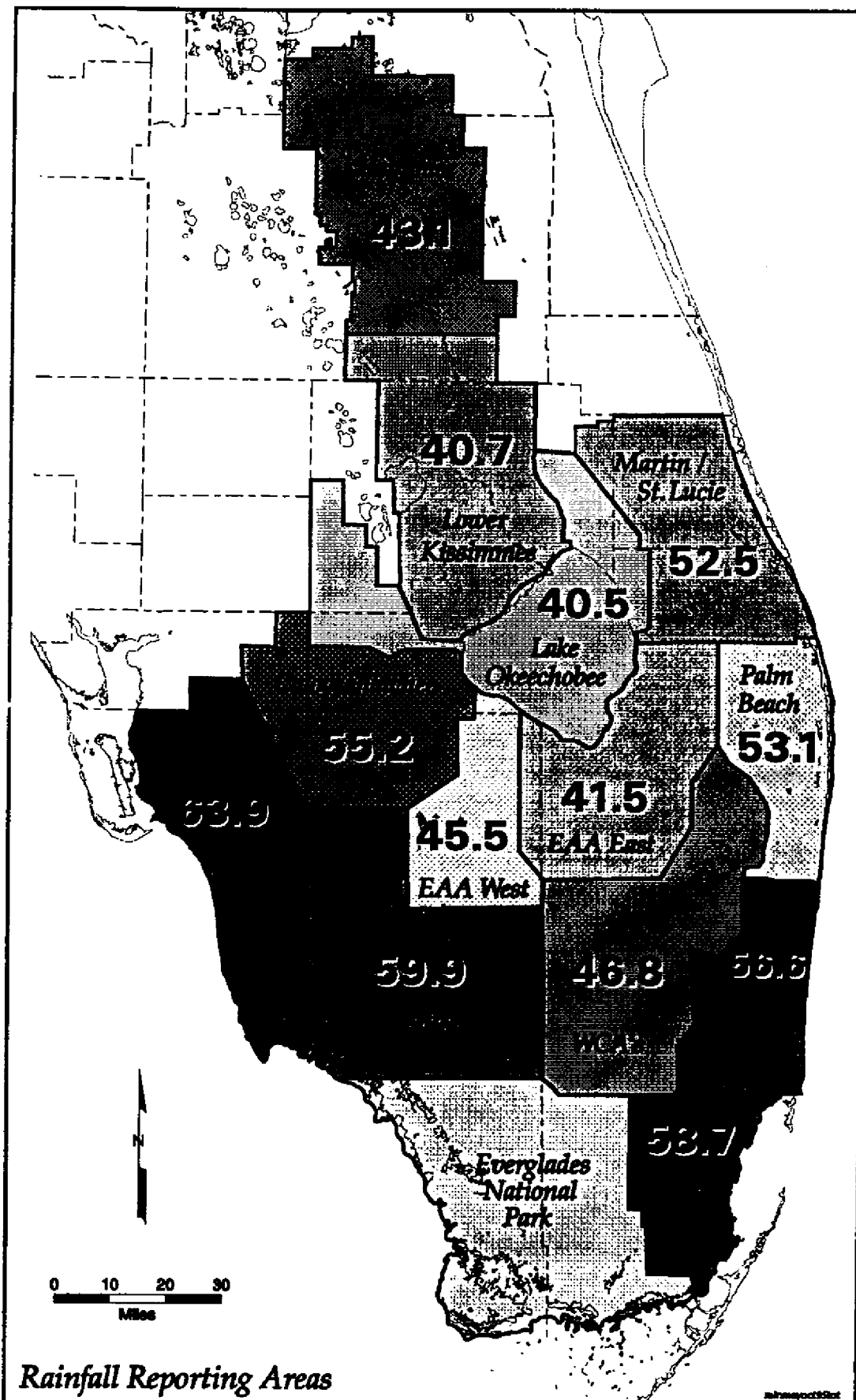


FIGURE 3-5. Total Wet Season Rainfall in Inches, May-October, 1995.

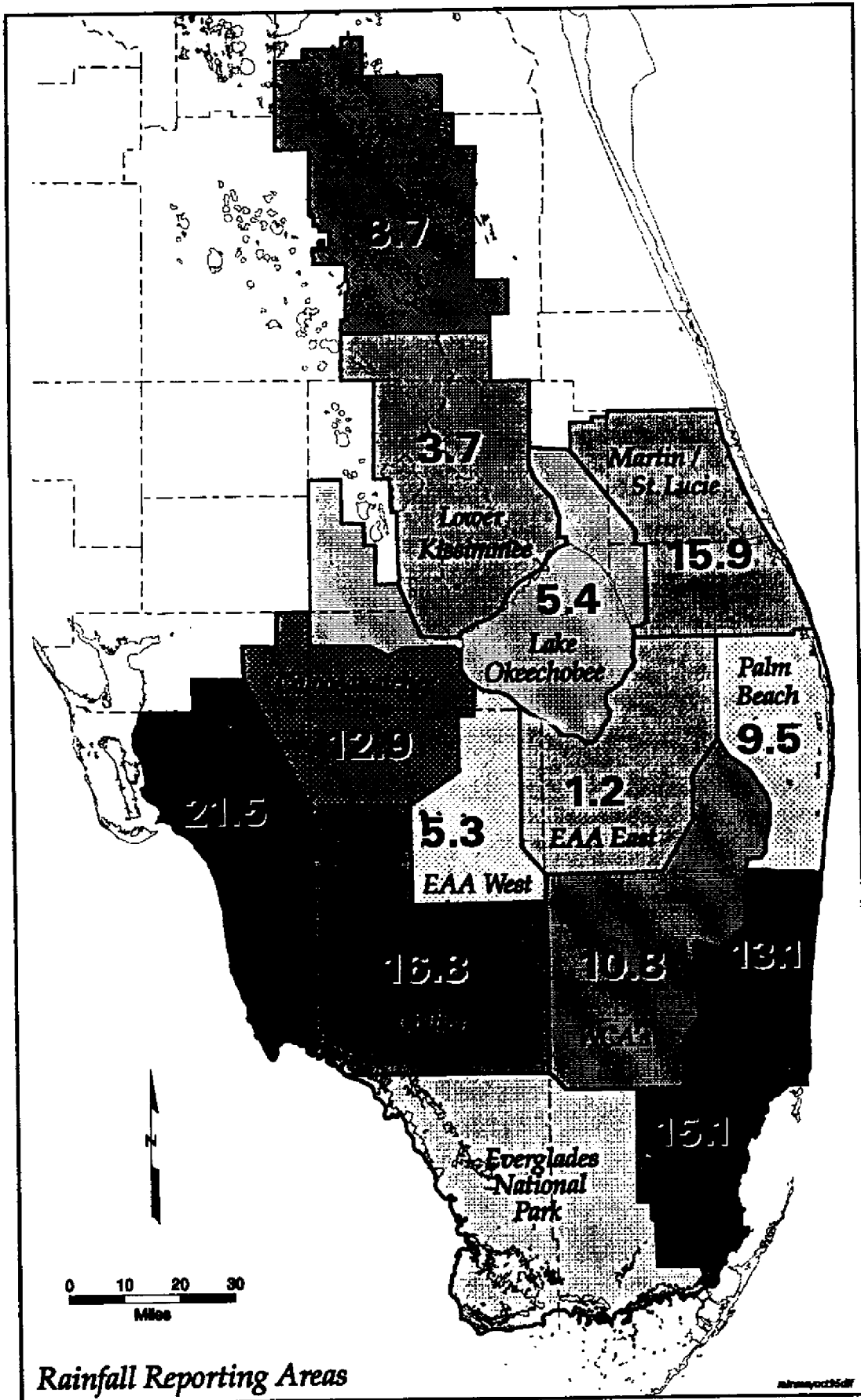


FIGURE 3-6. Wet Season Rainfall in Inches Above Average, May - October, 1995

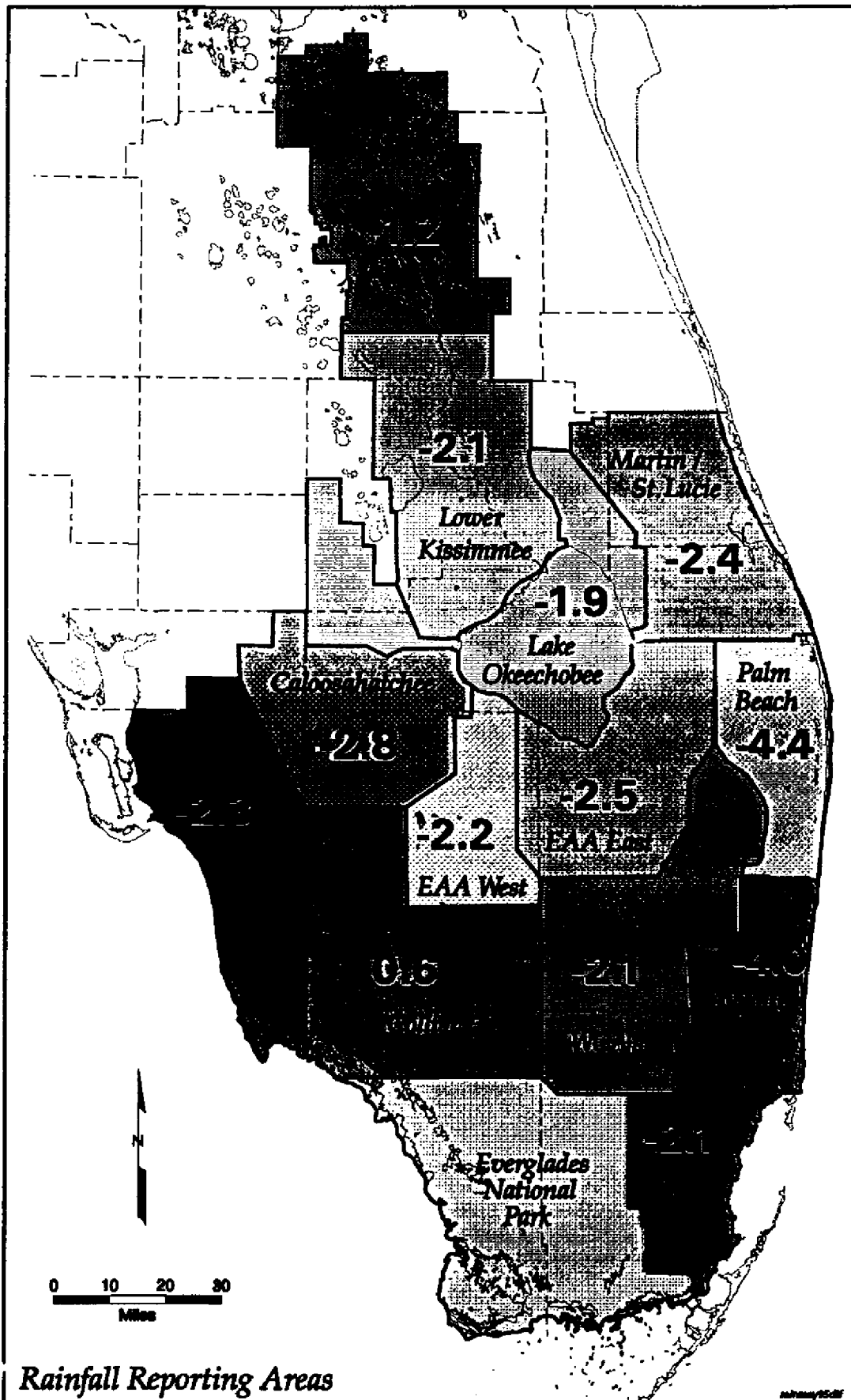
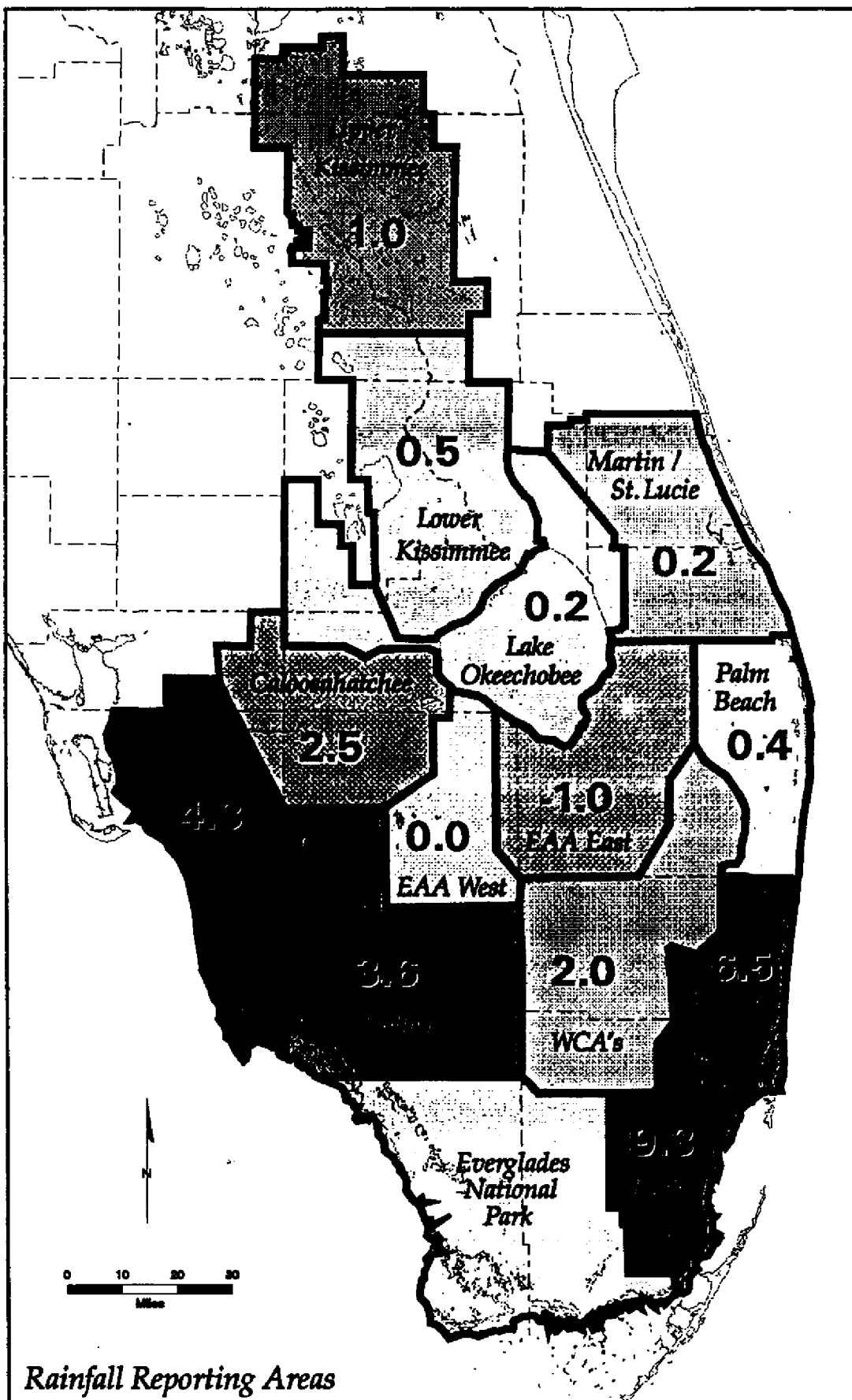


FIGURE 3-7. Rainfall in Inches Above or Below Average, May 1995.



Rainfall Reporting Areas

FIGURE 3-8. Rainfall in Inches Above or Below Average, June 1995.

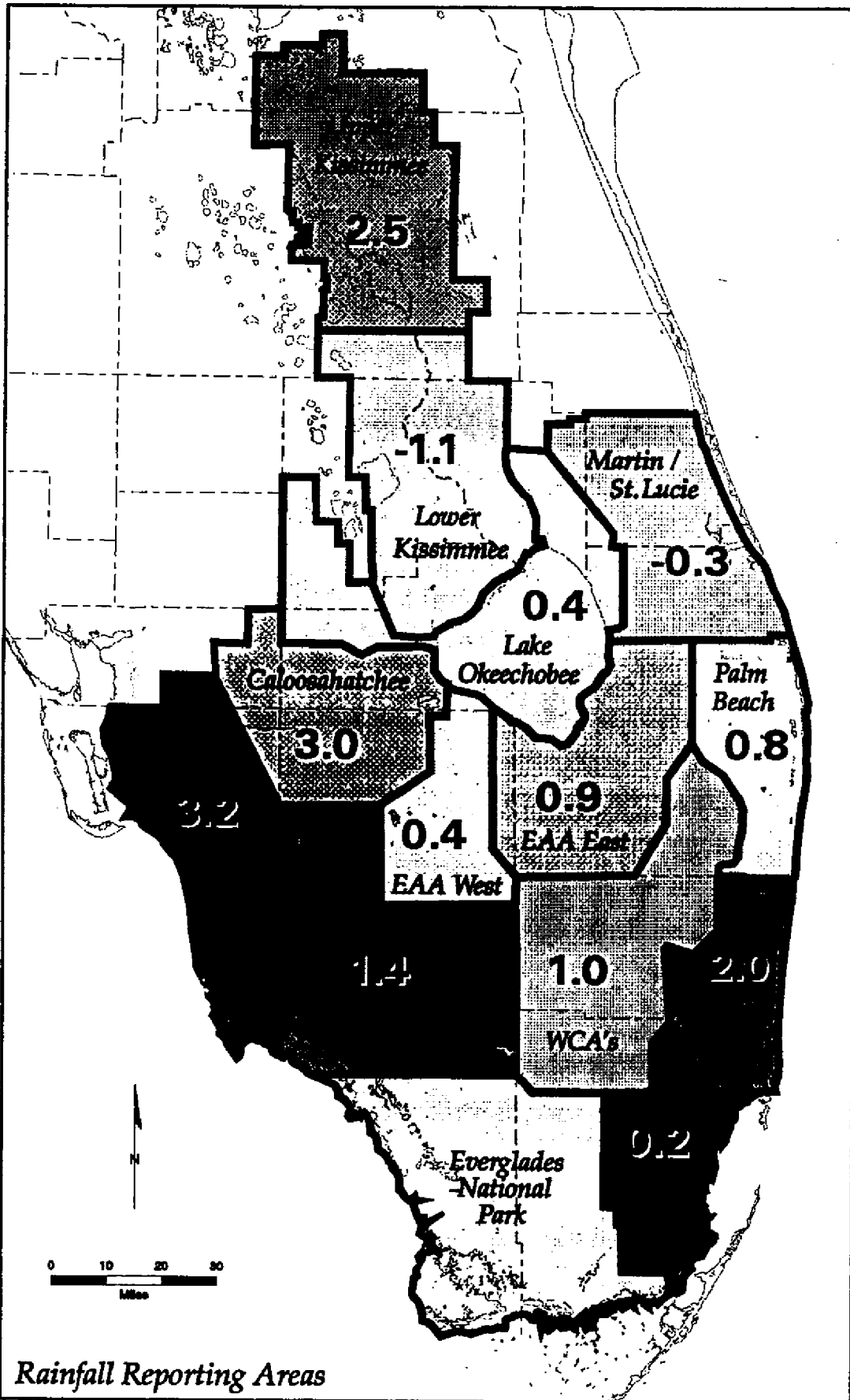


FIGURE 3-9. Rainfall in Inches Above or Below Average, July 1995.

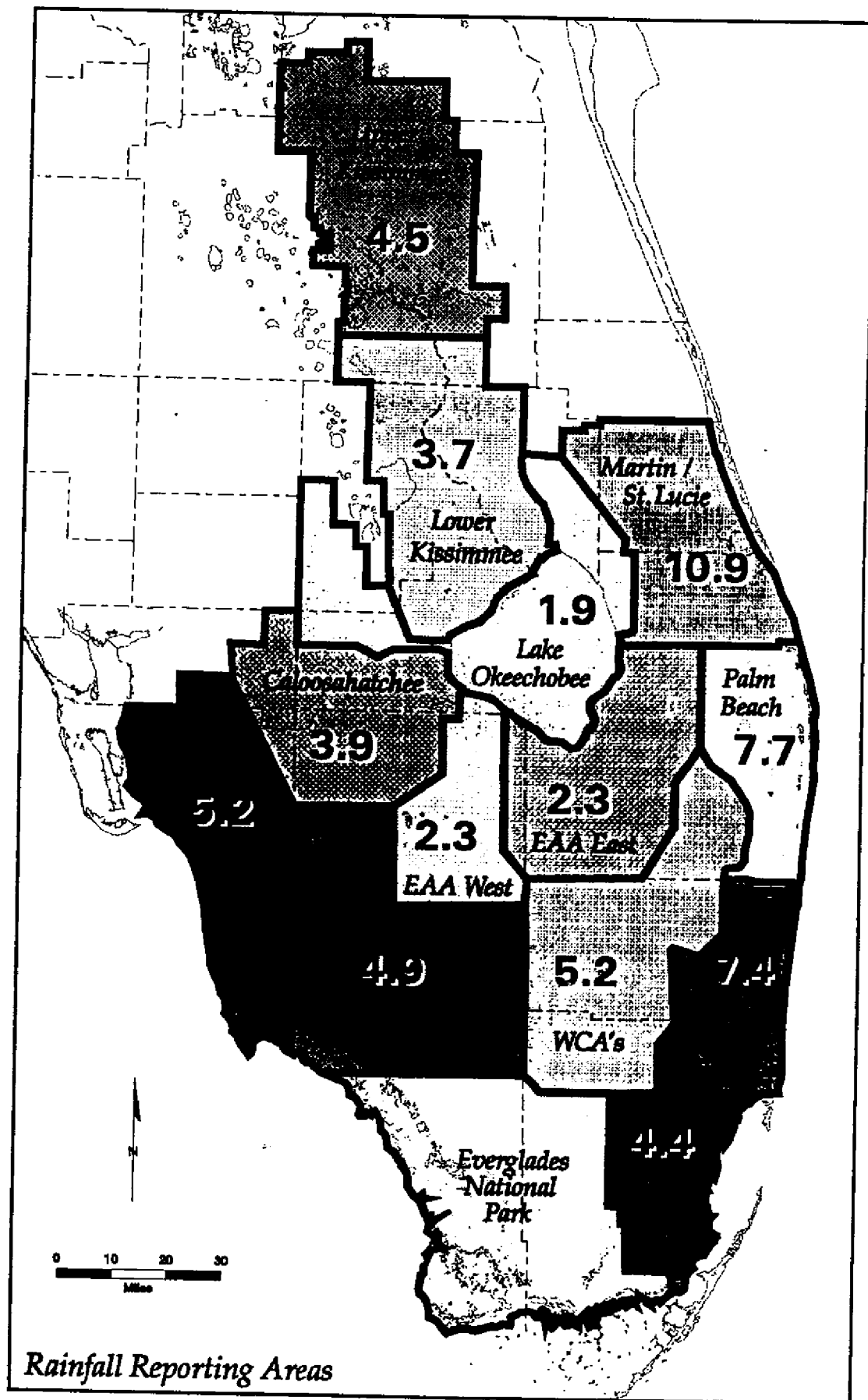


FIGURE 3-10. Rainfall in Inches Above or Below Average, August 1995.

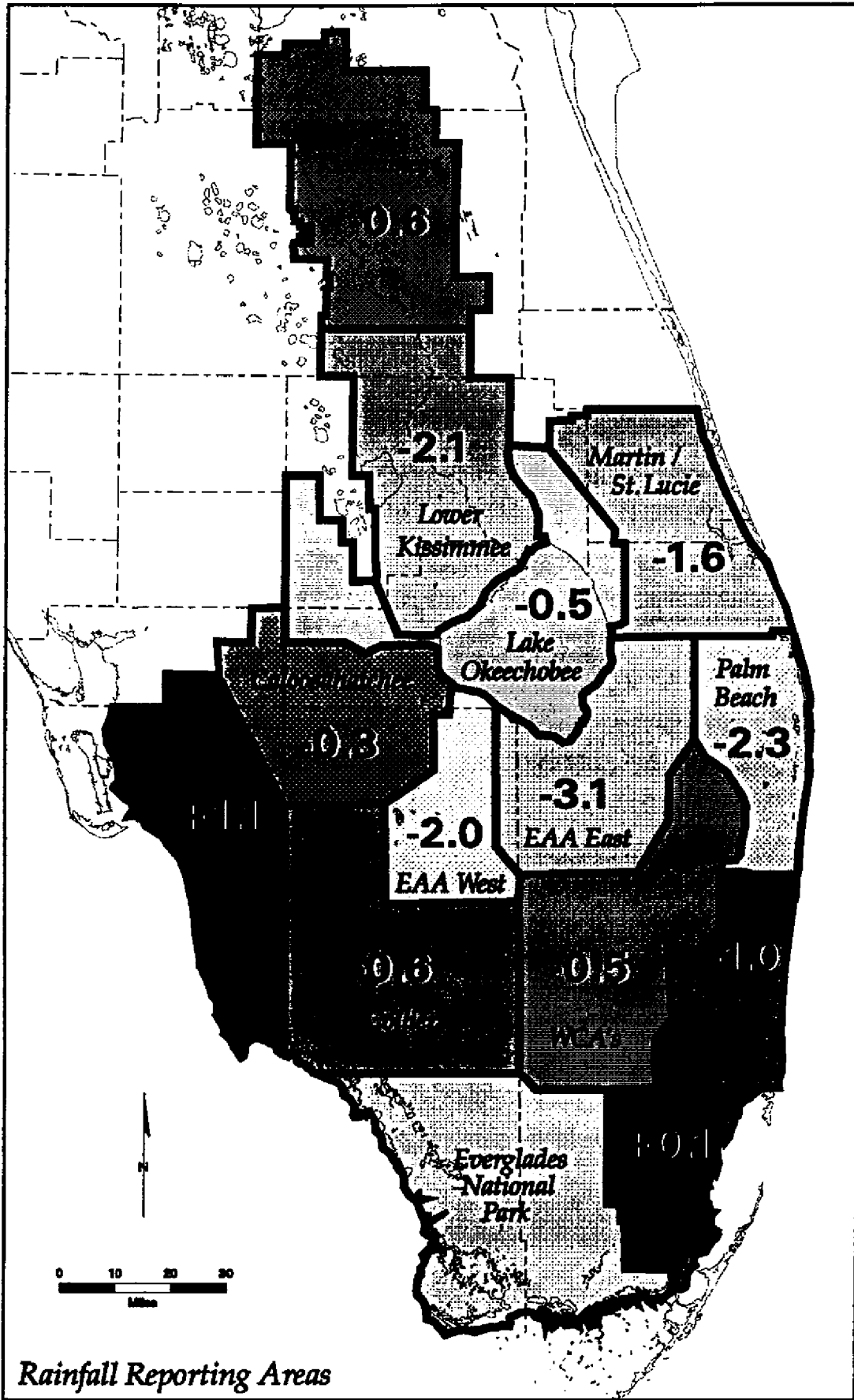


FIGURE 3-11. Rainfall in Inches Above or Below Average, September 1995.

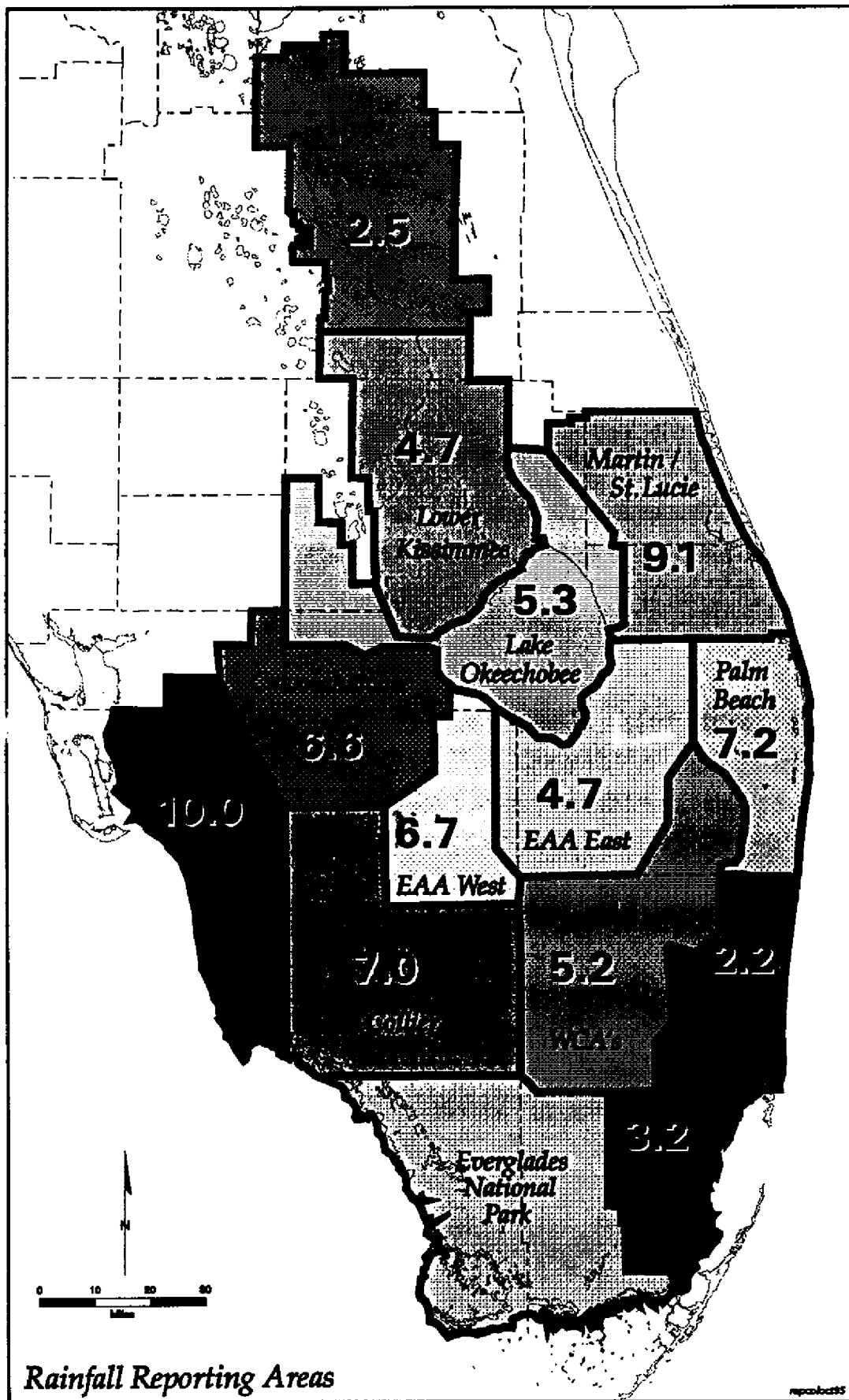


FIGURE 3-12. Rainfall in Inches Above or Below Average, October 1995.

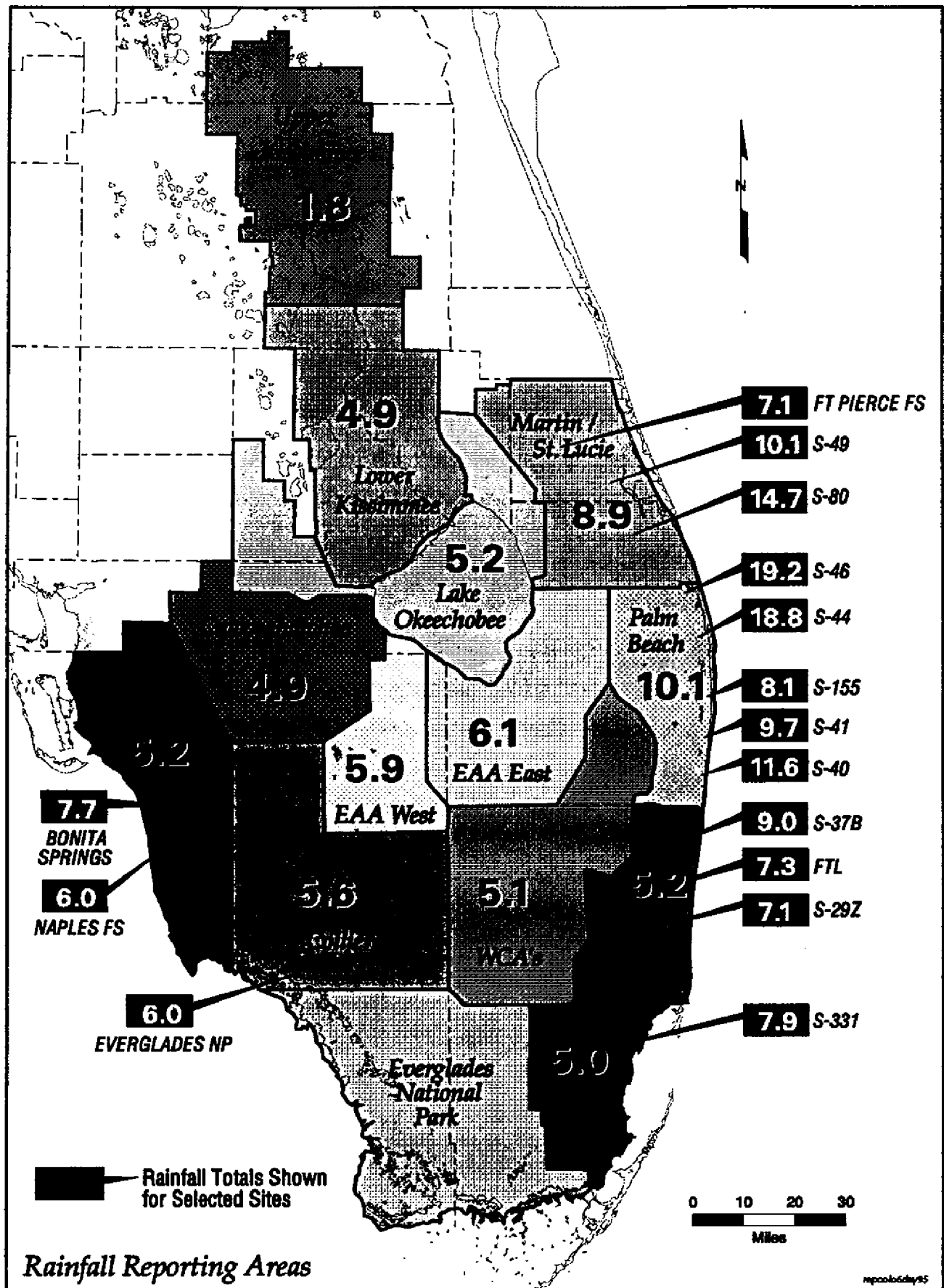


FIGURE 3-13. Average Basin Rainfall (Inches) Totals for Storm Event of October 14-19, 1995.

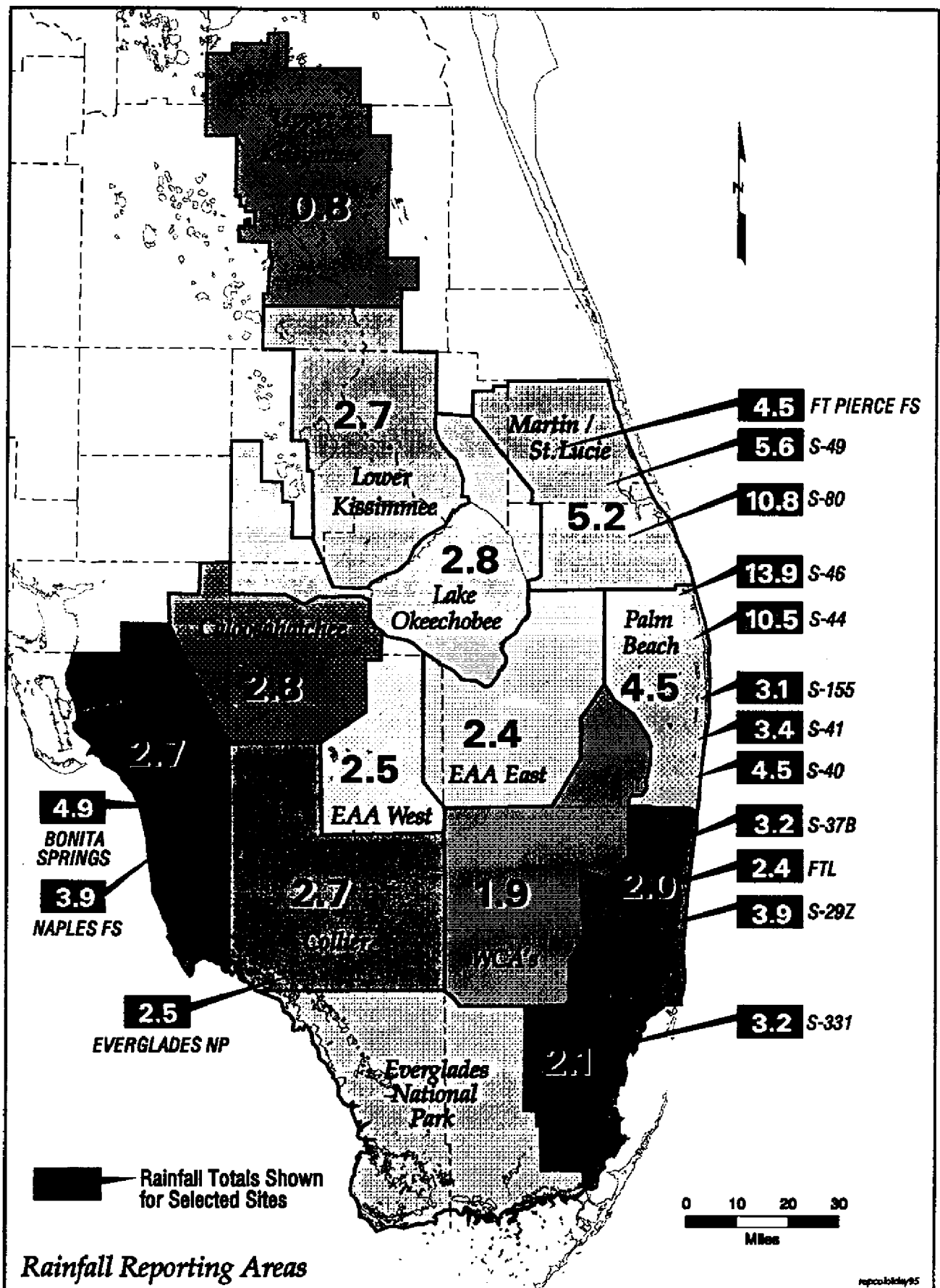


FIGURE 3-14. Average Basin Rainfall (Inches), 1-day Maximum for Storm Event of October 14-19, 1995.

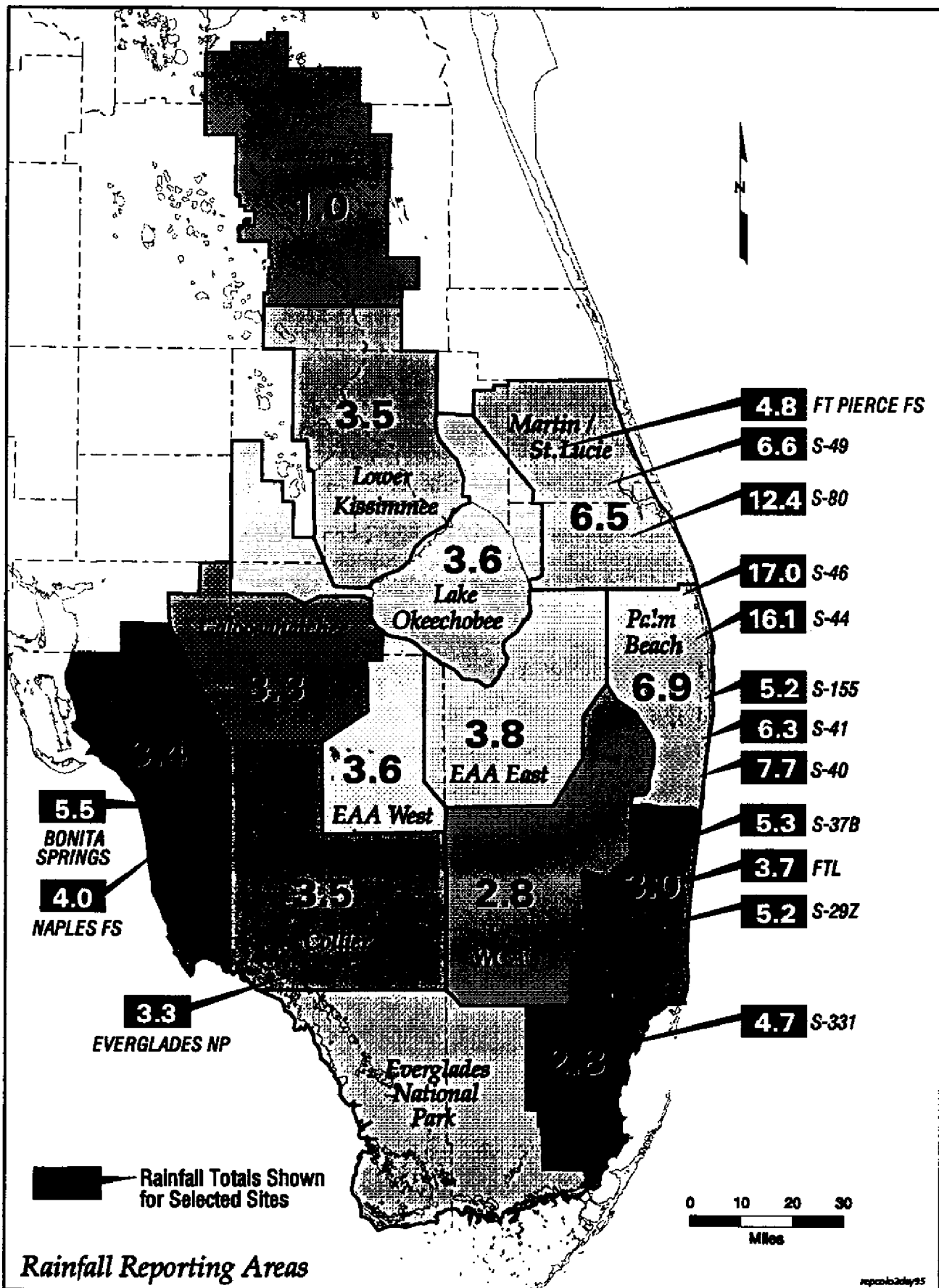


FIGURE 3-15. Average Basin Rainfall (Inches), 2-Day Maximum for Storm Event of October 14-19, 1995.

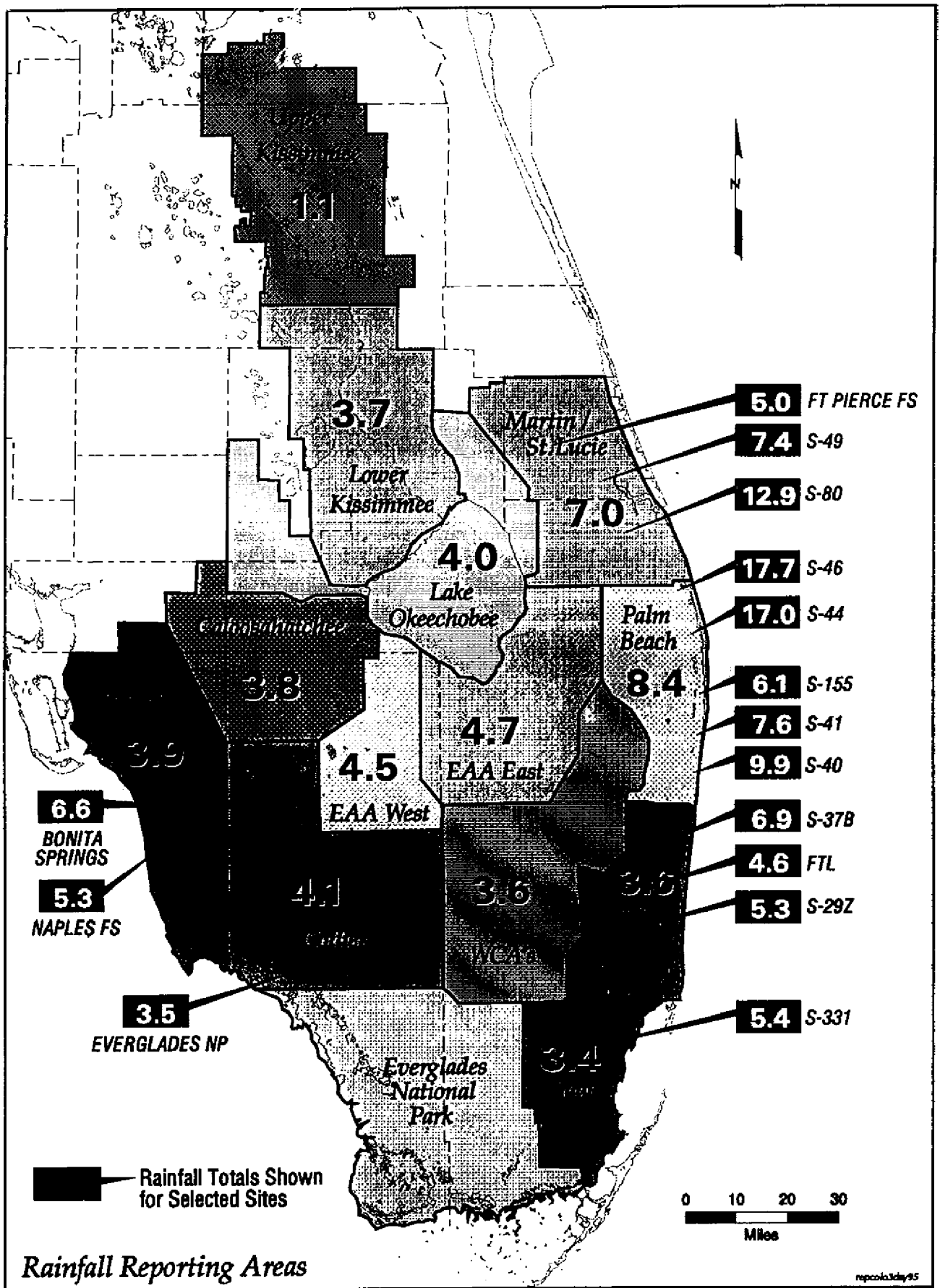


FIGURE 3-16. Average Basin Rainfall (Inches), 3-Day Maximum for Storm Event of October 14-19, 1995

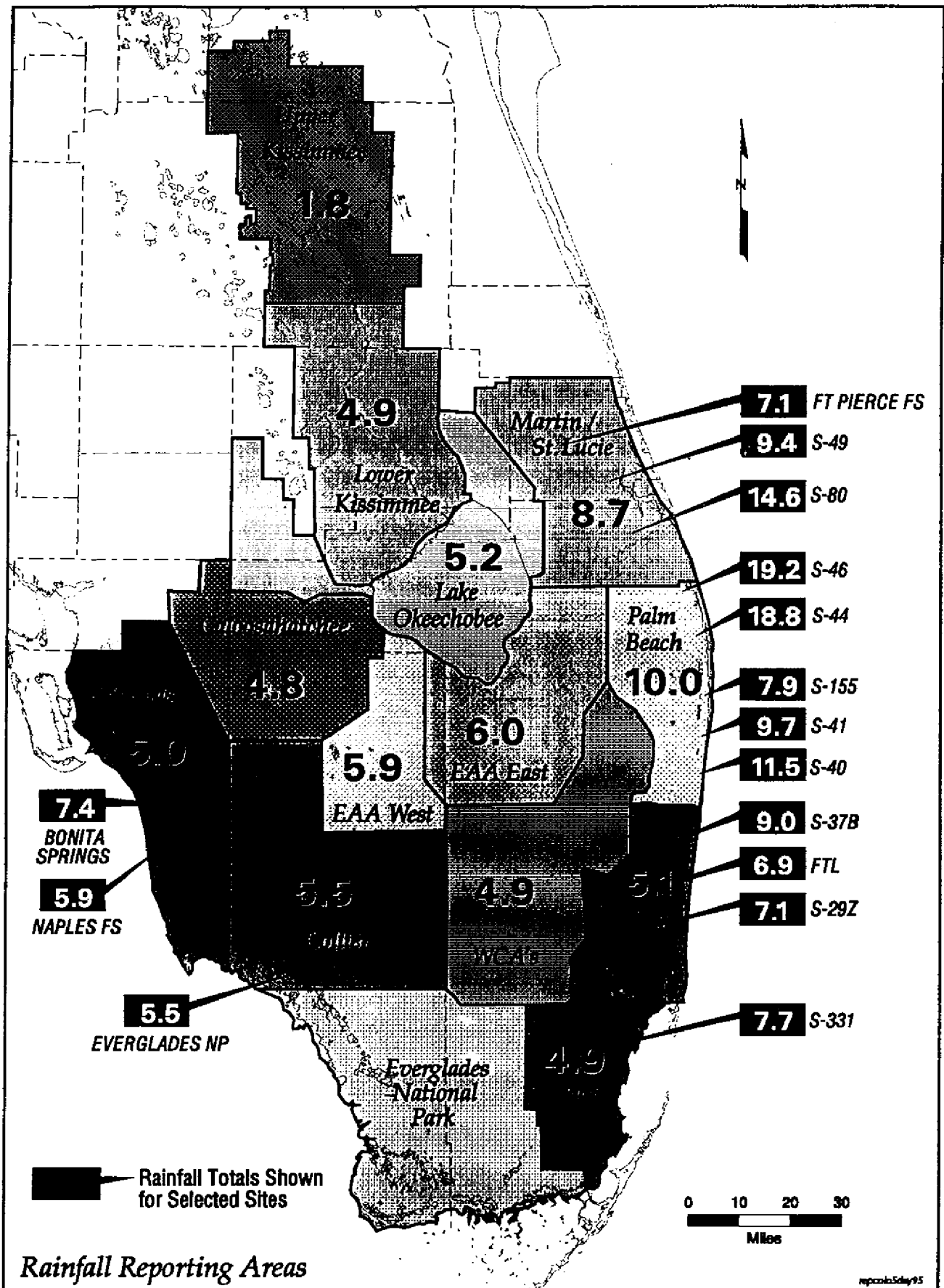


FIGURE 3-17. Average Basin Rainfall (Inches), 5-Day Maximum for Storm Event of October 14-19, 1995

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CHAPTER 4

SYSTEM OPERATION (WATER LEVELS AND DISCHARGES)

UPPER KISSIMMEE RIVER BASIN

The Upper Kissimmee River Basin consists of Lakes Alligator, Myrtle, Hart, East Tohopakaliga, Tohopakaliga, Cypress, Hatchineha, Gentry and Kissimmee. They are referred to as the Upper Kissimmee Chain of Lakes (UCOL). Daily water level stages and regulatory schedule levels for each lake are presented in Figures 4-1 through 4-3.

Regulation schedules are rule curves (specified levels) that are used to determine when water must be released to maintain desired water levels. Regulation schedules do not directly indicate optimum water levels at any point in time nor do they restrict inflow when water levels are above regulation. The rule used when applying the schedules is that releases are required in order to intentionally lower water levels when those levels are above the schedule. Too rapid a return to regulatory levels is undesirable, thus, discharges are set to return water levels in a more reasonable length of time in order to best balance all systems. Complex regulation schedules may state specific levels of regulatory flow based on water level and time of year. No releases are required to intentionally lower water levels when the levels are below the regulation schedule. Releases for purposes other than water level control may, of course, be made when stages are below the schedule.

The lakes in the Upper Chain of Lakes were operated on slightly different schedules than usual during 1995 in preparation for a planned extreme drawdown in Lake Kissimmee. The drawdown was scheduled to begin on Nov. 1, 1995 and continue through the spring months of 1996. All of the regulated Upper Chain of Lakes reached their new temporary schedules during July 1995.

The start of the Lake Kissimmee Drawdown was delayed 30 days (from November 1 to December 1, 1995) due to the large regulatory releases from Lake Okeechobee that were necessary in early November. The delay allowed the drawdown to proceed with minimal impact to the estuarine environment downstream of Lake Okeechobee, an environment already highly stressed due to unusually large volumes of freshwater inflows.

Outflows from each of the lakes in the Upper Kissimmee Chain are channeled to Lake Kissimmee and then to Lake Okeechobee via the C-38 canal. Discharges to Lake Okeechobee from Lake Kissimmee are controlled by structure S-65. Table C-1 in Appendix C contains the headwater and tailwater stages, as well as the daily discharges, from Structure S-65.

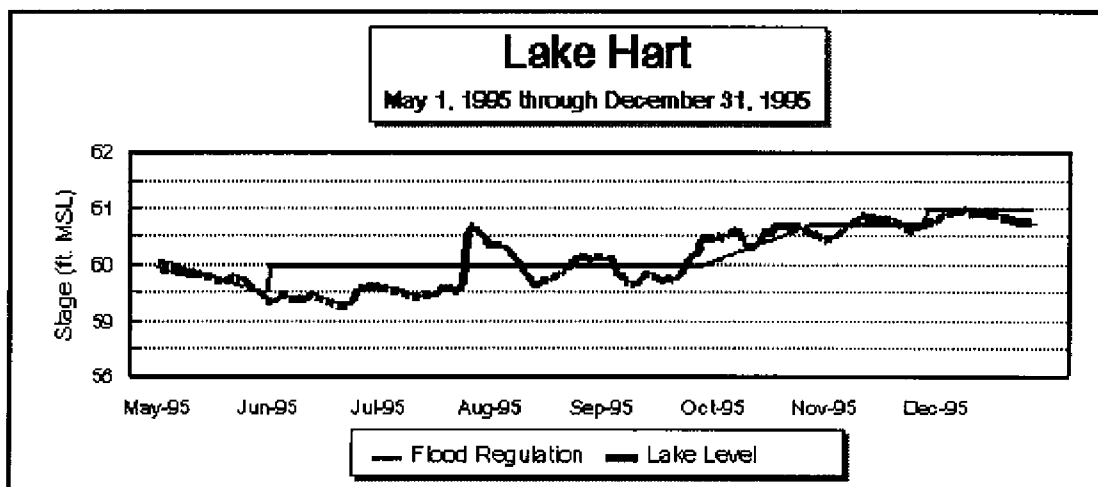
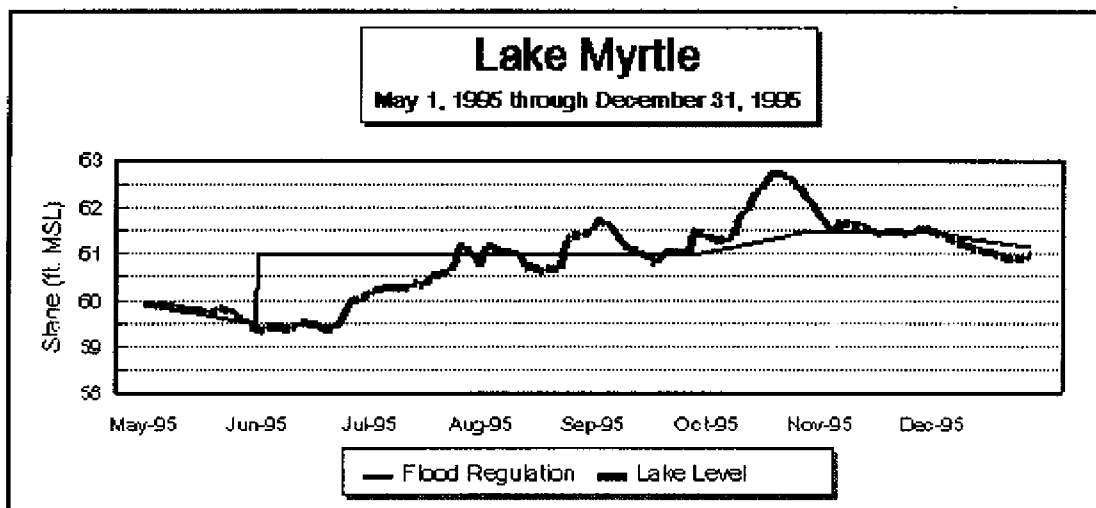
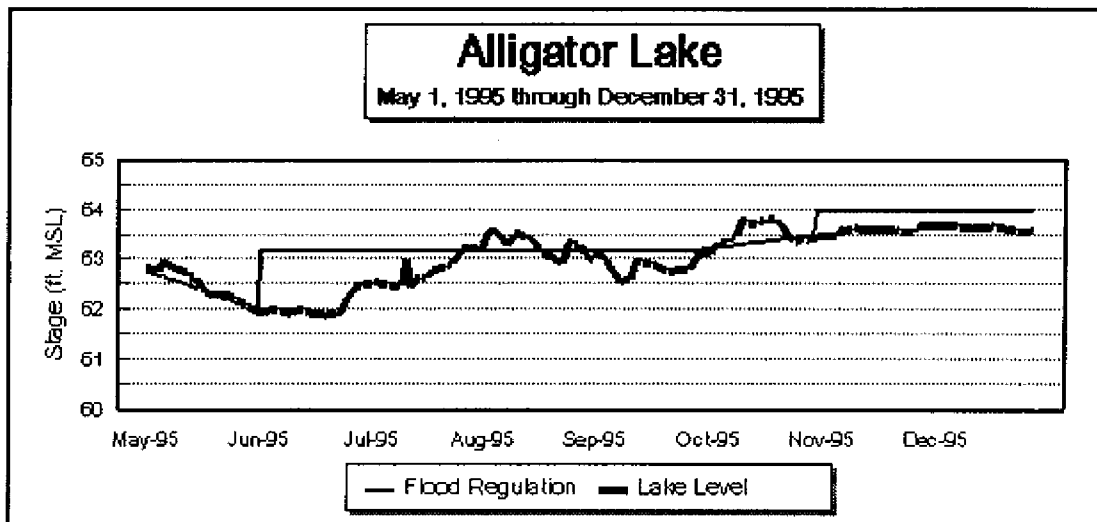


FIGURE 4-1. Water Levels and Regulation Schedules for Major Lakes in the Upper Kissimmee River Basin.

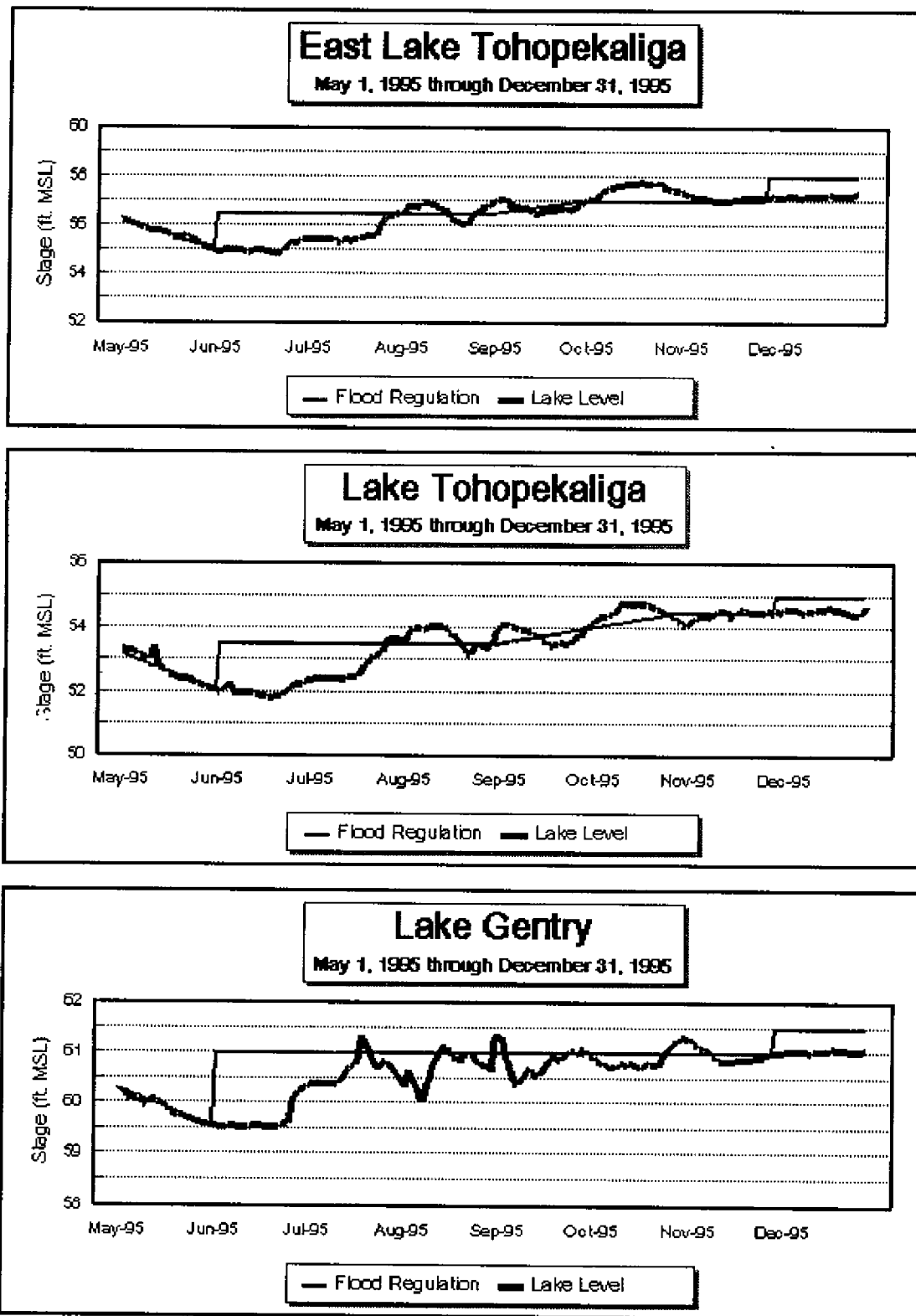


FIGURE 4-2. Water Levels and Regulation Schedules for Major Lakes in the Upper Kissimmee River Basin.

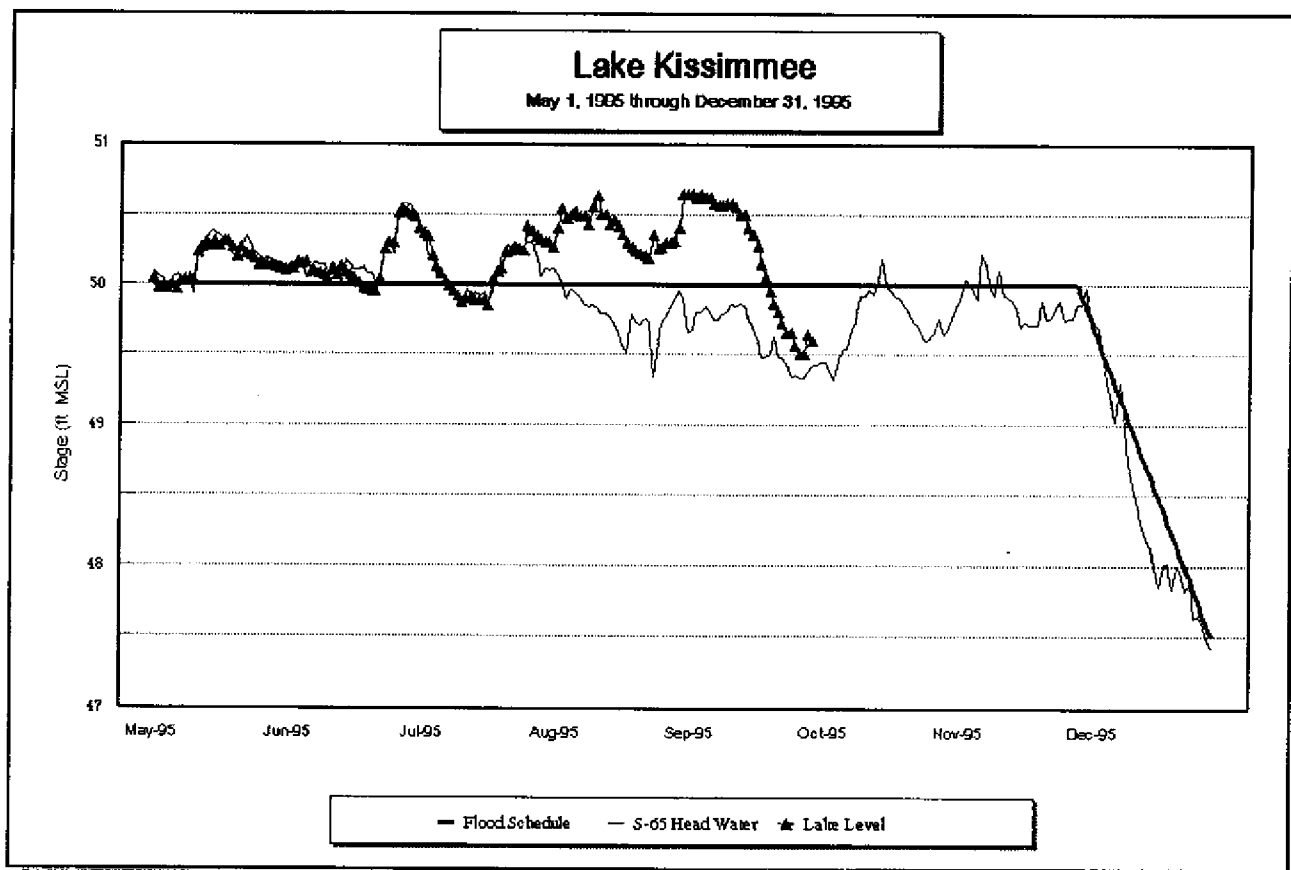


FIGURE 4-3. Water Levels and Regulation Schedule for Lake Kissimmee.

Conditions During Storm Events

Storm of June 18-26, 1995: The Upper Kissimmee Basin lake stages (Figures 4-1 through 4-3) were near or within regulatory levels with the exception of Lake Kissimmee. The regulatory stage level for Lake Kissimmee from May through October was 50 ft. (NGVD). Actual stages for Lake Kissimmee (shown in Figure 4-2) were near regulatory level throughout this storm. Maximum releases from S-65 can range from 3000 to 11,000 cubic feet per second (cfs) depending on the local inflow in C-38. During this storm, the discharge from structure S-65 ranged from a low of 178 cfs to a high of 916 cfs. The maximum discharge through S-65 as a result of this storm was 2240 cfs., and was observed on July 1.

Hurricane Erin of August 2-5: Hurricane Erin passed directly over the Upper Kissimmee Basin on August 2 contributing 4.5 inches to basin rainfalls which were above normal for the month of August. Although large flows were required from all

control structures in the area, water levels were held near the target levels throughout the month. Lake stages in all of the Upper Kissimmee Lakes were above the regulatory levels, except for Lake Gentry. Discharges through S-65 ranged from 3900 to 4860 cfs during the hurricane period, with a peak discharge of 5080 cfs occurring on August 8.

Tropical Storm Jerry of August 23-26: Regulatory stage levels were exceeded for all of the Upper Chain of Lakes, with the exception of Lakes Gentry and Myrtle (Figures 4-1 and 4-2). Discharges through S-65 after the end of Hurricane Erin continued to decrease to approximately 3800 cfs on August 25 during the onset of Tropical Storm Jerry. As a result of tropical storm Jerry, discharges then increased to a maximum of 5700 cfs on the September 7. After the resulting peak occurred, a reduction in flow continued until October 4 at which time a rate of 1430 cfs was recorded.

Hurricane Opal of October 5-7: During the onset of Hurricane Opal, all of the lake stages were within regulatory levels. After Jerry, releases decreased steadily, ranging from 5690 to 1430 cfs; with the onset of Opal, discharges through S-65 began to increase, reaching a peak discharge of 2460 cfs on October 13.

Storm of October 14-19: Discharges through S-65 started to increase from 2650 cfs on October 14 to a high of 4630 cfs on October 20. After this storm event, discharges gradually decreased.

LOWER KISSIMMEE AND LAKE OKEECHOBEE BASINS

Inflows to Lake Okeechobee

The Kissimmee River discharges into Lake Okeechobee through S-65E; Table C-1 in Appendix C contains the inflow data for S-65E. There are 10 other structures which discharge into the lake in addition to the Fisheating Creek. These structures control tributary discharges from basins on the northern rim of Lake Okeechobee, whereas Fisheating Creek is a natural, uncontrolled stream. Most of the surface water inflow to Lake Okeechobee comes from north of the lake.

From May 1 to December 31, discharges from the Kissimmee River into Lake Okeechobee through structure S-65E accounted for approximately 55% of the total surface water inflows from the northern basins and tributaries discharging to the lake. During the same period, the Fisheating Creek tributary accounted for approximately 11% of the inflow. Runoff to Lake Okeechobee from the Lake Istokpoga/Indian Prairie areas through structures S-71 and S-84 (combined) accounted for 18% of the total discharges to the lake; runoff from the Taylor Creek/Nubbin Slough Basins, which

discharge through structure S-191, accounted for approximately 6% of the total. The remaining 10% came from pump stations on the North Shore, at S-4, and occasionally from S-2 and S-3 when conditions in the EAA required emergency pumping. Appendix D summarizes the inflows from these controlled tributaries, and Appendix E shows the streamflow from Fisheating Creek. Most of the major storm events during the wet season produced high runoff rates which increased the storage in Lake Okeechobee and helped push the stage level in the lake to the highest recorded level in nearly 50 years.

Lake Okeechobee reached a stage of 18.64 feet on October 26, 1995, the highest water level recorded since November 1947 (Figure 4-4). During the last week of October 1995, maximum flow rates from Lake Okeechobee to the Caloosahatchee River reached 7100 cfs and to the St. Lucie Canal reached 7400 cfs. These high discharges were adequate to regain control of lake stages. By the first part of December, it was possible to reduce regulatory releases to the pulse release level. Pulse releases continued into 1996. The actual daily lake stages are presented in Table H-1 in Appendix H. Effects from the various storms on the northern basins and the resulting tributary inflows to Lake Okeechobee are discussed below.

High water levels in Lake Okeechobee during October prompted intense monitoring of the Herbert Hoover Dike surrounding the Lake. The U.S. Army Corps of Engineers brought in geotechnical experts to direct the monitoring and to coordinate emergency repairs in case they were needed. Precautionary measures, including building temporary berms and pumping water to raise water levels adjacent to the land side of the levee, were initiated to reduce potential hazards.

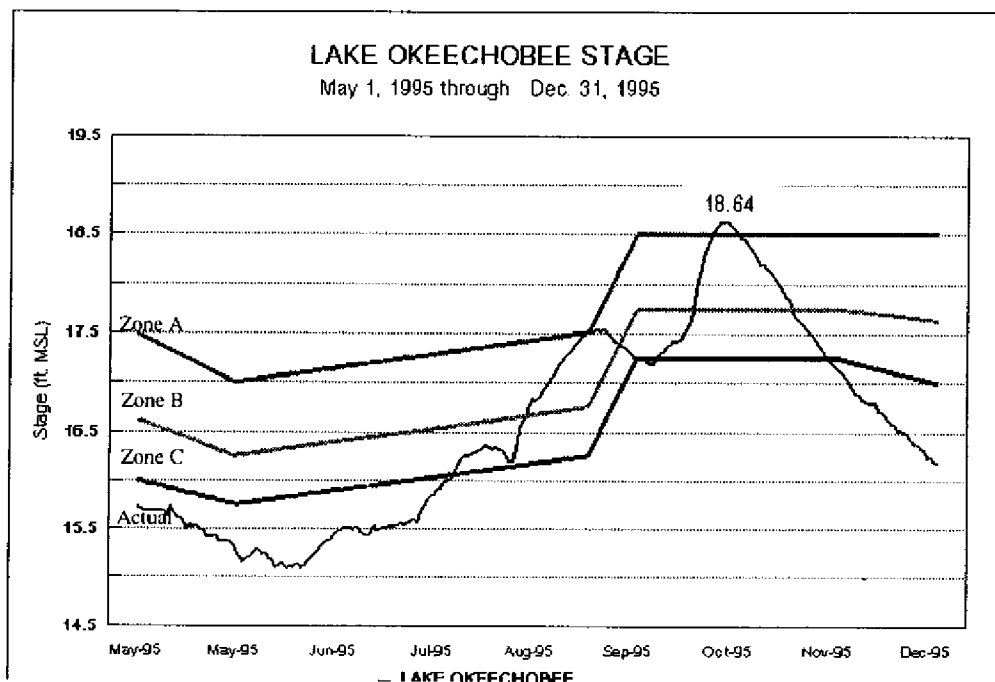


FIGURE 4.4. Actual Daily Lake Okeechobee Stage and Regulatory Zone Stages. Pulsed releases to estuaries are used to maintain lakestage below Zone C levels. Progressively larger volumes of water are released from the Lake as stage increases toward Zone A levels, above which maximal discharges are mandated.

Conditions During Storm Events

Storm of June 18-26, 1995: Prior to the onset of this storm event, the stage in Lake Okeechobee was at 15.12 ft (NGVD) and reached a level of 15.36 ft. at the close of the event. Surface water inflows to the lake before the onset of the storm event produced a total combined discharge from the northern basins of from 100 to 200 cfs daily. However, flow began to increase from 1301 cfs on June 23 to a maximum of 5821 cfs on June 27. Flows receded gradually to a low of 1263 cfs on July 24.

Hurricane Erin of August 2-5: Inflows to the lake were at a level of 6000 cfs for two days prior to the onset of Hurricane Erin. On the first day of the hurricane, a total of 9341 cfs was being discharged from the northern basins to the lake. By August 4, discharges had reached a level of 14,234 cfs; of that, 8620 cfs came from the Kissimmee River. The total combined discharge to the lake from the northern basins remained at around 10,000 cfs for several days after the cessation of the hurricane rains.

Tropical Storm Jerry of August 23-26: Inflows to the lake totaled approximately 6500 cfs for two days prior to Tropical Storm Jerry and increased to 14,320 cfs on the last day of the storm. Total runoff from the northern basins to the lake continued to be high

through September 19 due to continuous rainfall in the basins. Total combined discharges ranged from 10,000 to 18,000 cfs during this period.

Hurricane Opal of October 5-7: Total basin discharge to the lake before and during this hurricane ranged from 4800 to 6900 cfs daily. Discharges started to increase after the hurricane, reaching a maximum of 10,080 cfs on October 8.

Storm of October 14-19: Prior to this storm event, the total discharge to the lake was in the vicinity of 9000 cfs.; discharge continued to increase during the storm and reached a high of 22,416 cfs on October 20. Discharge from the Kissimmee River accounted for about 4000 cfs of the total, increasing to 7900 cfs at storm's end.

Outflows from Lake Okeechobee through St. Lucie Canal and Caloosahatchee River

Large regulatory releases were required to manage high water levels in Lake Okeechobee for the second consecutive year. Pulse releases, which are a less environmentally stressful means of removing excess water from Lake Okeechobee than the more sustained releases, were initiated on September 21, 1994. However, the pulse release procedures were inadequate to handle the additional inflow from Tropical Storm Gordon. As a consequence, releases to Zone C began on November 16, 1994. Additional heavy rain in December 1994 required that Zone C releases continue into the first week of February 1995. Pulse releases continued until April 28, 1995. Because of the cumulative impact of high inflows into Lake Okeechobee during the normal dry season months, the wet season in June started with a lake level about two feet above normal.

In response to near normal inflows in June and July, Lake Okeechobee again rose to levels which required pulse releases beginning July 31, 1995. Heavy inflows continued through August, triggering Zone C releases during the month, and increasing to Zone B releases on August 28. The large Zone B releases were necessary for most of the month of September. It was possible to reduce regulatory flows to Zone C releases the last week of September; however, these could only be maintained until mid-October when a stalled front brought very heavy rains that resulted in a rapid increase in the Lake Okeechobee water level. Large inflows required that Zone B releases be scheduled on October 17. It was not possible to fully implement the larger discharges at that time due to downstream limitations at all possible outlets. It was actually necessary to temporarily stop Lake Okeechobee releases to the St. Lucie Canal because of downstream flooding. Lake releases were carefully coordinated between the U.S. Army Corps of Engineers, South Florida Water Management District, Martin County engineers and emergency managers to ensure that victims of flooding in the South Fork of the St. Lucie River downstream of S-80 would not be impacted by

releases from Lake Okeechobee. By October 24 maximum capacity discharges were realized from all outlets.

Releases from Lake Okeechobee occur through Structures S-77 and S-308 on the west and east sides of Lake Okeechobee, respectively. Discharges from the west side at S-77 are conveyed by the C-43 Canal (the Caloosahatchee River) to the Caloosahatchee Estuary, after passing through structures S-78 and S-79. From the east side, S-308 discharges are conveyed by the St. Lucie Canal to the St. Lucie Estuary after passing through Structure S-80. Additional outflows, which convey water to the Everglades Agricultural Area (EAA), pass through structures on the southern rim of the Lake. The daily stage and flow data for S-77 and S-308 are presented in Appendix E. The discharges made through these structures during the five major storm events are discussed below. More specific impacts to the St. Lucie and Caloosahatchee Estuaries are discussed in Chapter 6.

Conditions During Storm Events

Storm of June 18-26, 1995: There were no regulatory discharges made from Lake Okeechobee through S-77 and S-308. However, water supply releases through S-77 were made to the Caloosahatchee Basin from June 7 to June 12. Water supply releases through S-308 were also made to the St. Lucie Basin during the first week of June.

Hurricane Erin of August 2-5: Regulatory discharges of 1400 cfs to the Caloosahatchee River began two days prior to the onset of Hurricane Erin. By August 3, discharges had increased to 4190 cfs. but then decreased gradually to a low of 690 cfs on August 8. Discharges through S-77 continued to rise following the storm due to high stage levels in Lake Okeechobee. Regulatory discharges were also made to the St. Lucie Canal through structure S-308 starting two days prior to Hurricane Erin and continuing until August 3. Structure S-308 remained closed until August 8 at which time regulatory discharges began again. The direct impact of Erin was not great, but feeder bands trailing Erin during the next few days of August thoroughly soaked the area.

Tropical Storm Jerry of August 23-26: Discharges through S-77 and S-308 during Tropical Storm Jerry were curtailed to allow downstream structures to discharge local runoff to tide. Local runoff for the Caloosahatchee Basin is the difference between the flows measured at S-79 and S-77, and the local runoff for the St. Lucie Basin is difference in flows measured at S-80 and S-308. Regulatory discharges through the St. Lucie Canal and the Caloosahatchee River (C-43) recommenced after sufficient downstream channel capacity was reached.

Hurricane Opal of October 5-7: Discharges through S-77 to the Caloosahatchee River were continuous throughout September; in October the structure was closed to

allow downstream channel capacity to be regained. The lowest discharge during this entire period was 3110 cfs; the highest was 6420 cfs. Regulatory releases to the St. Lucie Canal were also continuous throughout September and October. The discharges through S-308 ranged from a low of 763 cfs to a high of 3420 cfs during the month of September and through the end of Hurricane Opal on October 7.

Storm of October 14-19: Due to a rising stage in Lake Okeechobee from heavy October rainfall, regulatory discharges ranging from 3250 to 4470 cfs were conducted during this storm event; these correspond to releases from Zones C and D into the Caloosahatchee River through S-77. Discharge through S-77 continued to increase after the storm to a maximum of 7,040 on October 29, 1995. Discharges to the St. Lucie Canal through S-308 ranged from no-flow to a high of 1820 cfs during this storm event, and continued to rise thereafter to a maximum of 7410 cfs on October 30.

UPPER EAST COAST BASIN (MARTIN/ST. LUCIE)

Water levels in C-23, C-24, and C-25 were lowered dramatically at the end of July in preparation for possible direct impact by Hurricane Erin. Although Erin's impact was not great, trailing feeder bands over the next few days of August thoroughly soaked the area. Tropical Storm Jerry formed off the coast of Palm Beach and Martin Counties on August 23. The area was impacted by very heavy rains from this system. Following so closely behind previous heavy rainfall conditions, it came very close to overloading the capacity of C-23, C-24, and C-25. Tributary areas to C-24 (White City, St. Lucie West, and the Ten Mile Creek areas downstream of project control structures) suffered severe flooding as a result of the heavy rain from this series of rainfall events. Water levels downstream of S-49 on C-24 were monitored carefully to ensure that releases from this structure did not contribute to flooding in these areas.

In spite of dangerously large releases from C-23 at S-97, water levels continued to rise, triggering concern for the safety of this key structure. As a result of this concern, contingency plans were made to cut bypass channels to create an emergency diversion in the event it became necessary to relieve some of the excess water going into C-24. However, a cooperative effort between the District and local agricultural interests was successful in temporarily reducing inflows until water levels could be brought under control. The necessity of completing the bypass channel at this time was averted as a result of this cooperation. Nevertheless, the return of extremely heavy rainfall in October made it necessary to complete the emergency diversion.

Extremely heavy rainfall resulted when a front, stalled over Palm Beach County on October 16 and 17, began moving north. Flooding was again common in the C-23 Basin and in West Port St. Lucie. Reduction in agricultural pumping was not adequate

to forestall the possibility of structural failure at S-97; bypass channels were cut around the G-78 and G-79 control structures, allowing excess water in C-23 to enter C-24 where it could be removed safely. Erosion damage resulted from the high flows in both C-23 and C-24.

Extremely heavy rains and wet antecedent conditions, combined with high tides and strong easterly winds, caused generalized flooding conditions in the South Fork of the St. Lucie River during the event in mid-October. Due to the severe flooding, the U.S. Army Corps of Engineers (the Corps), who controls the releases from Lake Okeechobee and the St. Lucie Lock, coordinated with the District, emergency managers, and Martin County personnel to delay regulatory releases from Lake Okeechobee so that these areas would not be adversely impacted.

Southern Martin County and northern Palm Beach County felt the brunt of the extremely heavy rains that resulted from the stalled front on October 16 and 17. Point rainfall at some locations in this area exceeded the 1-in-100 year storm frequency. In southern Martin County, inadequate or nonexistent surface water drainage systems, combined with the heavy rainfall, resulted in damage from deep, standing water over extended time periods.

EVERGLADES AGRICULTURAL AREA (EAA)

Inflows to Lake Okeechobee from EAA

Discharges into Lake Okeechobee from the EAA occur through structures S-2 and S-3. Guidelines for the allowable volume of water to be back-pumped to the lake through these structures were established in the Interim Action Plan (IAP), through an operating permit (#50-0679349) issued to the SFWMD from the Florida Department of Environmental Protection (DEP).

Excess rainfall is normally diverted south (via S-2 and S-3 pumps) to the Water Conservation Areas, except during very heavy rainfall events, at which time the S-2 and S-3 pumps are pressed into service to back-pump the excess water into Lake Okeechobee to prevent flooding.

Table 4-1 shows the amount of inflow to the lake from the EAA during the 1995 wet season; this includes the effects from the 5 major storm events described in Chapter 2. The total amount of water discharged to the lake from the EAA through S-2 and S-3 from May through December 1995 was 67,180 acre-feet. This represents approximately two inches of back-pumped water over the entire Lake area.

TABLE 4-1. Discharges from the EAA to Lake Okeechobee (acre-feet). (Back-pumping in June was for maintenance and testing of emergency procedures only, not water control.)

MONTH	Structure S-2	Structure S-3
May	0	0
June	650*	270*
July	0	0
August	19,500	8,960
September	0	1,175
October	26,520	9,835
Totals	46,670	20,510

Conditions During Storm Events

Storm of June 18-26, 1995: During this storm, no water was discharged from the Lake Okeechobee (the lake) into the EAA through structures S-2, S-3, and S-352. However, approximately 650 acre-feet was back-pumped into the lake on June 20 through S-2, while a total volume of 270 acre-feet was back-pumped through S-3 during this storm period. The pumping at both S-2 and S-3 during this event was for maintenance and emergency procedure testing rather than for water control.

Hurricane Erin of August 2-5: The EAA did not receive any water from the lake through the three primary inflow structures during this period.

Tropical Storm Jerry of August 23-26: During this period, back-pumping was initiated at S-2 and S-3 to relieve rising water level conditions in the canals in the northern portion of the EAA.

Hurricane Opal of October 5-7: Approximately 2,000 acre-feet of water was back-pumped to the lake through structure S-2 during this period, while S-3 remained closed. Gravity flows from the lake to the EAA through structure S-352 started on September 19 and continued through this storm event until October 13.

Storm of October 14-19: Both S-2 and S-3 were actively back-pumping water to the lake during this period. Gravity discharges through S-352 ceased on October 14 and the structure remained closed through November 7.

Inflows to the EAA from Lake Okeechobee

The mean daily stages and discharge data for structures S-2, S-3, and S-352 (primary inflows) are presented in Table F-1 in Appendix F. Negative values in the discharge data in Table F-1 represent water that was conveyed to the lake through pumping activities; the monthly total volumes are shown above in Table 4-1.

Outflows from the EAA to the Water Conservation Areas (WCAs)

Water from the EAA is conveyed to the WCAs through primary outflow structures S-6, S-7, S-8, and the S-5A complex (S-5A+S-5AW+G-250). During 1995, the Everglades Nutrient Removal Project (ENR) diverted a significant volume of water away from S-5A in order to remove nutrients prior to the water entering WCA-1. Water that was treated prior to entering WCA-1 was removed from the EAA at pump station G-250. Twenty-four percent of the water that otherwise would have entered the conservation area at S-5A during 1995 was diverted to the ENR for treatment. The percentage of water treated by the ENR project varied widely from a low of 10% in February to 93% in May. In order to lower lake levels, a limited volume of water was moved from Lake Okeechobee through the EAA to WCA-1 and WCA-2A and eventually to tidewater via the east coast canals. The ENR project was used to the greatest extent possible to treat the lake water first. The distribution and volume of these lake releases were limited to avoid adverse impacts to WCA-3A. The mean daily stage and discharge data for these structures is presented in Table G-1 in Appendix G.

WATER CONSERVATION AREAS (WCAs)

Mean daily stages for WCAs 1, 2, and 3 are presented in Table H-1 of Appendix H and are depicted in Figure 4-5 with regulation schedules. No water supply or regulatory releases were conducted from Lake Okeechobee to the WCAs except when they could be passed through WCA-1 and WCA-2 to the east coast. However, the WCAs received heavy discharges from the EAA through structures S-5, S-6, S-7 and S-8, due to high local runoff, in addition to heavy inflows from S-140, S-190 and the uncontrolled L-28 gap area. The area west of L-1, L-2, and L-3 contributed heavily to the S-8 basin as well. The water that was moved into the S-8 basin was subsequently pumped to WCA-3A at S-8. For extended periods during 1995, maximum discharges were made through the S-12 structures, which are the primary outlet for WCA-3A. Water levels in WCA-3A were high enough to cause extensive environmental damage during both 1994 and 1995. A later section of this report describes actions taken to minimize these high stages, analyzes the distribution and magnitude of the contributing factors, and provides recommendations on measures to reduce future impacts.

Conditions During Storm Events

Storm of June 18-26: Prior to the beginning of this storm, discharges were being made from the EAA to the WCAs from structures S-6, S-7, and S-8. During this storm event, daily flows through the Hillsboro Canal at S-6 ranged from 425 to 1990 cfs. In the North New River Canal at S-7, they ranged from a low of 250 cfs on June 26 to a high of 1680 cfs on June 23. Additionally, flows through S-8 in the Miami Canal ranged from 128 cfs on June 19 to 2710 cfs on June 23. However, only 941 cfs of discharge occurred through the S-5A complex in the West Palm Beach Canal on June 23.

Hurricane Erin of August 2-5: Rainfall in the EAA Basin during the month of July, prior to the onset of Hurricane Erin, was fairly continuous. As a result (due to local runoff), discharges to the WCAs through structures S-5A, S-6, S-7 and S-8 began in early July to alleviate flooding in the EAA and continued until the middle of August. During this storm event, the discharges from S-6 ranged from 772 to 1520 cfs and those from S-7 ranged from 540 to 855 cfs. The range of discharge through S-8 was from 1,170 to 1880 cfs, and through the S-5A complex from 741 to 2870 cfs.

Tropical Storm Jerry of August 23-26: Discharge to the WCAs during the middle of August was initiated in anticipation of Tropical Storm Jerry. Structures S-5A, S-6, S-7, and S-8 were operating at high levels and discharging water at daily rates ranging from 2000 to 3000 cfs.

Hurricane Opal of October 5-7: Water levels in WCA-1 remained below the regulation schedule for the month of September and through the beginning part of October. By mid-September water levels had decreased to around 16.52 feet (NGVD), local runoff from the EAA had diminished, and discharges through structure S-6 had been reduced to 300 to 400 cfs daily. With the onset of Opal, however, water levels in WCA-1 began to rise and reached 17.11 feet (NGVD) by the end of the hurricane. During the hurricane, discharge rates from S-5A to WCA-1 ranged from 258 to 1340 cfs; discharges from S-6 increased from 286 to 555 cfs (prior to the onset of the hurricane) to approximately 1200 cfs and remained at this level until October 10.

Prior to the onset of this storm event, water levels in WCA-2 were approximately 13.43 feet (NGVD), with minimal inflows occurring from the EAA through S-7. During the hurricane, the maximum daily discharge through the structure reached 1500 cfs.

On October 4, the water level in WCA-3 was approximately 13.31 feet (NGVD). By October 9, the water level had increased to 13.91 feet (NGVD) due to runoff generated from the storm. The highest daily discharge from structure S-8 was 2230 cfs.

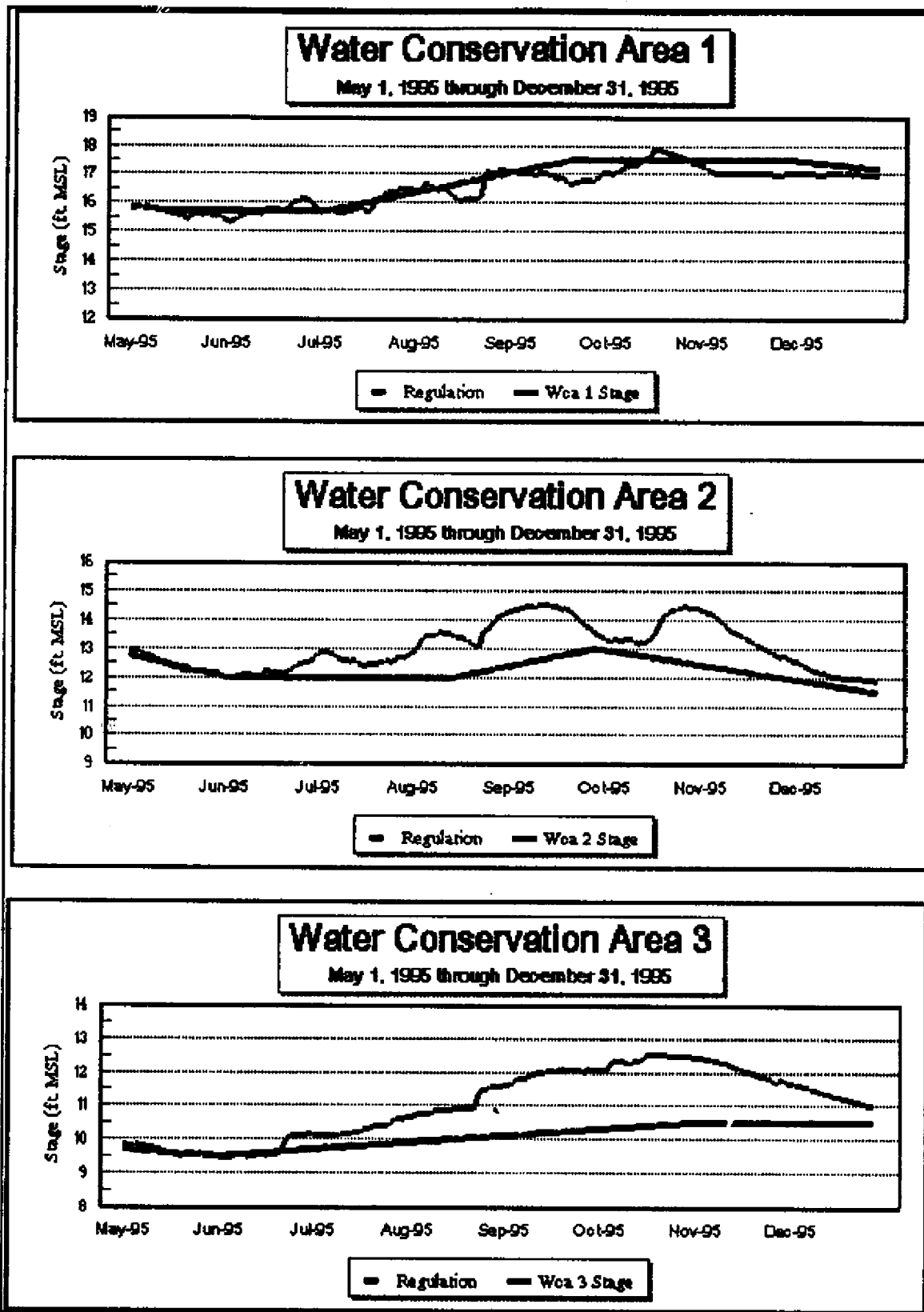


FIGURE 4-5: Mean Daily Water Levels and Regulation Schedules for WCA-1 (top), WCA- 2 (middle), and WCA-3 (bottom), May-December 1995.

Storm of October 14-19: The combined effects of Hurricane Opal and this storm event caused the water level in WCA-1 to rise from 17.11 feet on October 8 to 17.93 feet on October 20. After Opal, discharges from S-6 and S-5A were curtailed and daily rates were reduced from 1150 cfs to 413 cfs and from 1430 to 589 cfs, respectively. During this storm, the discharge rate from S-6 increased again from 413 cfs to a maximum of 2380 cfs on October 18. Discharges from the S-5A complex to WCA-1 increased from 589 cfs to a maximum of 4760 cfs on October 19. Discharges to WCA-1 through both structures gradually decreased after the storm event ended.

After Hurricane Opal, water levels in WCA-2 receded to a level of 13.38 feet (NGVD). However, with the onset of the October 14-19 storm event water levels began to increase once again, reaching a high of 14.91 feet (NGVD) by the end of the storm. The corresponding discharge from S-7 was 2250 cfs. Both the stage and discharge for S-7 started to diminish after October 17.

Water levels in WCA-3 fluctuated from 13.91 to 13.26 feet (NGVD) after Hurricane Opal. On October 20 the stage reached a maximum of 14.72 feet, with a corresponding discharge of approximately 3040 cfs from S-8.

HIGH WATER CONTROL IN WATER CONSERVATION AREA 3A

Water levels in WCA-3A reached an all-time-record high in November and December 1994. Regulatory releases from Lake Okeechobee during 1994 were intentionally diverted away from WCA-3A to prevent further impact to the already high water level conditions (stages) there. Maximum releases were discharged through the S-12 structures, which are the primary outlet for WCA-3A. The East Coast canals, which have the capability to remove a small to moderate amount of excess water, provided a secondary outlet for water from the WCAs to the Atlantic Ocean. They were used to the greatest extent possible without endangering downstream users. Even with maximum outflow and minimum inflow, it was not until May and early June 1995 that the water receded to more normal levels. These high water conditions took a heavy toll on the wildlife that normally inhabit the area. Older, established trees on the tree islands also suffered severely from the extended period of high water. More detailed information on these observations can be found in the report entitled *1994-1995 High Water Event in the Everglades and Francis S. Taylor Wildlife Management Area* (November 1995) by S. P. Coughlin and L. B. Richards of the Florida Game and Fresh Water Fish Commission (FGFWFC).

Continued heavy rain through the summer months again raised concern as water levels increased in both Lake Okeechobee and WCA-3A. In September 1995, a team of

experts from the District, the FGFWFC, the DEP, Everglades National Park, U.S. Army Corps of Engineers, the Miccosukee Tribe, and the U. S. Fish and Wildlife Service visited impacted tree islands in WCA-3A. In addition to assessing the threat of permanent damage to the tree islands, this team also discussed the possible need to use the WCAs as a means to remove water from Lake Okeechobee. There was general agreement that additional flow from Lake Okeechobee to WCA-3 should be avoided if possible.

However, rainfall in October caused Lake Okeechobee to rise to the highest levels in nearly 50 years and brought WCA-3A levels close to the record levels experienced during the previous year. It became necessary to make maximum practical releases from Lake Okeechobee under Zone A regulatory discharge criteria. The Zone A release criteria requires that maximum practical releases be made to the WCAs as well as to the St. Lucie and Caloosahatchee Canals. Water was not released from the lake to the WCAs during the Zone A release period (which ended the first week of November), because local flood control in the EAA, combined with the serious condition in WCA-3A, required nearly all of the available discharge capacity. The St. Lucie Estuary and the Caloosahatchee Estuary thus suffered the brunt of very large discharges.

Additional regulatory discharges from Lake Okeechobee were still required to restore safe operating conditions. Under normal conditions, discharge through the EAA to WCA-1, WCA-2 and WCA-3 would be made to further reduce the impact to the estuaries. The control strategy used in this instance, however, was to continue to divert Lake Okeechobee regulatory flow away from WCA-3A. Lake Okeechobee water was diverted to WCA-1 and WCA-2, but only if it could, in turn, be sent to the ocean via the East Coast canals or kept in storage without passing it to WCA-3. Flow to the East Coast canals continued to be used, to the greatest extent possible, to lower water levels in the WCAs. The S-12 structures, the primary outlet for WCA-3A, were used at full capacity, and S-333 was brought into service when downstream conditions permitted.

An assessment of additional environmental damage in WCA-3A due to continued high water levels during 1995 will be conducted in early summer 1996 after seasonal changes which will allow a more efficient assessment of the damage to deciduous vegetation. Under the direction of Everglades National Park, an interagency task force will be preparing this assessment during the later half of 1996.

Figure 4-5 provides a comparison of water levels in WCA-1, WCA-2A, and WCA-3A during 1995 with regulation schedules in each of the areas. Water levels in WCA-1 and WCA-2A did not cause undue concern, although structural considerations limited additional increases. Water levels in WCA-3A were not of a magnitude to cause

concern over structural integrity; however, stage levels experienced in both 1994 and 1995 were environmentally damaging (FGFWFC report, 1995).

A water budget analysis was conducted to provide a predictive understanding of high water conditions in WCA-3A. This analysis quantified water sources and where it went, allowing further exploration of future options to either increase outflow or decrease inflow when water is too high.

The relative distribution of outflow from WCA-3A (Figure 4-6) documents the relatively small impact that water management controls have over water levels in WCA-3A. As shown, over half of the outflow leaves the area through evapo-transpiration, largely uncontrollable through water management practices. During 1995, evapo-

transpiration

accounted for 51.7% of the total outflow, a percentage far less than normal years due to a concentrated effort to maximize surface water outflow for most of the year.

The relative contribution of S-333 was much smaller than normal because flow through this structure had to be restrained for much of the year due to high water conditions downstream. Under hydrologic conditions in which tailwater constraints are not important, 55% of the surface water outflow is routed through S-333 and 45% through the S-12 structures. This 55%-45% distribution approximates the historical distribution of flow between Northeast Shark River Slough (S-333) and Shark River Slough (S-12) under "average" hydrologic conditions.

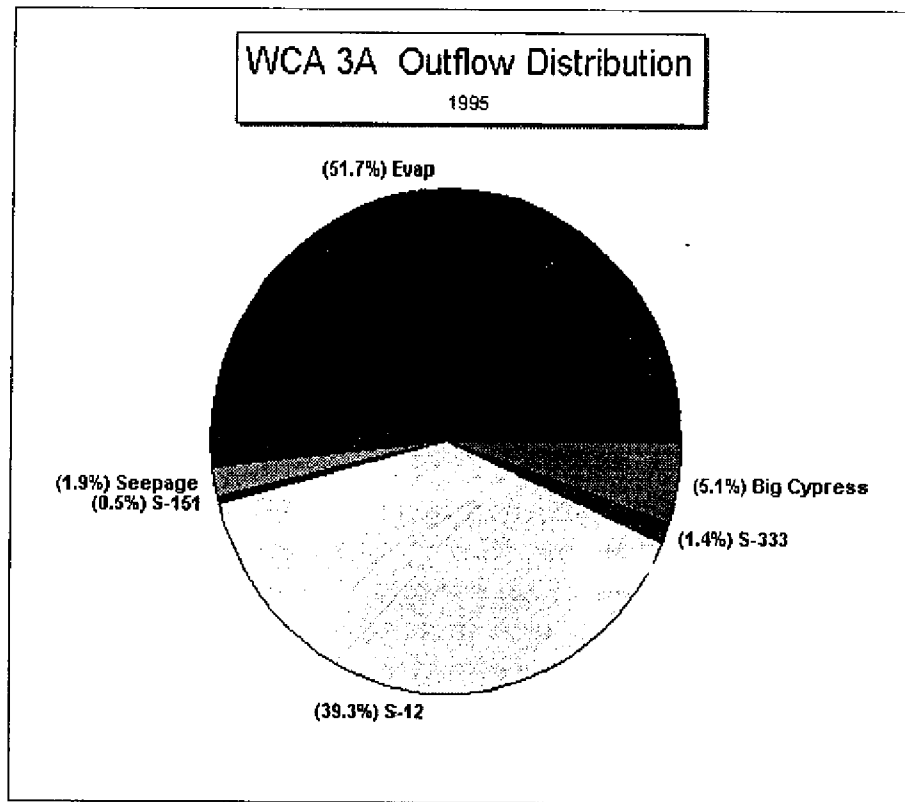
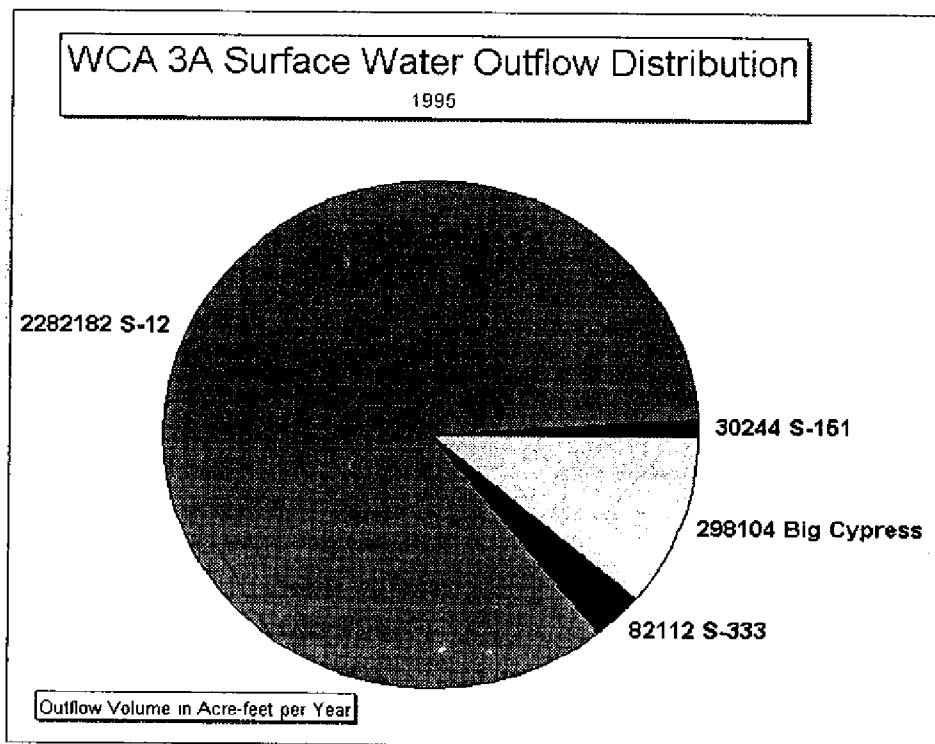


FIGURE 4-6. WCA 3A Outflow Distribution during 1995.

The portion labeled "Big Cypress" refers to the set of culverts, S-343A, S-343B and S-344, located near the southwestern corner of WCA-3A. This set of three structures controls flow from WCA-3A through levee L-28 to the Big Cypress Preserve and, eventually, through a series of culverts under US 41 and Loop Road.

Under current water control criteria these culverts are used only when WCA-3A is high. Flow must be limited to protect US 41 and to prevent flooding in the Loop Road area. Flows through this group of culverts was much higher than normal during 1995 due to improvements in the Loop Road culverts and because of the extended high water conditions in WCA-3A. The possibility of changing the operating criteria at these structures to better meet multi-objective criteria will be investigated. It is possible that additional environmental benefits, as well as small to moderate improvement in high water control, could be realized in WCA-3A.



A more detailed view of the surface water outflows from WCA-3 is presented in Figure 4-7. The large volume of water handled by S-12 is most striking. Well over 2,000,000 acre-feet of water was removed from WCA-3A to Everglades National Park in 1995. This is the equivalent of over 4.5 feet of water over the entire WCA-3A. In order to accommodate this

FIGURE 4-7. WCA 3A Surface Water Outflow Distribution

extraordinary flow volume, it was necessary to open the gates clear of the water at all S-12 structures for most of the year. When all gates at these structures are fully open, the structures and the associated levee provide virtually no resistance to flow, even at the high flow rates observed during 1995. Under these high flow conditions, flow at any

flow, even at the high flow rates observed during 1995. Under these high flow conditions, flow at any given water level in WCA-3A is limited by flow resistance provided by the relatively shallow marsh conditions in Everglades National Park, together with other flow obstacles that lie downstream of the S-12 Structures, such as the Old Tamiami Trail.

At S-12, the downstream condition makes it impossible to develop more than a small portion of the 32,000 cfs design rate, as was demonstrated during the extreme water level conditions realized in December 1994. It was not possible to develop sustained flow larger than 7000 cfs even with the record high water levels observed at that time. S-12 has by far the largest outflow over which water managers have any control; for this reason special attention should be placed on preserving the current emergency flow capability and enhancing this capability to the maximum extent possible in order to allow water managers to effectively respond to high water emergencies in WCA-3A. Possible projects which might fall into this category are: to remove large sections of the Old Tamiami Trail in order to reduce current downstream flow resistance, and to rethink alternative solutions (which can achieve similar flow redistribution benefits without adversely impacting S-12 emergency flow capability) to filling in the L-67 Extension Borrow ditch as a part of the Modified Deliveries to Everglades National Park.

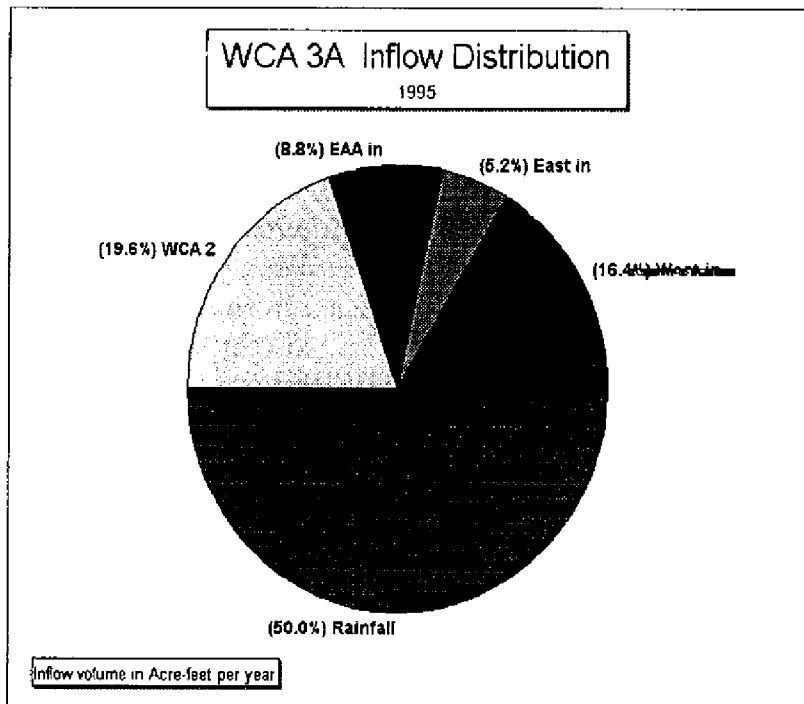


FIGURE 4-8. WCA-3A Relative Inflow Distribution

As with the outflow, a large portion of the inflow to WCA-3A is not under the control of water managers. Rainfall, for example, accounted for half of the water entering WCA-3A in 1995 (Figure 4-8). Some of the current inflows on the western boundary are also natural, rather than controlled inflows. That portion of the pie chart in Figure 4-8 labeled "East in" represents pumping at the S-9 Pump Station, which includes a significant amount of return seepage from WCA-3A. The "West in" portion includes the measured inflows at S-140, S-190, G-155, and G-89, along with an estimate of inflows through the L-28 gap based on

similar unit runoff values observed in the S-190 basin. The S-140 inflow includes a small amount water which reaches S-140 from L-3 via G-89. "EAA in" includes gravity inflow from S-150 and pumped inflow at S-8. The S-8 inflows include a portion of the flow west of the EAA that entered the S-8 basin from G-136 and G-88. The relative portion of S-8 flow volume from these western areas was higher than normal because high water levels in WCA-3A severely restricted the ability of G-155 to relieve flooding in the areas draining to L-1, L-2, and L-3. "WCA 2" consists of flow from S-11. Part of the inflow from S-11 originates as agricultural runoff in the EAA from S-5A, G-251(ENR), S-6, and S-7, which pump to WCA-1 and WCA-2A. Direct rainfall on WCA-1 and WCA-2 add to the inflow, while evapotranspiration and flow to the East Coast canals remove water. The resulting excess of inflows over outflows in WCA-1 and WCA-2A enters WCA-3A through S-11.

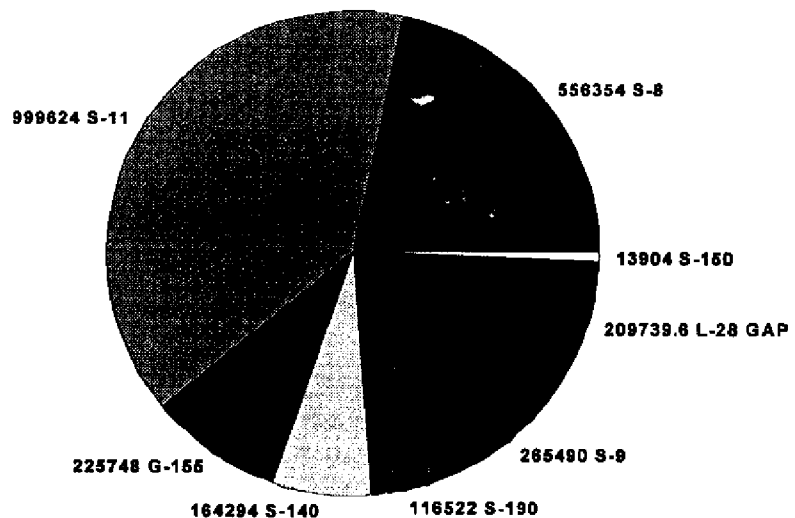
Figure 4-9 provides the magnitude of surface water contributions for individual structures. The area of WCA-3A is just under 500,000 acres. The respective impact of each source on WCA-3A water levels in 1995 can thus be approximated in feet by dividing the respective inflow volumes by 500,000.

It is not possible to reduce the surface water inflows significantly without adverse impacts to flood protection unless

additional long-term storage can be provided, or unless the inflows can be diverted to another receiving body. The impact of the proposed "Talisman" acquisition of 20,000-30,000 acres of additional water storage in the S-8 basin can be approximated from the information available. Assuming water can be stored to a depth of from 5 to 10 feet

WCA 3A Surface Water Inflow Distribution

1995



22% of the flow pumped at S-8 originated in C-139 Basin and would have gone through G-155 if WCA3 were lower

FIGURE 4-9: WCA-3A Surface Water Inflow for District Structures (Acre Feet/Year).

over the storage area, and assuming also that the storage area would be empty at the start of the year, the available storage to reduce water levels in WCA-3A would be on the order of 150,000 to 200,000 acre-feet. It is apparent that there is adequate water available to fully use that storage, but the additional storage alone would not solve the high water problems which were observed in WCA-3A during 1994 and 1995. The additional water storage area would be very valuable in improving the timing of water deliveries to the Everglades Protection Area. This would improve treatment efficiencies of the STAs, provide additional water control flexibility, maintain minimum flows and levels, and serve other valuable functions, but would not in itself provide adequate relief for high water levels in WCA-3A.

Additional water storage areas in the EAA, beyond the "Talisman" tracts, and in the East Coast buffer areas near S-9, could be used to further increase our ability to manage levels in WCA-3A.

One key element of the water management strategy used in 1994 and 1995 to relieve high water conditions is not apparent from the water budget analysis presented. This strategy involved the reduction of inflows to WCA-3A through an aggressive program of moving water (that otherwise would go to WCA-3A) east to the Atlantic Ocean. The primary routes that can be used for this purpose are C-51 via S-5AS, S-5AE, and S-155; the Hillsboro Canal via S-39 and G-56; C-14 via S-38, S-37B, and S-37A; and the North New River Canal via S-34 and G-54. These canals and structures must be devoted to meeting flood control needs east of the water conservation areas during storm conditions, but may be used to divert excess water from WCA-1 and WCA-2A away from WCA-3A when the need for flood protection subsides.

Using the East Coast canals to reduce WCA-3A inflows in 1995 was very successful. Although available capacity is relatively small, the cumulative effect of moderate discharges sustained over extended periods was substantial. In 1995, over 1,000,000 acre-feet was released from WCA-1 and WCA-2A eastward to the coast. A small portion of the water released to the East Coast canals went to meet water supply needs in 1995 rather than being dumped to tide, and a portion passed through the WCAs to the East Coast as regulatory releases from Lake Okeechobee. All of these releases helped reduce inflow to WCA-3A. The water diverted away from WCA-3A by the canals was roughly equivalent to the largest single source of inflows, which is S-11. The magnitude of success in diverting water eastward suggests that it will be worthwhile to fine-tune this operation. If remote telemetry control was available to replace the current manual operations at four additional sites, it is reasonable to assume that an additional 10% could be diverted eastward. This would appear to be a very cost effective method to gain control of an additional 100,000 acre-feet of potential inflow diversions from S-11. The sites that require telemetry control are S-5AE, S-5AS, S-38, and S-34.

Summary of Recommendations for Future High Water Control

1. Provide telemetry control at S-5AS, S-5AE, S-38, and S-34 to allow more water to be moved eastward from the WCAs.
2. Support the proposed "Talisman" acquisition for additional water storage. This acquisition will contribute to reducing adverse high water impacts on WCA-3A in addition to substantial environmental, water supply, and water control flexibility benefits.
3. Revisit the Modified Deliveries to Everglades National Park Plan to find alternate solutions to filling in the L-67 Extension Borrow ditch. Alternate solutions should achieve similar flow redistribution benefits without adversely impacting S-12 emergency flow capability.
4. Remove key sections of the Old Tamiami Trail to reduce current impediments to flow out of WCA-3A. This will increase the capacity to remove water from WCA-3A through the S-12 structures under extremely high water conditions.
5. Investigate the possibility of changing the operating criteria at the Big Cypress Structures (S-343A, S-343B, and S-344) to better meet multi-objective criteria. It is possible that additional environmental benefits could be realized, as well as a small to moderate improvement in high water control in WCA-3A. This should be an interagency effort, as impacts on endangered species, possible long term vegetative changes, and water supply impacts should be evaluated.
6. Accelerate current efforts to remove obstacles to full utilization of S-333. These consist of improvements to the Tiger Tail Indian village and flooding mitigation for the East Everglades area. Both these measures are now addressed in the Modified Deliveries to Everglades National Park Plan.

LOWER EAST COAST BASIN (LEC)

Palm Beach County

Extremely heavy rainfall in Palm Beach County during mid-October caused severe urban and agricultural flooding in many areas where rainfall exceeded drainage capacity. Heaviest rainfall occurred in the northeastern portion of the county between Stuart and Palm Beach Gardens and generally east of Military Trail/I-95. These areas, for the most part, are not served by the system of project canals and drainage structures operated by the District. Drainage in these areas is normally quite good but was not

adequate enough to handle the very heavy rainfall which occurred on October 16 and 17. Storm rainfall in this area exceeded the 100-year return period for a three-day period. The most severely impacted areas served by the project system included the C-18, C-17, and C-51 drainage areas.

Late in the afternoon on October 17, the C-18 area was threatened by potential flooding. Structure S-46 was operated at maximum capacity to bring water levels in C-18 to lower than normal levels in order to facilitate drainage. G-92 (which normally serves as a water supply structure to augment freshwater discharges to the North Fork of the Loxahatchee River from C-18) was opened to allow water to flow backwards through the structure, and to lessen impacts of the heavy rain on residents in the Jupiter Farms area.

The C-17 canal was discharging at maximum capacity beginning on October 16. With few exceptions, water levels remained at or slightly above bank level in most of the drainage area east of I-95. Severe flooding in this basin occurred west of I-95 due to the limited capacity of the secondary drainage system. Improved drainage systems to the west are being proposed to reduce the likelihood of future flooding in that area. This approach must be used with caution to prevent overwhelming the easternmost portion of the basin (particularly the Lake Catherine/Lighthouse Drive area) with additional runoff water from the west during an extended flood peak.

On the morning of October 15, water levels at the western end of C-51 increased to such an extent that flow entering from L-8 was no longer desirable. Indian Trails Drainage District was asked to curtail flow from the Acreage into C-51 in accordance with permitted conditions. By afternoon on October 16, the area south of C-51 was feeling the effects of heavy rain. The Lake Worth Drainage District was making large southerly releases into the C-15, C-16, and the Hillsboro canals as well as moderate discharges into C-51. Heavy rainfall continued and, by late night/early morning of October 17, all Lake Worth Drainage District structures were operating at full capacity. Water levels in the western end of C-51 remained extremely high through October 18. The Lake Worth Drainage District monitored conditions carefully at their inflow structure to C-51 near SR7, adjusting gate openings frequently to prevent back-flow from aggravating flooding within their drainage area. By October 19 water levels had improved to the point where flows from Lake Worth Drainage District were all diverted southward. Indian Trails was then granted permission to discharge excess water to C-51. Water levels at the western end of C-51 were too high for the installed instrumentation to measure stages and flows during the peak of the event.

Dade County Area

Dade County experienced wide-spread flooding in June 1995. A week-long period of heavy rain began on June 18 as a deep trough developed over the southeastern United States and expanded into the Gulf of Mexico. Excessive rains, averaging more than nine inches, fell over Dade County from June 20 through 22. The average monthly total for Dade County was nearly 17 inches, which was over twice the normal monthly rainfall for June. Several official rainfall stations in the area measured more than 25 inches of rain during June 1995. Some of the most severe flooding during this storm occurred in the western C-4 basin. Several individual rain gages in this area measured 3-day rainfall totals exceeding the 100-year storm level, indicating that flooding of this magnitude is expected to occur only infrequently. Sweet Water, situated in an area referred to as "AREA B" where drainage capacity is very limited, was the most heavily impacted area in the C-4 basin. Corps of Engineers documents indicate that a pumped drainage system was originally proposed to augment current drainage capacity in Area B, but the project was deferred for economic reasons. Other locales subjected to flooding during this event were in low-lying areas within the eastern C-9, western C-8, and C-7 basins, Broward County and the Homestead/Florida City area.

Flooding of a more chronic nature occurred in the 8.5 square-mile area of southwestern Dade County, also referred to as the East Everglades. This area is located west of levee L-31N south of Tamiami Trail. L-31N forms the western boundary of the area protected by the system of federally constructed canals, levees, and water control structures. No direct flood protection is available to the residents of this area, although water controls are temporarily lowered in L-31N following heavy rainfall to help accelerate recovery following flooding, provided protected areas are not adversely impacted. During periods of extended, above-normal rainfall, this secondary drainage relief is not very effective. Water levels over 6.0 feet at an indicator well named "Angels" are generally indicative of standing surface water conditions with some yard and road flooding. Water levels exceeded 6.0 feet at this location for 254 days in 1995. A task force is exploring options to provide more significant flood relief to this area.

EVERGLADES NATIONAL PARK (ENP)

Inflows from Water Conservation Area 3 to the ENP

Surface water inflows to Everglades National Park from WCA-3 occur through structures S-12-A, S-12-B, S-12-C, and S-12-D. These structures are gated spillways with a total design discharge rate of 32,000 cfs. As a practical matter, it is not possible to develop discharge rates of this magnitude with reasonable water levels upstream of the

S-12 structures. This was demonstrated by the maximum sustained rate of less than 7000 cfs which developed during the extreme conditions of December 1994. The major impediment to realizing discharge rates approaching design levels is the high water levels downstream caused by flow resistance in the relatively shallow marsh downstream and flow obstructions, such as the Old Tamiami Trail south of the current US 41. Presented in Table I-1 in Appendix I are the mean daily inflows from each of the structures as well as the combined inflow total for all structures from May 1 to December 31, 1995.

Conditions During Storm Events

Storm of June 18-26: During the first month of the wet season (May) total surface water inflows to the ENP through the S-12 structures ranged from 414 cfs to 848 cfs. During this storm period, the total inflow to the ENP ranged from a low of 553 cfs to a high of 1808 cfs. Inflows gradually diminished after June 23.

Hurricane Erin of August 2-5: Before the onset of Hurricane Erin, inflow to the Park was taking place at a rate of 1500 to 1600 cfs per day. However, these rates increased to approximately 2000 cfs by August 7. Total surface water inflows through the structures during the hurricane period ranged from 2121 cfs to 2270 cfs.

Tropical Storm Jerry of August 23-26: The combined total discharge through the structures continued at a fairly constant rate of approximately 2200 cfs after Hurricane Erin, continuing through the start of Tropical Storm Jerry. Tropical Storm Jerry brought heavy rainfall to the southern portion of the District, which increased discharges to the Park.

Hurricane Opal of October 5-7: Following Tropical Storm Jerry, discharges gradually increased from around 3000 cfs to 5400 cfs by the end of Hurricane Opal.

Storm of October 14-19: Discharges through the S-12 structures continued increasing after this storm and reached a maximum of 5724 cfs on October 14-19. Inflows to the Park gradually decrease, diminishing to 2566 cfs by December 31, 1995.

Inflows to C-111 and Taylor Slough

The eastern portion of Florida Bay receives freshwater inflows from C-111 and from Taylor Slough. Excess stormwater from the area west of Homestead near L-31N is routed into Everglades National Park and Florida Bay through C-111 via S-176, and through Taylor Slough via S-174. Flow at S-18C is a good index of how much water the panhandle area of the Park receives. Under normal conditions, in order to provide a more favorable distribution of inflows to Everglades National Park and Florida Bay, as

much of this stormwater as possible is moved westward to Taylor Slough rather than using C-111. The relative magnitude of S-174 and S-176 flows generally indicate how successful the westward diversion was in any year. Excess stormwater moved to Taylor Slough is quantified at S-174. Pumping at S-332 is used to facilitate the movement of water through S-174 and to augment flow to Florida Bay.

Structure S-197 is an environmentally sensitive structure that controls emergency overflows from C-111 to Barnes Sound. Water in the C-111 canal system is normally discharged through gaps in the spoil material on the south bank of the canal to the marsh systems (which form the eastern panhandle of Everglades National Park) and eventually to Florida Bay. When rainfall exceeds the handling capacity of this system, S-197 must be opened to provide flood relief. Prior to 1990 the capacity of this structure was very limited. Large flood events required the removal of an earthen plug near the culvert structure, often resulting in severe adverse impacts on the downstream estuarine environment. The capacity of S-197 was expanded in 1990 from three culverts to 13 culverts. Along with the increased structure capacity, a carefully crafted discharge strategy was developed which progressively increased the amount of flow discharged in proportion to the severity of the storm runoff. This discharge strategy was designed to eliminate adverse downstream impacts while preserving necessary flood relief. Intensive water quality and biologic monitoring is conducted whenever the enlarged structure is used for flood control purposes and monitoring continues for the recovery period after flow termination. The modern flow control techniques were highly successful during 1995. The structure was frequently used during 1995, but no observable adverse impacts from these discharges were detected even with intensive monitoring. Presented in Table J-1 in Appendix J are the daily mean headwater and tailwater stages for S-18C, S-197, S-176, S-174 and S-332, as well as the daily flows from these structures.

Conditions During Storm Events

Storm of June 18-26: Flows to S-18C prior to the storm were taking place at a rate of around 300 cfs. By June 17 flows had increased to 599 cfs. During the storm event, flow from S-18C ranged from 323 to 1960 cfs. Discharges from S-197 ranged from no flow to 2565 cfs.

Hurricane Erin of August 2-5: During this hurricane, flow from C-111 to Florida Bay ranged from 520 cfs to 1130 cfs through S-18C and from 0 to 828 cfs through S-197.

Tropical Storm Jerry of August 23-26: Prior to the onset of Tropical Storm Jerry, an approximate flow of around 400 cfs was being released from S-18C, and the culverts at S-197 were closed. During this storm, the flow from S-18C ranged from 410 cfs to 1070 cfs. Daily flows from S-197 varied from no flow to 742 cfs.

Hurricane Opal of October 5-7: Discharges from S-18C decreased to 386 cfs on October 5 after Tropical Storm Jerry. Flows increased slightly to 458 cfs by the end of Hurricane Opal. During the entire period of this hurricane, the southernmost structure, S-197, remained closed.

Storm of October 14-19: Flows gradually increased after Hurricane Opal and reached a maximum of 1540 cfs by October 18. After the storm, they then gradually decreased. On October 10, the culverts at S-197 were opened, discharging at a rate of 325 cfs. By October 19, the rate had increased to a maximum of 1509 cfs. Flows then gradually decreased to 248 cfs by November 1, and the culverts at the structure were closed on November 2.

Reports on the Impacts of High Water in the Southern Everglades

In 1996, an expert panel was convened to examine current research efforts to assess the impacts of high water levels in 1994-95. The panel's report, *Report of an Expert Panel - Ecological Assessment of the 1994-95 High water levels in the Everglades*, is available from the south Florida Natural Resources Center of Everglades National Park. Major findings and recommendations of the panel include: current data provide an incomplete picture of ecosystem responses; forested habitats, at least with the Park, do not appear to have been seriously affected by high water; flooding of grasslands west of Shark River Slough eliminated breeding habitat for the Cape Sable Sparrow; fish populations appear to have benefited overall from the high water, while alligators appeared to be stressed; and regarding bird species, the effects were mixed.

The Florida Game and Freshwater Fish Commissions report, *1994-95 High Water Event in the Everglades and Francis S. Taylor Wildlife Management Area*, (Coughlin and Richards) also addresses impacts. Findings in this report include: most tree islands were inundated and experienced loss of tree and shrub species; mammalian wildlife was impacted greatly, and the deer population appears to have been reduced dramatically; and while reductions in the quality of tree island habitat and upland habitat appear to be temporary (except for hardwoods, which will take years to recover), severe losses of dahoon holly and red bay in WCA 2A will reduce habitat quality for the long term.

DISTRICT WIDE WATER CONTROL STRUCTURE OPERATIONS

Highlights of the operational management of water control structures during the June and October storm periods are presented in Appendix K.

CHAPTER 5

DISTRICT WIDE FLOODING COMPLAINTS

Flooding complaints from ten counties were received by the District from the major storm events which occurred during the wet season of 1995. These complaints are listed below. Location of the flooded areas, by counties, is depicted in Figures 5-1 through 5-10. (Projects with numbers indicate SFWMD Surface Water Management Permits.)

CONDITIONS DURING STORM EVENTS

JUNE 3-5, 1995: This rainfall event caused some flooding in Palm Beach County. Two areas in particular were:

- Hypoluxo Road
- Acreage (Permit #'s 50-00754-S and 50-00761-S).

JUNE 20-23, 1995: This storm in Dade, Broward, Lee and Charlotte Counties caused some street and yard flooding. We did not receive any reports of homes being flooded. Complaints were received from the following areas:

Dade County

- Sweet Water Golf Estates
- Homestead
- Miami
- Miami International Airport
- Blue Lagoon Area
- Serena Lakes
- Agricultural Flooding
- North Miami Beach
- Severa Lake
- Hialeah

Broward County

- Hallandale

Lee County

- North Ft. Myers

Okeechobee County

- Pastures west of 441 in the northern county
- West of Walmart near southern 441

(Okeechobee County, continued)

- Sun MHP
- Quail Woods

St. Lucie County

- SR 70 and pastures.

AUGUST 1-3: This rainfall event caused some flooding of streets and yard in Collier, Palm Beach, Okeechobee and St. Lucie Counties:

Collier County

- Pelican Nursery (Permit #11-00257-S)
- Bay West Nursery (Permit # 11-00180-S)
- Berkshire Lakes (Permit # 11-00364-S)
- Imperial Golf Estates (Permit # 11-00173-S)
- Golden Gate Estates (Permit # 11-00154-S)
- Gopher Ridge Grove (Permit # 11-00363-S)
- Dupree Road

Okeechobee County

- West of St. Lucie/Okeechobee line, ag flooding residential area
- Southeastern Okeechobee City residential flooding
- Blue Cypress MHP

Palm Beach County

- Steeplechase
- Rainbow Lakes (Permit # 50-00743-S)
- Acreage (Permit #'s 50-00754-S and 50-00761-S)

St. Lucie County

- St. Lucie Gardens

AUGUST 23-26, 1995: In the areas that were evacuated, there was wide-spread flooding of homes. In addition, there was extensive flooding of street and yards and agricultural fields in the following counties:

Collier County

- Village Walk (Permit # 11-00371-S)
- Estero, E. Broadway
- Quail West (Permit # 11-00768-S)
- Immokalee Road/CR 951 Area
- Corkscrew Island

(Collier County, continued)

- Eagle Island Grove (Permit # 11-00323-S)
- Bay West Nursery (Permit # 11-00180-S)
- Palm River Estates (Permit # 11-00029-S)
- Kensington (Permit # 11-00993-S)
- Kings Lake (Permit # 11-00145-S)
- Silver Lakes RV Park (Permit # 11-00950-S)
- Plantation (Permit # 11-00468-S)
- Kamp Keais Strand Ag Area
- Golden Gate Estates (Permit # 11-00154-S)

Lee County

- The Forest (Permit # 36-00161-S)
- Bonita Springs
- Manna Christian Mission RV Park+ (Permit # 1023-85-S)
- Saldivar Migrant Camp*
- Oakland Park Migrant Camp*
- Downs St.*
- Quinn St.*
- Edith St.*
- East of Lime St.*
- North of Bonita Beach Rd.*
- West of Fagen Ln.*
- South of E. Terry St.*

+Lee County Evacuation Order of August 25, 1995

*Lee County Evacuation Order of August 26, 1995

Hendry County

- Montura Ranch (Permit # 26-00156-S)

Martin County

- Rivers Edge Road
- Willoughby (Permit # 43-00387-S)
- Palm City Farms

Okeechobee County

- Martin Grade pastures flooding
- Northwest of Okeechobee City

Palm Beach County

- Highland Pines (Permit # 76-00023-S)
- Square Lake (Permit # 50-02422-S)
- Alden Ridge
- Springfield Drive
- Newport Cove
- Boca Greens (Permit # 50-00632-S)
- Military Trail and Haverhill
- Westchester (Permit # 50-00744-S)
- Mission Bay (Permit # 50-01326-S)
- Boca Gardens/Lyons Road (Permit # 50-01284-S)
- Loxahatchee River Road
- Boca Woods (Permit # 50-00737-S)
- Bermuda Drive
- Acreage (Permit #'s 50-00754-S and 50-00761-S)
- Loggers Run (Permit # 50-00461-S)

St. Lucie County

- The Reserve (Permit # 56-00674-S)
- C-23 Agricultural Area
- St. Lucie West (Permit # 56-00573-S)
- 10 Mile Creek Area
- White City
- Midway Road and South 25th Street
- Ft. Pierce - Longwood area

EMERGENCY AUTHORIZATIONS ISSUED

August 30, 1995 - Issued to N.T. Gargiulo in Lee County for removal of ditch plugs east of I-75 to relieve flooding within the Bonita Beach Road area. This authorization was extended to November 30, 1995 on September 15, 1995.

September 1, 1995 - Issued to FDOT, LaBelle Private Drainage District and Jack M. Berry, Inc. to reduce surface water flows in the Roberts Canal to lower the water stage upstream of the FDOT bridge at SR 80 in Hendry County. The bridge was in danger of failing due to erosion.

September 1, 1995 - Issued to Callaway Land and Cattle Company for installation and operation of two culverts in the Reserve project in St. Lucie County. The culverts were authorized due to flooded roads and backed up septic systems.

September 1, 1995 - Issued to FDOT and Hendry County for deepening and widening of certain portions of Banana Branch north of CR 78A to reduce stages in the Roberts Canal in order to protect the SR 80 bridge from damage.

September 7, 1995 - Issued to Roberts Jones for installation and operation of three small discharge pumps to prevent flooding in a sewage treatment plant located within the Jones Mobile Village project in Lee County.

OCTOBER 7, 1995: In the areas that were evacuated, there was wide-spread flooding of homes. In addition, there was extensive flooding of streets and yards as well as agricultural fields.

Collier County

- Pelican Nursery (Permit # 11-00257-S)
- Bay West Nursery (Permit # 11-00180-S)
- Quail West (Permit # 11-00768-S)
- Sunbelle Grove
- Kamp Keais Strand Ag Area

Lee County

- Manna Christian RV Park** (Permit # 1023-85-S)
- Saldivar Migrant Camp**
- Oakland Park Migrant Camp**
- Oakland Drive**
- Carpenter Lane**
- Taylor St.**
- Downs St.**
- Quinn St.**
- Edith St.**
- McKenna St.**
- Saunders St.**
- Pauley St.**
- Chapman St.**

**Lee County Evacuation Order of October 7, 1995

Highlands County

- Commercial site

Okeechobee County
- Quail Woods

Emergency Authorizations Issued:

October 10, 1995 - Issued to L.P. Gargiulo for removal and placement of ditch plugs and ditch improvements to relieve flooding on G & Farms within the Bonita Beach Road area in Lee County.

OCTOBER 13-17, 1995: This storm dropped significant amounts of rain on Glades, Highlands, Martin, Okeechobee, Northern Palm Beach and St. Lucie Counties. In addition to street, yard and agricultural flooding, there were hundreds of homes flooded on the floors. The following list identifies reported areas of flooding

Collier County

- Pelican Nursery (Permit # 11-00257-S)
- Crystal Lake RV Park (Permit # 11-00195-S)
- Old Florida Golf Club
- Good E Nuff Farm (Permit # 11-00536-S)
- Acremaker Road
- Longshore Lakes (Permit # 11-00420-S)
- Bay West Nursery (Permit # 11-00180-S)
- Immokalee/Mockingbird Lake Area
- Quail West (Permit # 11-00768-S)
- Pine Ridge (Permit # 11-00360-S)
- Golden Gate Estates & City (Permit # 11-00154-S)
- Lakewood (Permit # 11-00050-S)

Glades County

- Lakeport
- Brighton

Highlands County

- Commercial site

Martin County

- Warner Creek Area
- State Rd. 76 and Cove Road
- Foxwood (Permit # 43-00096-S)
- Manatee Pocket And Cove Road
- Tropical Farms
- Locks Road

(Martin County, continued)

- Bessie Creek east of the Turnpike
- Mariner Sands (Permit # 43-00177-S)
- Mariner Village (Permit # 43-00405-S)
- Hobe Heights
- The Woodlands (Permit # 43-00124-S)
- Rocky Point/Bossier Village (Permit # 43-00250-S)
- Solitron
- Heritage Ridge (Permit # 43-00126-S)
- Kitching Creek
- D.O.T. Ditch to Manatee Pocket
- Tropic-Vista
- Rivers Edge
- Section 28&33 Farms
- South Fork Estates (Permit # 43-00520-S)
- Tropical Paradise Mobile Home Park (Permit # GP 78-20)
- South Fork of the St. Lucie River south of Hwy 76
- Ranch Colony (Permit # 43-00187-S)
- North Passage to the Tequesta Country Club

Hobe Sound Area

- Flora Avenue south of Bridge Road west of U.S. 1
- Ranchland Avenue south of Bridge Road
- Pinecroft (Permit # 43-00316-S)
- Stonebridge/ The Preserve/ Lost Lakes area (Permit # 43-00442-S)

Port Salerno Area

- East of U.S. 1 west of Dixie Highway (Gomez area from Hobe Sound to Stuart)

Okeechobee County

- West of St. Lucie/Okeechobee line, ag flooding residential area
- Taylor Creek area
- Four Seasons
- Sunset Strip
- John Burton MHP
- Dark Hammock area
- Lazy 7
- Lipton Creek
- Quail Woods
- Bluefield Road area

Palm Beach County

- Garden Oaks (Permit # 50-02144-S)
- Cypress Cove (Permit # 50-02228-S)
- Northfork (Permit # 50-01841-S)
- North Palm Beach Heights@ (Permit # 50-01364-S)
- Wellington (Permit # 50-00548-S)
- Lake Worth Road & Military Trail
- M-1 Acreage (Permit # 50-00761-S)
- M-2 Acreage (Permit # 50-00754-S)
- Caloosa (Permit # 50-00474-S)
- Palm Beach Country Estates
- Jupiter Farms (Permit # 50-01198-S)
- Juno Ocean Walk RV Park
- Eastpointe Country Club (Permit # 50-00532-S)
- Westwood Lakes (Permit # 50-01151-S)
- L-8 Tieback area
- Sunny Urban Meadows
- U.S. Highway 1 north of PGA Blvd.
- A1A east of U.S. 1 north end of Singer Island
- Foxhall (Permit # 50-01817-S)
- Sabal Ridge (Permit # 50-01189-S)
- Earman River
- The Oaks
- Haverhill Road North of M Canal
- Westchester/Jog Road (Permit # 50-00744-S-03)
- Pine Acre Estates
- Lees Crossing (Permit # 50-00753-S)
- Winston Trail (Permit # 50-02454-S)
- Lake Charleston (Permit # 50-01625-S)

Palm Beach Gardens Area

- Garden Woods@
- Central Boulevard north of PGA Blvd.
- Maheau Estates Areas
- The Sanctuary
- Frenchman's Creek (Permit #50-00091-S)
- Monet Oaks@
- Yogi Bear Campground (Permit # 81-00087-S)
- Seacoast Utilities (Permit # 50-01695-S)
- Mecca Farms (Permit # 50-01626-S)

@ - Areas of known house floor flooding

Jupiter Area

- The Shores@ (Permit # 50-01436-S)
- Jupiter Medical Center (Permit # 50-00885-S)
- Jupiter Area
- Delaware Street south of Indiantown Road

St. Lucie County

- Port St. Lucie vicinity of C-24
- C-23 and C-24 canal area
- Port St. Lucie - Howard Creek area
- Carlton Road

@ - Areas of known house floor flooding

EMERGENCY ORDERS ISSUED

October 18, 1995 - Issued to The Shores for installation and operation of a portable pump in the Northern Palm Beach County Improvement District's drainage easement to relieve flooding in the Shores subdivision in Jupiter, Palm Beach County.

October 19, 1995 - Issued to all persons, firms, etc. within Hendry, Martin, Palm Beach and St. Lucie Counties for cessation of all identified off-site pumped discharge of storm water that is causing or contributing to flooding in affected counties. A pump within the Cypress Links Golf Course project were posted with this Order.

October 20, 1995 - Issued to Indian Trail Water Control District for discharge of storm water at a rate in excess of that permitted to relieve flooding in the Acreage area of Palm Beach County. This Authorization was issued a supplement on October 23, 1995 to allow additional pumped discharges.

October 24, 1995 - Issued to the Town of Juno Beach for installation and operation of a portable pump to discharge surface water from Juno Ocean Walk RV park in Palm Beach County into the Bluff's Shopping Center surface water management system.

October 26, 1995 - Issued to Wildcat Farms, Ltd. for excavation of portions of wetlands in the Wildcat Farms project in Lee County to form surface water drainage ditches to relieve flooding of agricultural lands.

November 7, 1995 - Issued to Garden Oaks Homeowner's Association (District Surface Water Management Permit #50-02144-S) for installation and operation of

discharge pumps to relieve flooded roads in the Garden Oaks project in Palm Beach County caused by unexpected off-site inflows and a crushed culvert.

November 8, 1995 - Issued to Palm Beach County and Lake Worth Drainage District for construction of a swale and installation of a culvert and riser to establish a connection between LWDD L-4 and E-2 canals to relieve flooding in the area north of Southern Boulevard at Hooper Road.

November 9, 1995 - Issued to Berry Groves, Inc. to lower the control elevation in 2 detention areas in Berry/Payson Grove to protect the viability of the project's preserve areas in Charlotte County.

November 14, 1995 - Issued to The Florida Club in Martin County for temporary alteration of the surface water management system to prevent, during construction, discharge of turbid storm water into Roebuck Creek.

November 29, 1995 - Issued to Pete Clemons, Kenneth Whitestone and Perry Smith & Sons for excavation of 800 feet of ditch east of CR 721 to direct surface water discharges from a citrus grove to C-38 to reduce flooding impacts in and around CR 721 and Larson Dairy Road in Highlands County.

FOLLOW-UP BY REGULATION STAFF

On projects with District surface water management permits, staff have been working with permittees to correct any known project deficiencies. In addition, permit staff have been working with permittees that have expressed interest in modifying their surface water management permits in order to lessen flooding impacts in the future. Also, staff has been working with local governments in finding ways to improve drainage in impacted areas.

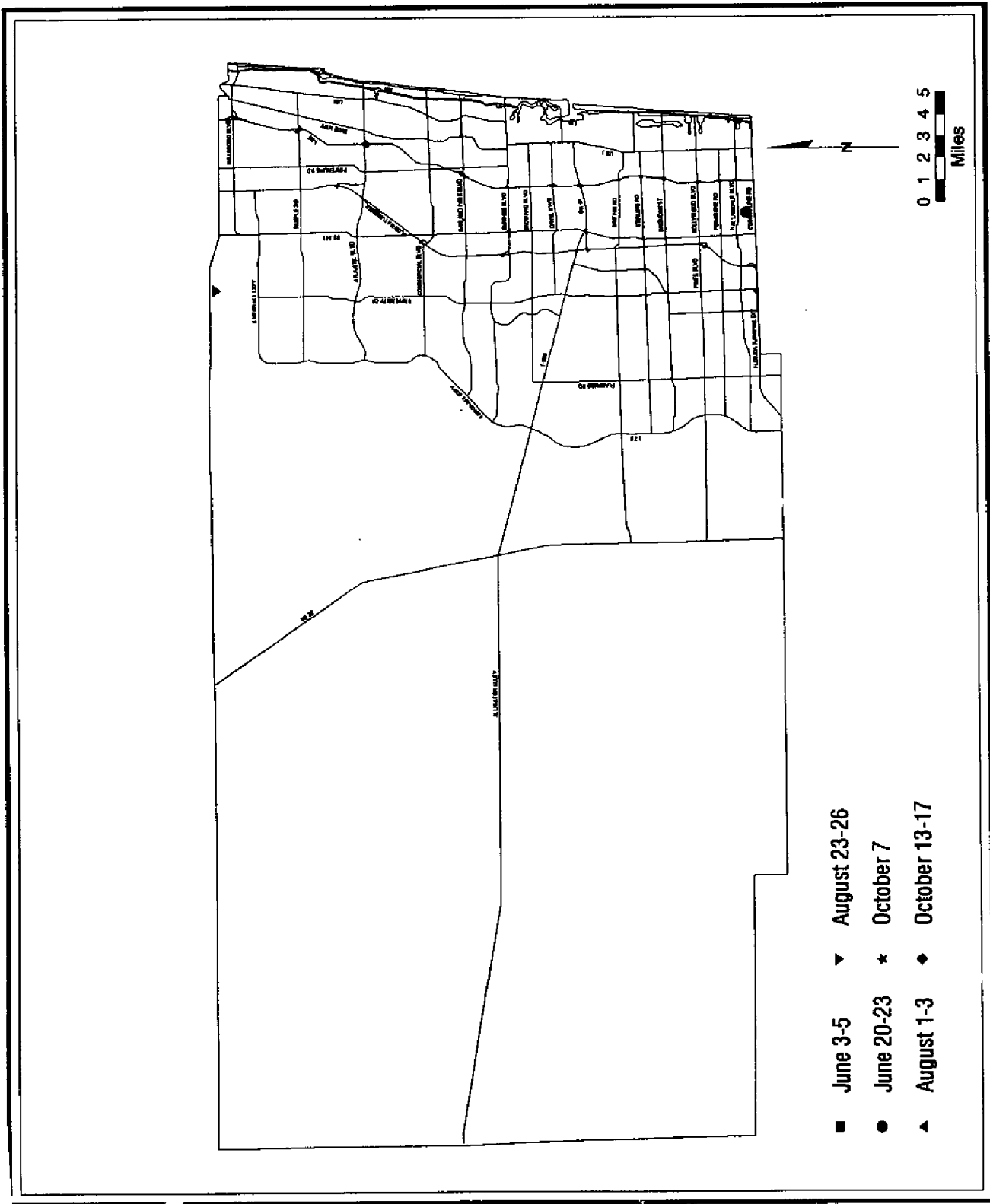


FIGURE 5-1. Broward County Flooded Areas

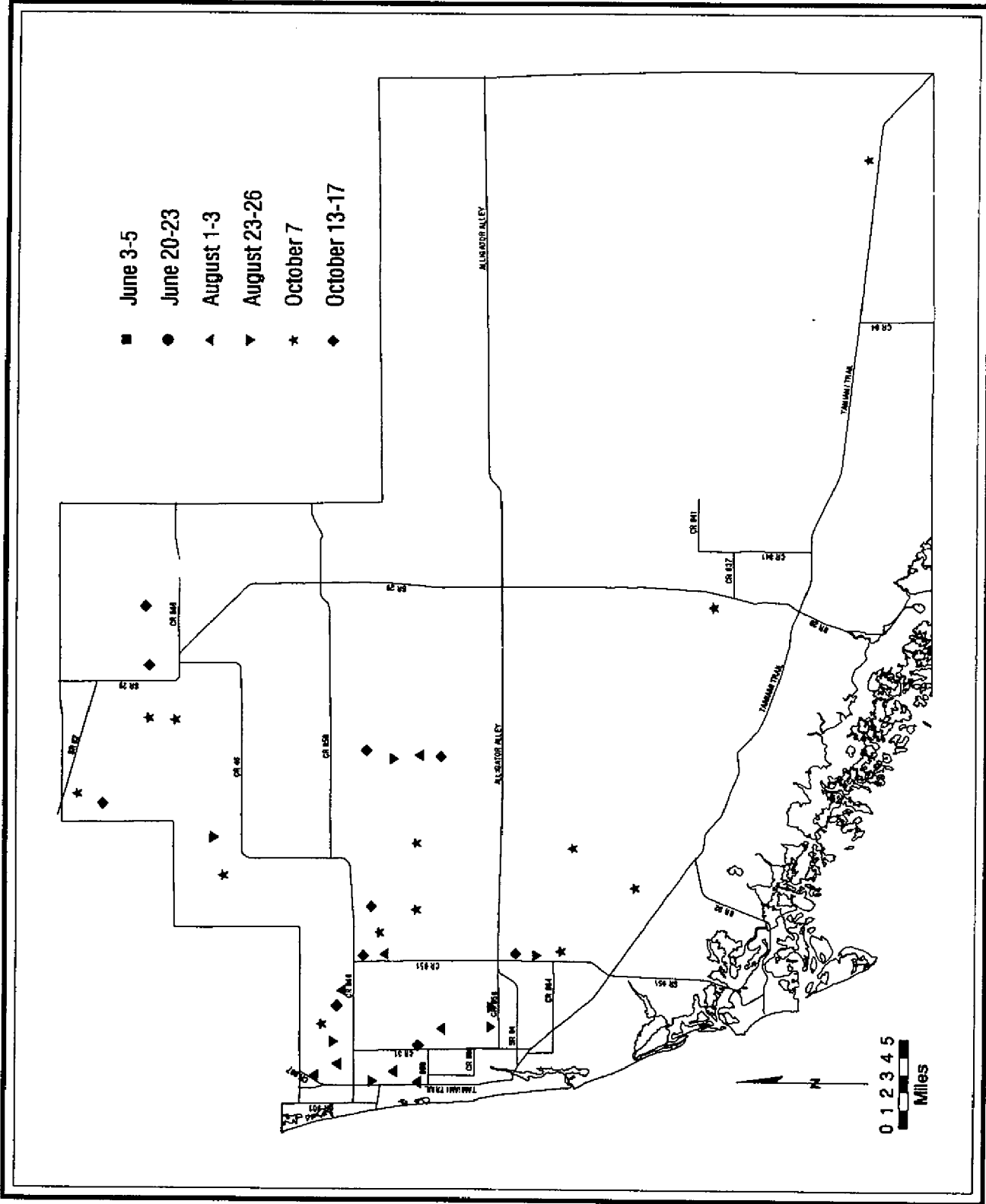


FIGURE 5-2. Collier County Flooded Areas

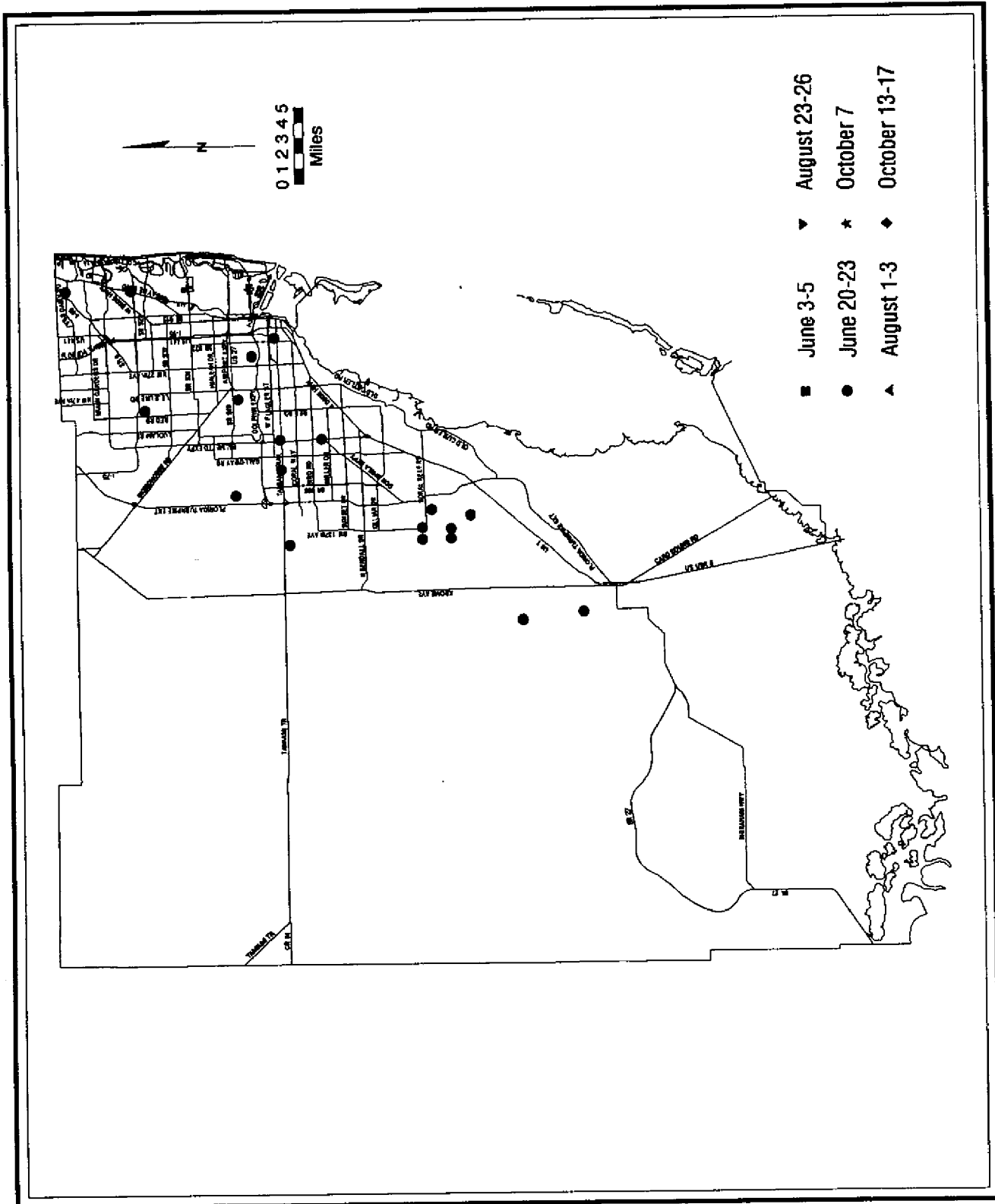


FIGURE 5-3. Dade County Flooded Areas

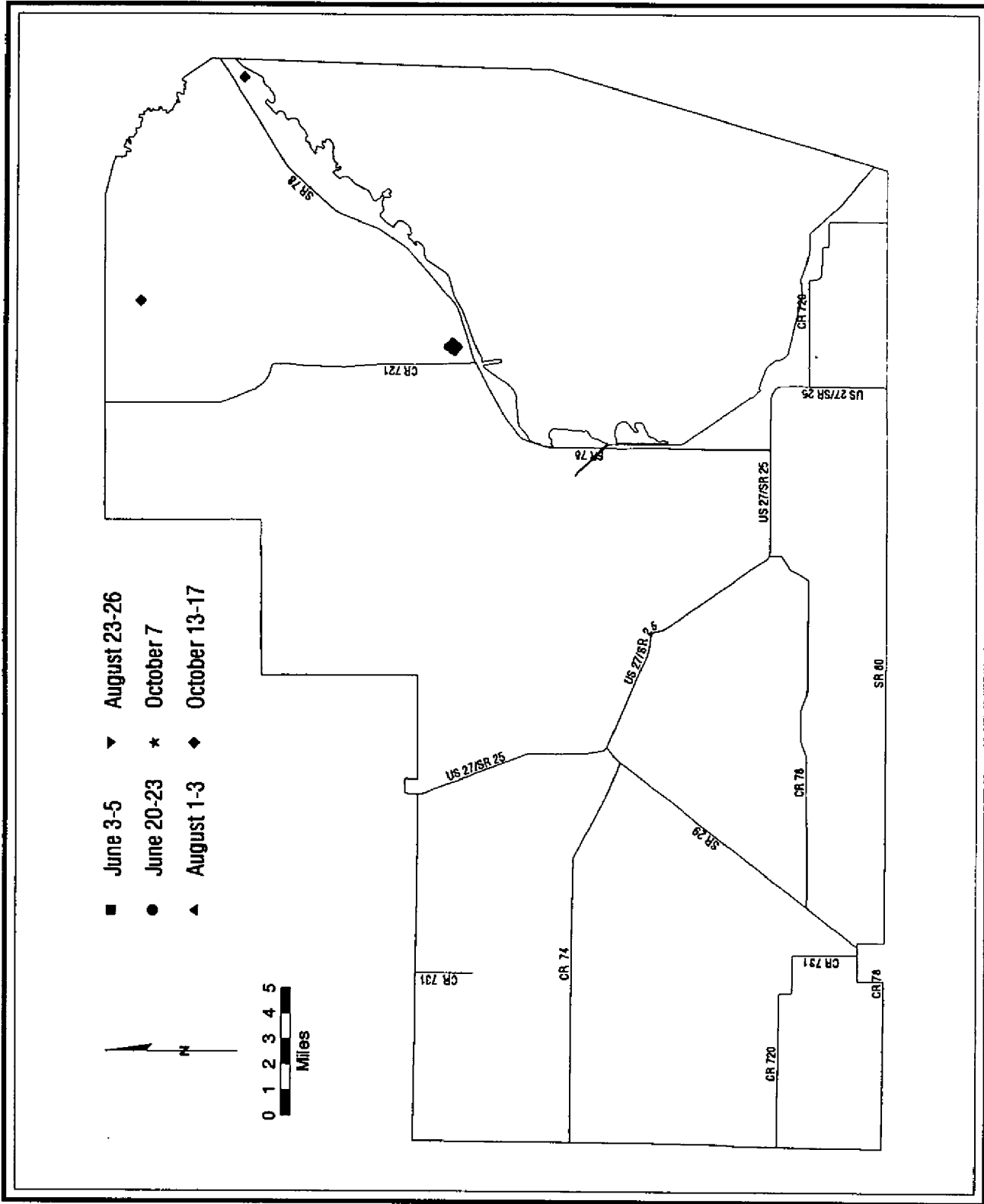


FIGURE 5-4. Glades County Flooded Areas

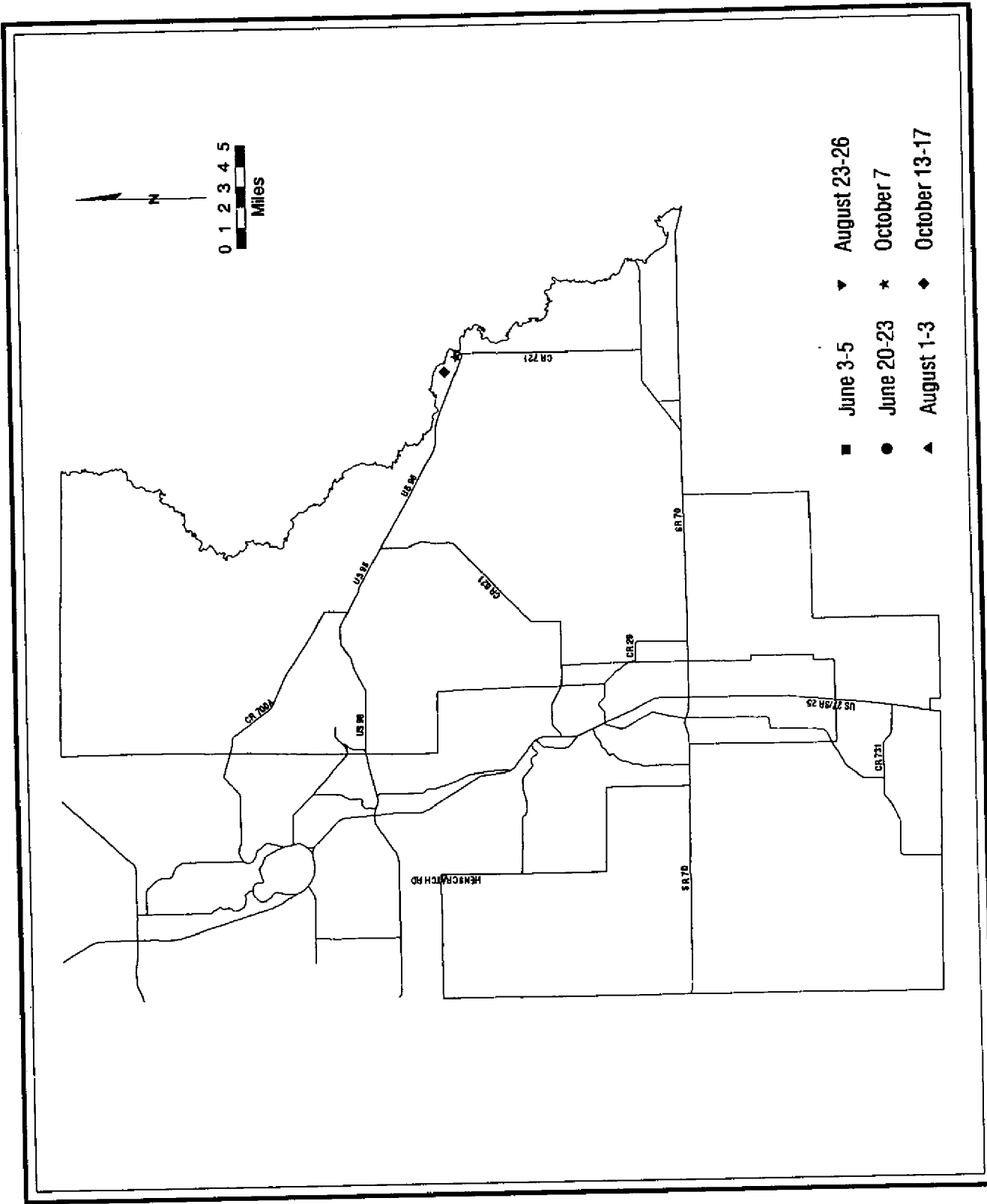


FIGURE 5-5. Highlands County Flooded Areas

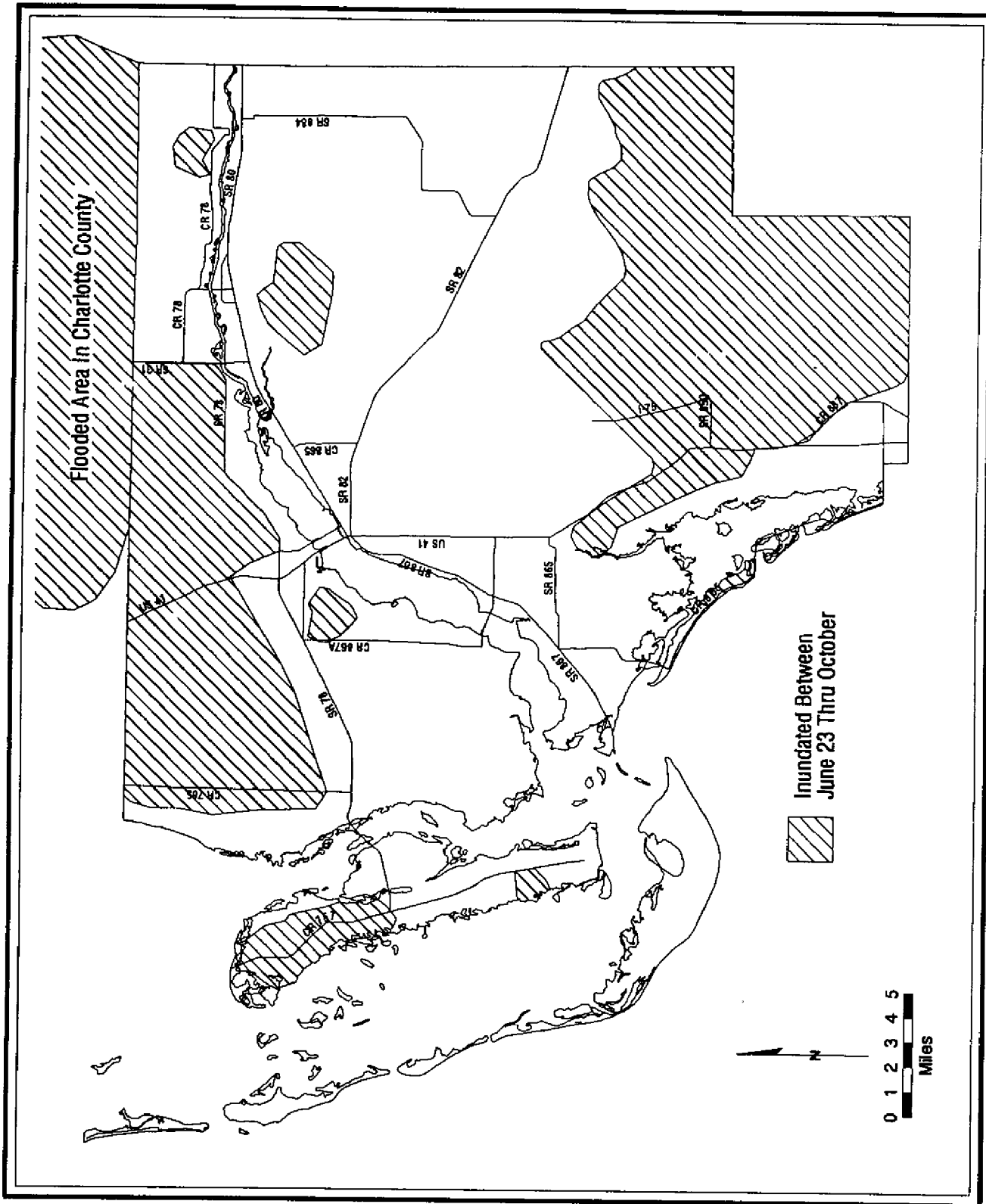


FIGURE 5-6. Lee County Flooded Areas

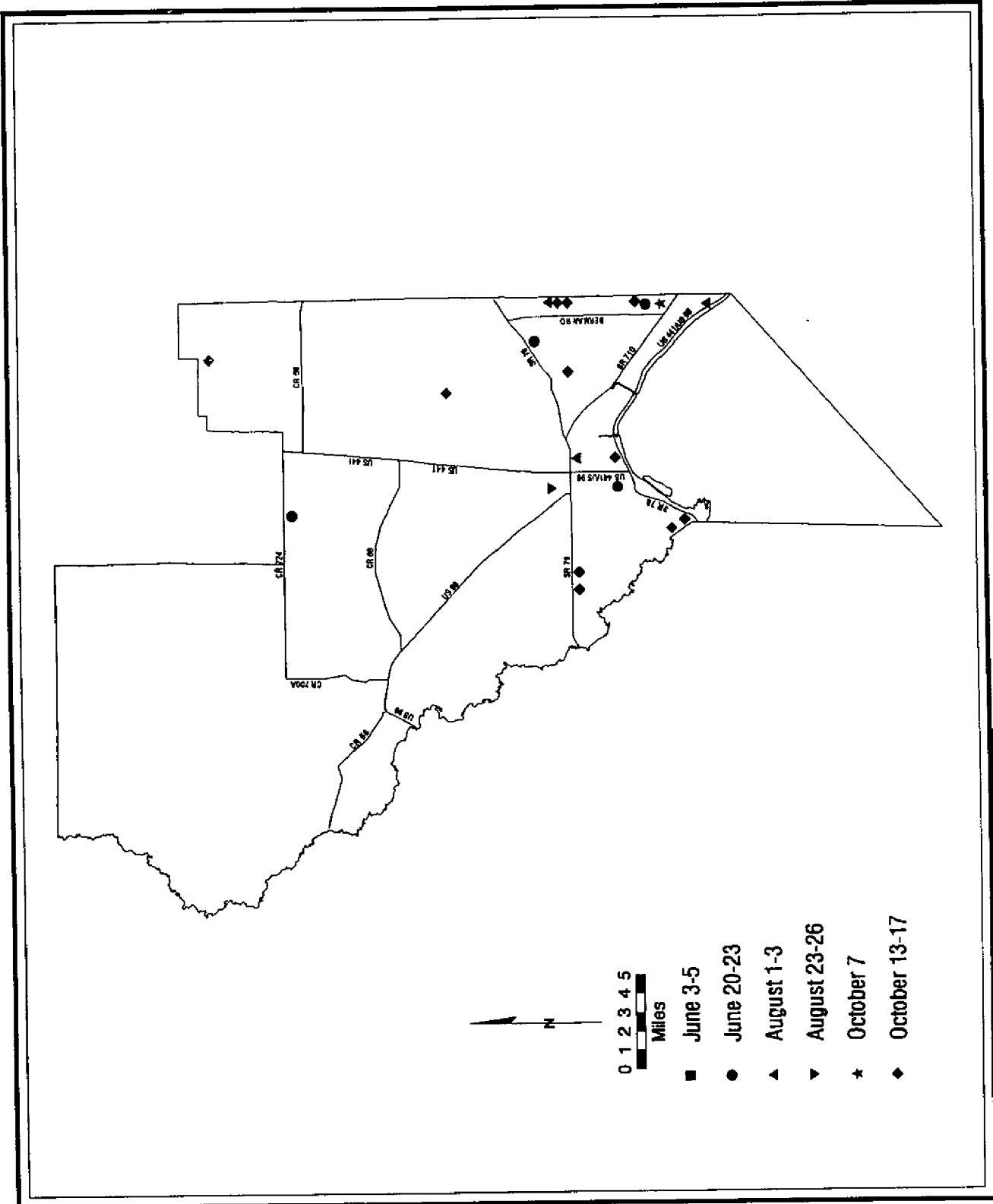


FIGURE 5-8. Okeechobee County Flooded Areas

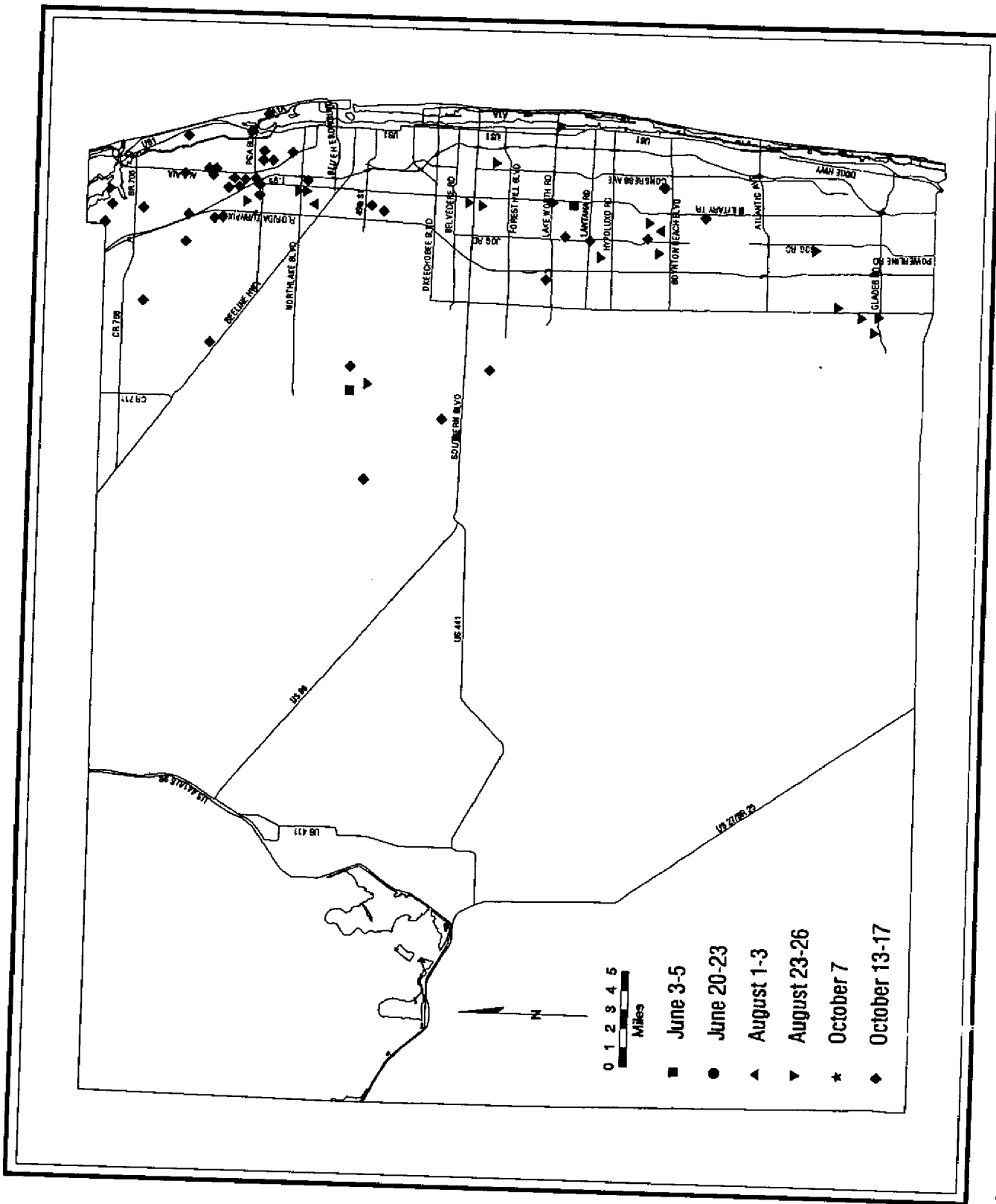


FIGURE 5-9. Palm Beach County Flooded Areas

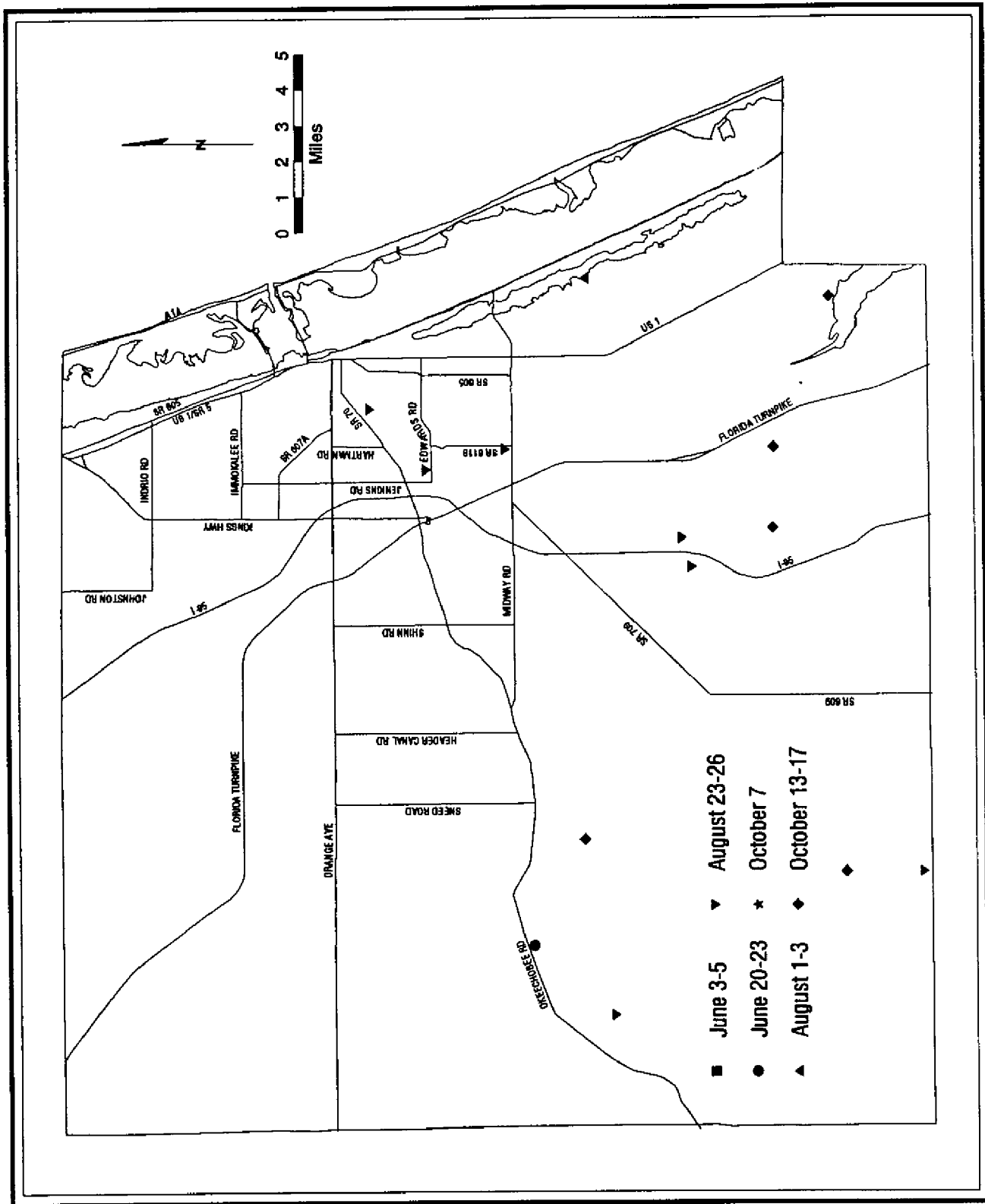


FIGURE 5-10. St. Lucie County Flooded Areas

CHAPTER 6

IMPACTS TO ESTUARIES AND BAYS

This chapter provides an evaluation of 1995 wet season effects on estuaries and bays. Specifically, it addresses the effects of the season's high freshwater discharges and inflows to the Caloosahatchee and St. Lucie Estuaries, as well as to Florida Bay.

Caloosahatchee River Estuarine System During the 1995 Wet Season

The Caloosahatchee River system (Figure 6-1) is comprised of a freshwater reach (Caloosahatchee River or C-43) and an estuary (Caloosahatchee Estuary). The freshwater reach extends 42 miles from Lake Okeechobee to the Franklin Lock and Dam (S-79), where it discharges into the estuary. The Caloosahatchee River (C-43) serves as a waterway, and provides freshwater for municipal and agricultural needs. The major sources of water for C-43 are its 850 square-mile watershed and its discharges from Lake Okeechobee. Discharges occur via S-77 at Moore Haven and are made to provide water to downstream users and to maintain lake levels according to a prescribed schedule. The Caloosahatchee Estuary, located in Lee County, stretches about 26 miles from S-79 to Shell Point, where it empties into San Carlos Bay at the southern end of Charlotte Harbor (Figure 6-2). Although the estuary itself drains a watershed of some 500 square miles, the drainage from the C-43 basin and the discharges from Lake Okeechobee largely determine the amount of freshwater entering the Caloosahatchee Estuary.

Because of its unnatural connection to Lake Okeechobee and because of modifications to the watershed, present-day freshwater discharge to the Caloosahatchee Estuary is no doubt quite different than it was before these alterations took place. As a consequence, salinity in the estuary varies widely in both space and time. Salinity varies naturally in an estuary; it exerts a profound influence on the distribution of marine organisms, the composition of estuarine communities and the organization of food webs. Excessive variation in salinity can thus maintain estuarine biota in a constant state of flux between those favoring higher salinities and those favoring lower salinities. In the extreme, appropriate salinity conditions do not last long enough for organisms to complete their life cycle, and the estuary becomes devoid of self-sustaining populations and communities.

CALOOSAHATCHEE ESTUARY

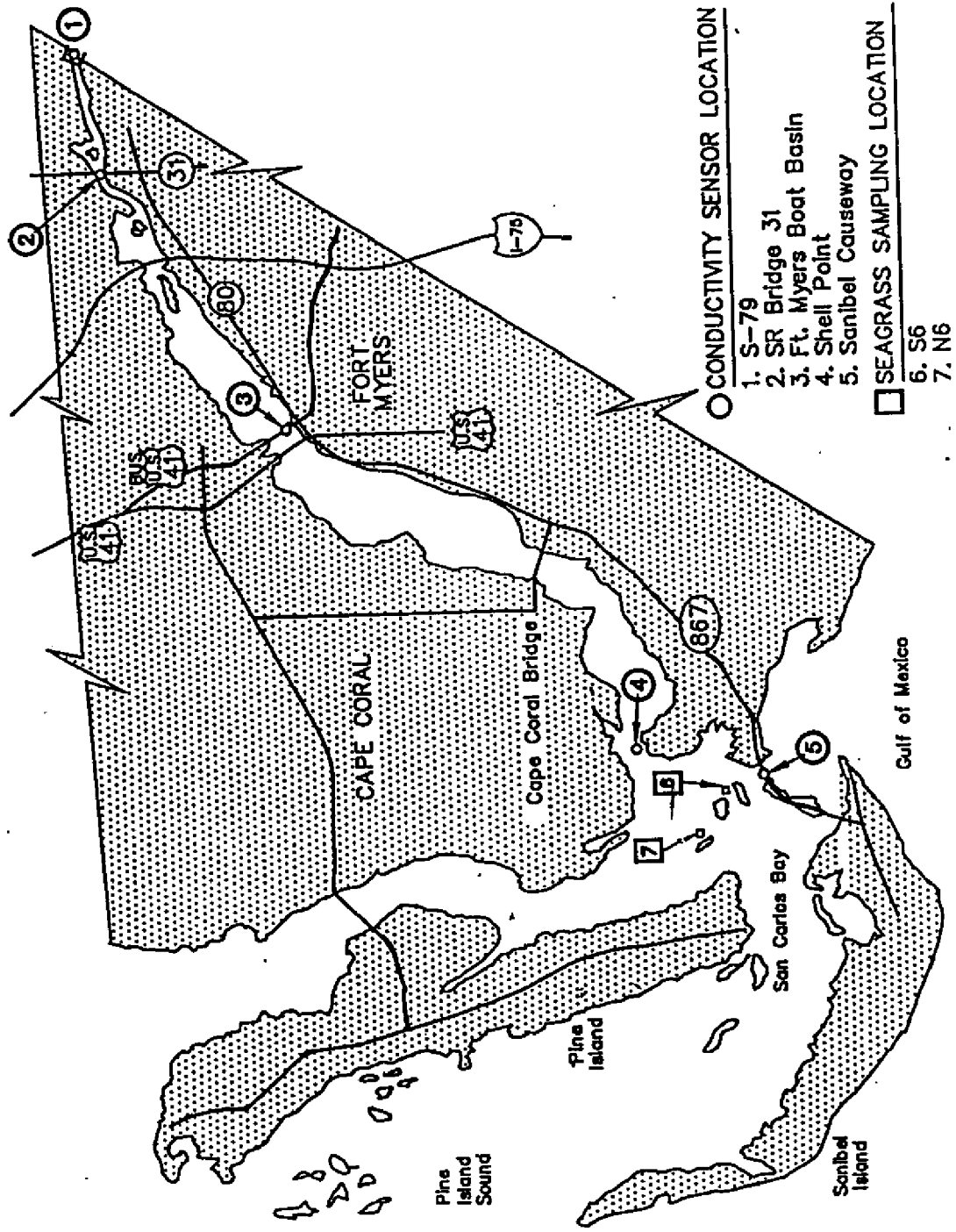


FIGURE 6-1. Caloosahatchee River System.

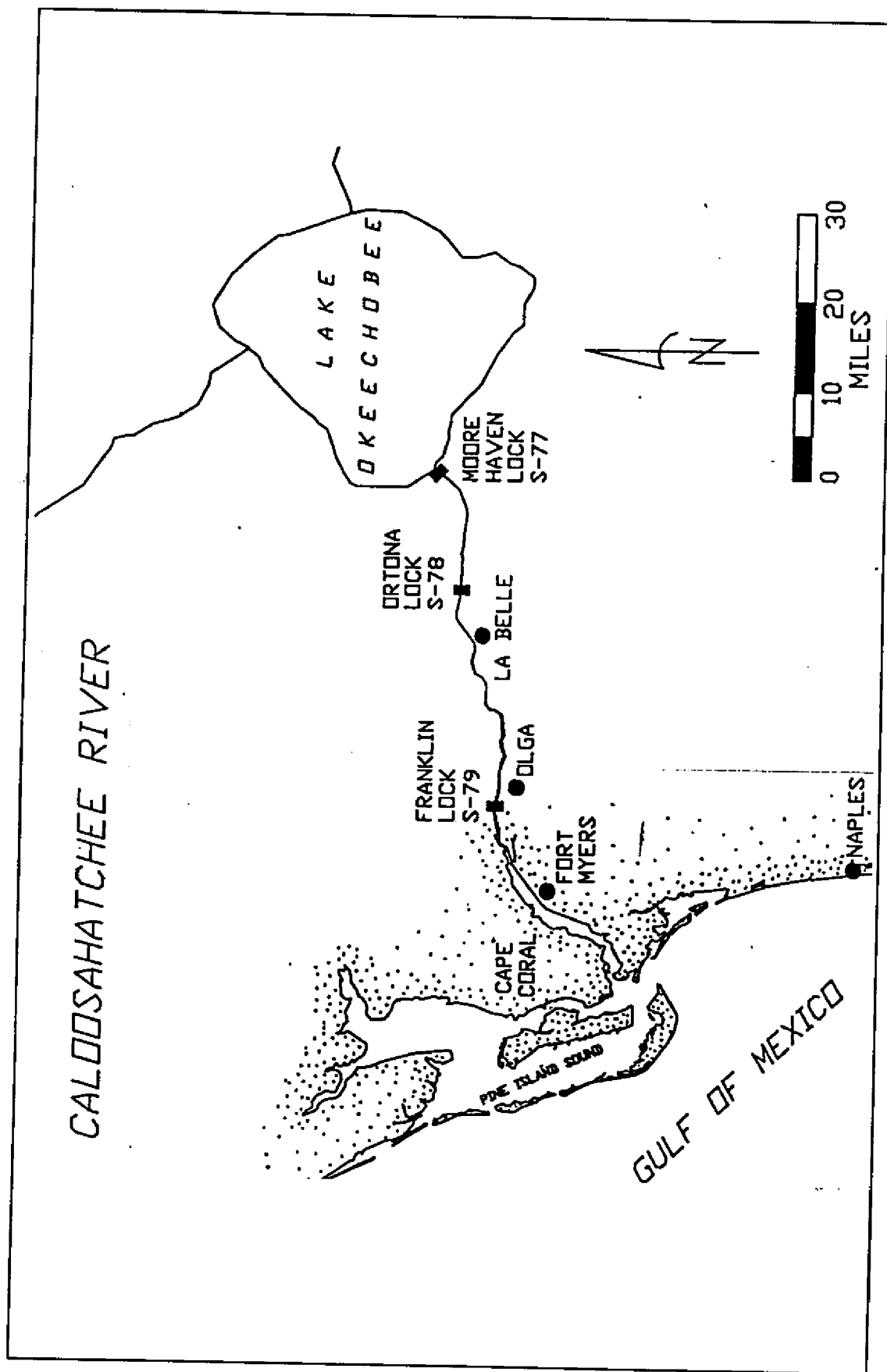


FIGURE 6-2. Location of Salinity Sensors and Sea Grass Sampling Stations in the Caloosahatchee Estuary.

Salinity Envelope for the Caloosahatchee River Estuary

In order to keep salinity variation within biotically acceptable limits, Chamberlain et al. established an optimum discharge envelope (Chamberlain, R.H., D.E. Haunert, P.H. Doering, K.H. Haunert, and J.M. Otero, 1995, Preliminary estimate of optimum freshwater inflow to the Caloosahatchee Estuary, Florida, South Florida Water Management District, in review, draft manuscript for publication). The recommended minimum and maximum mean monthly discharges to the Caloosahatchee Estuary at S-79 are 300 and 2800 cfs. Flows within this discharge envelope maintain tolerable salinities within the distributional range of important submerged aquatic plant species in the Caloosahatchee Estuary and San Carlos Bay (Figure 6-2). Flows outside this envelope may be problematic, causing mortality of some species and allowing others to invade.

Analysis of the 1995 Wet Season

The impacts of the 1995 wet season on the Caloosahatchee Estuary were analyzed in the following manner. First, rainfall in the Caloosahatchee watershed was compared to the long-term average condition. Total freshwater discharge at S-79 was partitioned into the amount separately contributed by the basin and lake. Basin runoff was determined by taking the difference between discharge at S-79 and S-77. Total basin and lake discharges for 1995 were placed in historical perspective by comparing these with long-term averages computed from a 29-year record (1966-1994). Effects of major storms and regulatory releases from Lake Okeechobee on the time-series of discharge at S-79 were also evaluated. The influence of wet season discharges on salinity in the estuary was determined by examining records from five continuous recorders located along the longitudinal axis of the estuary (Figure 6-2). Finally, potential effects of 1995 wet season discharges on two species of sea grass (*Halodule wrightii* and *Thalassia testudinum*) were examined by comparing the average seasonal cycle with that computed from a 4-year record (1986-1989).

Rainfall in the Basin and Freshwater Discharge at S-79

Rainfall in the Caloosahatchee basin was above normal for all months during the 1995 wet season except May and September (Figure 6-3). This above-normal rainfall resulted in an increase in basin discharge to the estuary of 217% above the long-term average (Figure 6-4). The discharge from Lake Okeechobee was 486% above the long-term average. These high discharges combined to produce discharges at S-79 that were 295% above the long-term average for the wet season (Figure 6-4). Based on the 29-year period of record, the basin normally contributes about 75% of the discharge at S-79 during the wet season, while releases from Lake Okeechobee

account for the remaining 25%. In 1995, the basin accounted for only 55% of the total discharges and releases from the Lake for the remaining 45%. The daily record of discharge at S-79 clearly depicts the difference between a long-term average wet season and the wet season of 1995 (Figure 6-5). During the first 3 months of the 1995 wet season, discharge was derived almost entirely from basin runoff. Peak flow events in early and late June correspond to Hurricane Alison (June 2-5) and an unnamed storm (June 18-24). During August, September, and October a series of storms continued to control runoff from the Caloosahatchee Basin. Peak basin discharge events in early and late August reflect the influence of Hurricane Erin (August 1-3) and Tropical Storm Jerry (August 23-26). The bimodal pattern of basin discharge in October stems from Hurricane Opal (October 5-6) and an unnamed tropical storm (October 14-19). The feature that distinguishes the first three months of the wet season from the last three months is the contribution of releases from Lake Okeechobee to the total (Figure 6-5). The contribution of the Lake to the total discharge is represented by the space between the two lines on Figure 6-5. Erin, Jerry, Opal, and the unnamed, mid-October tropical storm necessitated regulatory releases from the Lake. Lake releases dominated total discharge at S-79 during mid-August and for most of September. The maximum daily discharge for the wet season (17,288 cfs) occurred in October. The last daily discharge exceeding 17,000 cfs occurred in 1982.

The long-term average record (Figure 6-5) suggests that the flow envelope established by Chamberlain et al. (1995) is most often exceeded from mid-June to mid-July and again during the month of August. September and October discharges are less likely to exceed the maximum recommended discharge of 2800 cfs. Discharges during the May through August period of the 1995 wet season conformed to this average picture. Unlike the long-term average condition, discharges at S-79 exceeded 2800 cfs for the entire October-September period. The time-series of calculated basin discharge underscores the effects of regulatory discharges from Lake Okeechobee. Had regulatory releases not occurred, even in this relatively wet year, flow to the Caloosahatchee at S-79 would have fallen within the envelope for short periods in August and September, and would have returned to biotically acceptable levels by the end of the wet season. Regulatory releases prevented this from happening.

Impacts on Salinity and Submerged Aquatic Vegetation

The time-series of salinity from the continuous recorders indicated that from July to the end of October the estuary was entirely fresh at least down to Ft. Myers. Records indicate that salinity at Shell Point and at the Sanibel Causeway declined from June to the end of July, falling below 20 ppt for extended periods. Analysis of survey data from the Caloosahatchee (Chamberlain et al. 1995), indicates that the abundance of both shoal grass (*Halodule wrightii*) and turtle grass (*Thalassia*

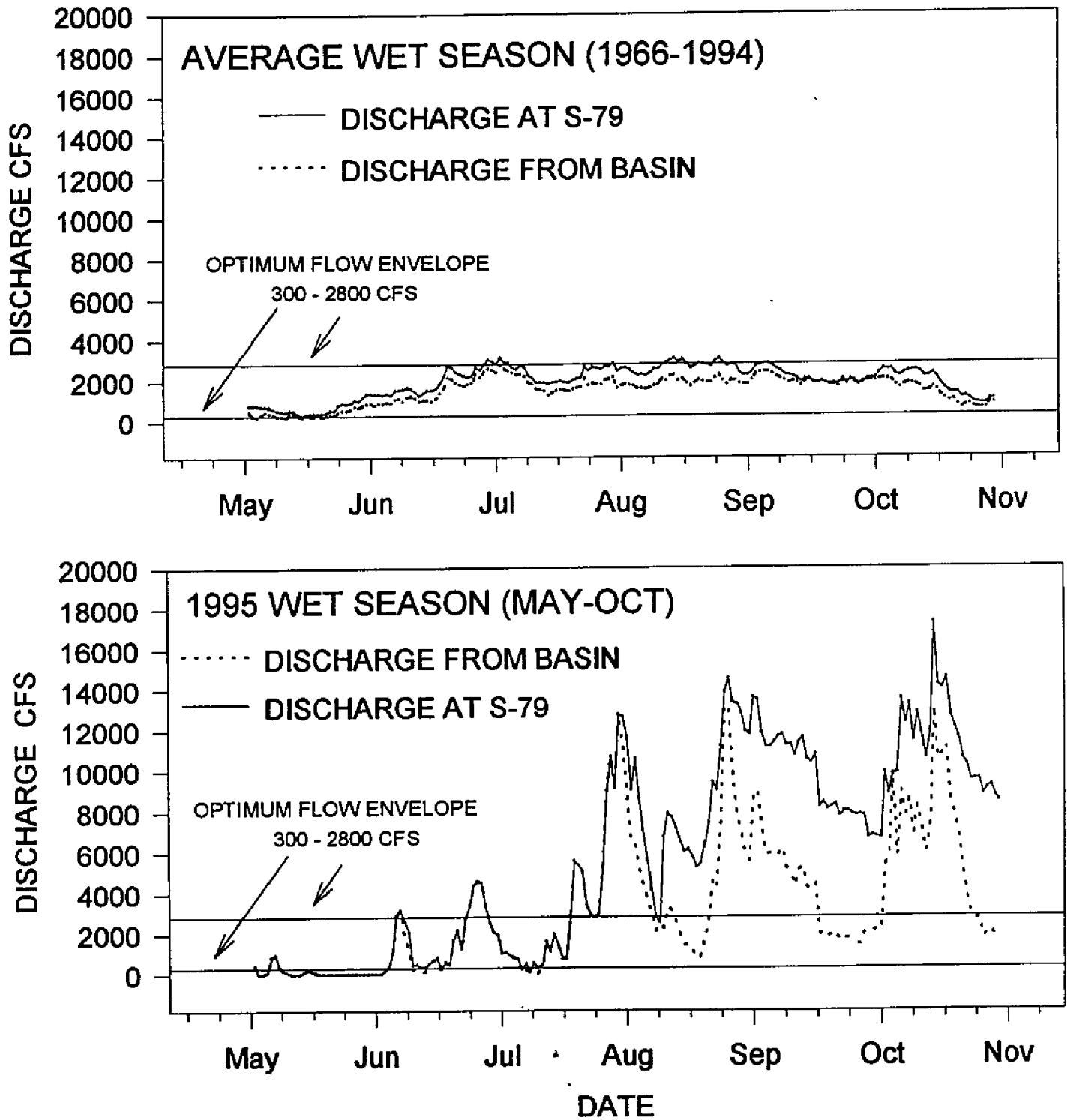


FIGURE 6-5. Daily Discharge (cfs) at Structure S-79 and from the Caloosahatchee Watershed (Basin) During the Wet Season.

testudinum) tends to be low when salinities fall below 20 ppt. The sensors at Shell Point and the Sanibel Causeway are located on either side of San Carlos Bay. Data from these sensors indicate that salinities fell below 20 ppt in San Carlos Bay at least during August and early September and suggest potential impacts on the sea grass beds in this region of the system (Figure 6-6).

The abundance of shoal grass in San Carlos Bay was almost certainly impacted by the high discharges experienced during the wet season of 1995 (Figure 6-7). During May and June when discharges were similar to prior years, the density of shoal grass was also comparable to previous years. During August, September and October when discharges were higher than expected, shoal grass density was far below average. By contrast, turtle grass did not appear as clearly affected as shoal grass. Turtle grass is more robust than shoal grass and its roots and rhizomes are more deeply buried in the sediment. Thus its response to environmental perturbation may be slower and less pronounced.

It is difficult to establish cause and effect from observational data such as these. However, it seems clear that the abnormally low densities of *Halodule wrightii* in San Carlos Bay were associated either directly or indirectly with the high discharges occurring during the 1995 wet season. From August through October, the period of greatest sea grass decline, these high discharges were rendered even higher by regulatory releases from Lake Okeechobee. The potential contribution of these regulatory releases to the decline in *Halodule wrightii* cannot be dismissed and deserves further scrutiny in the future.

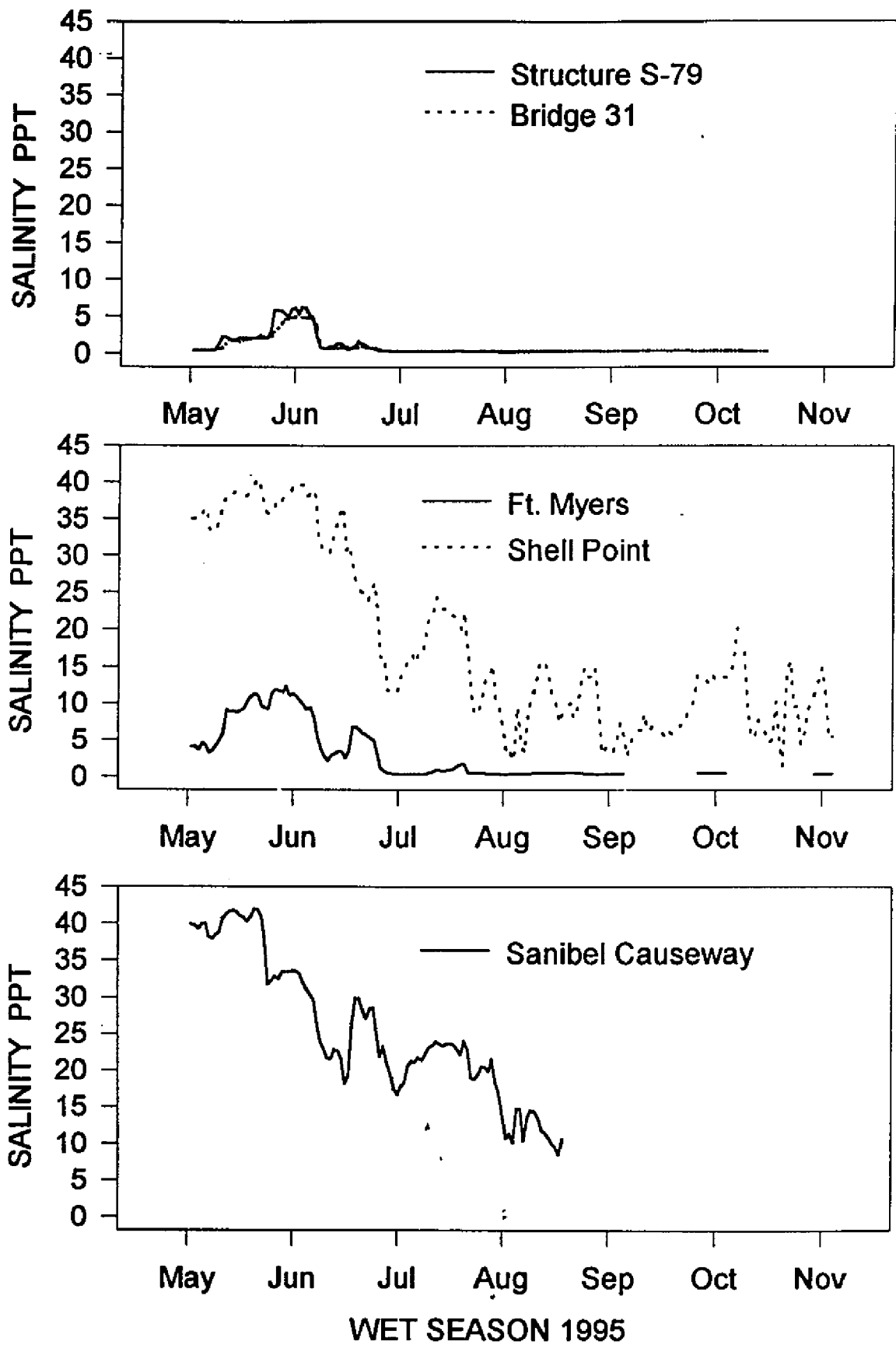


FIGURE 6-6. Salinity in the Caloosahatchee Estuary During the 1995 Wet Season. Data are from Continuous Conductivity Recorders.

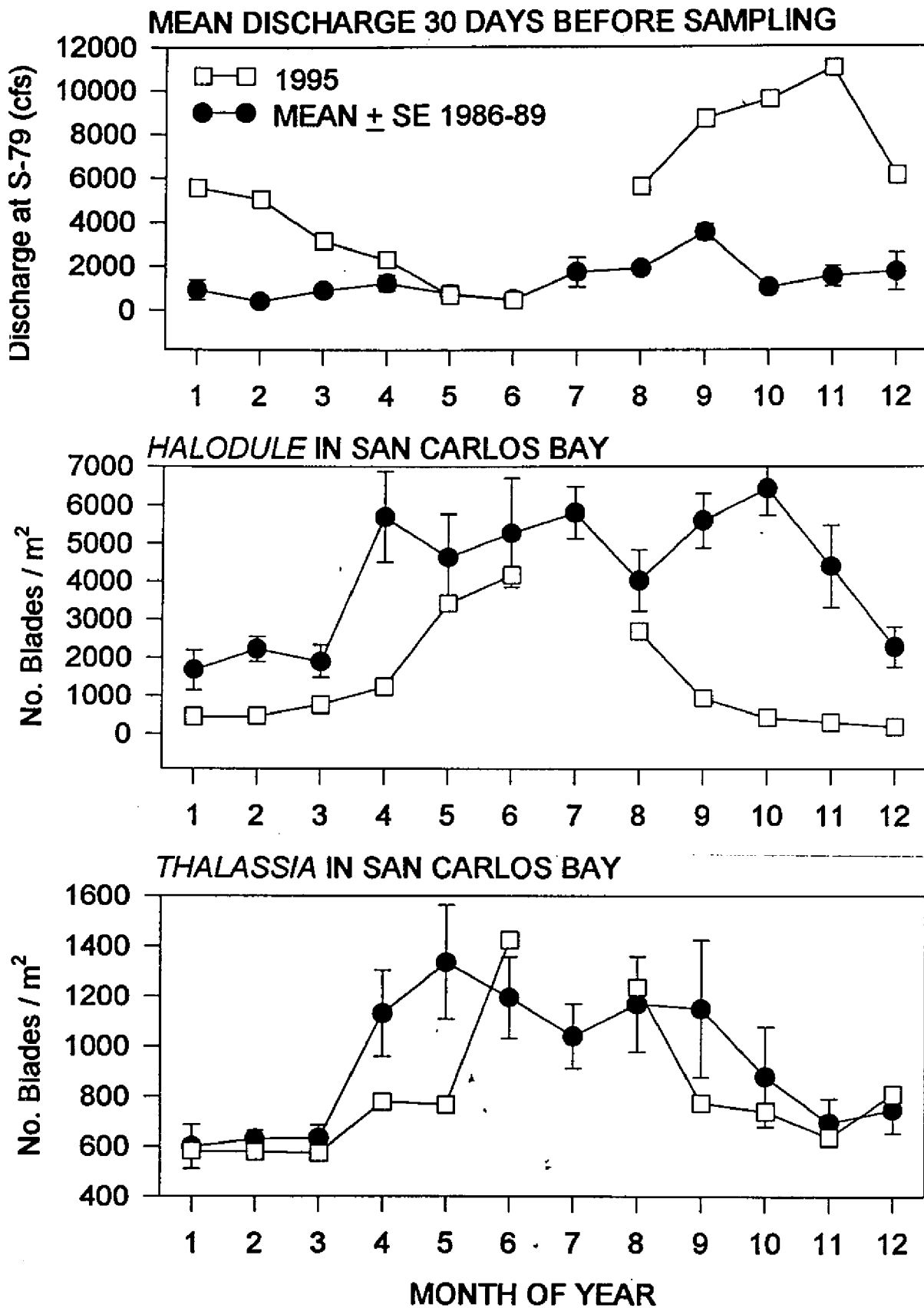


FIGURE 6-7. S-79 Mean daily discharge 30 days prior to sampling seagrass (top). *Halodule* and *Thalassia* blade density San Carlos Bay.

St. Lucie Estuary Watershed

The St. Lucie Estuary is located on the southeastern coast of Florida, encompassing portions of both Martin and St. Lucie Counties within the watershed. The North Fork and South Fork flow together at the Roosevelt Bridge near the City of Stuart, and then flow eastward approximately six miles to the Indian River Lagoon and the Atlantic Ocean at the St. Lucie Inlet (Figure 6-8). Tidal influences in the North Fork reach 15 miles north of Stuart at Five-Mile Creek, and to a water control structure on Ten-Mile Creek just west of the Florida Turnpike. Tidal influences in the South Fork extend about eight miles south of Stuart to the St. Lucie Lock and Dam (S-80) on the St. Lucie Canal and into the extremes of the Old South Fork tributary.

The St. Lucie Estuary is divided into three major areas: the inner estuary, comprised of the North and South Forks; the mid-estuary, consisting of the area from the juncture of the North and South Forks to Hell Gate; and the outer estuary extending past Hell Gate into the Intracoastal Waterway and the St. Lucie Inlet. The main body of the North Fork is about four miles long, with a surface area of approximately 4.5 square miles. The South Fork is approximately half the size of the North Fork with a surface area of about 1.9 square miles. The mid-estuary extends approximately five miles from the Roosevelt Bridge to Hell Gate and has an area similar to the North Fork (4.7 square miles).

While the St. Lucie Estuary encompasses about 8 square miles, the watershed covers an area of almost 775 square miles. The watershed is divided into eight basins, five major and three minor ones (Figure 6-8). Three of these major basins, the C-23, C-24, and C-44, represent basins now draining to the estuary through primary canals. In addition to drainage from within the C-44 basin, the C-44 Canal (St. Lucie Canal) also conveys flood control discharges from Lake Okeechobee to the St. Lucie Estuary. The other two major basins, the North Fork and the Tidal Basin, include numerous drainage connections to the St. Lucie Estuary.

Numerous physical drainage modifications have been made within the St. Lucie Estuary watershed. Beginning in the early 1900s, canals and water control facilities were constructed. The St. Lucie Canal (C-44) was constructed between 1916 and 1924 to provide an improved outlet for Lake Okeechobee flood waters. In 1918 the North St. Lucie River Drainage District, now the North St. Lucie Water Control District (NSLWCD), was formed. A system of canals and control structures was designed to provide flood control for about 75,000 acres in the North Fork Basin. As part of this project, Five-Mile and Ten-Mile Creeks were channelized to increase drainage. The C-24 Canal was constructed to provide drainage west of the

ST. LUCIE ESTUARY WATERSHED

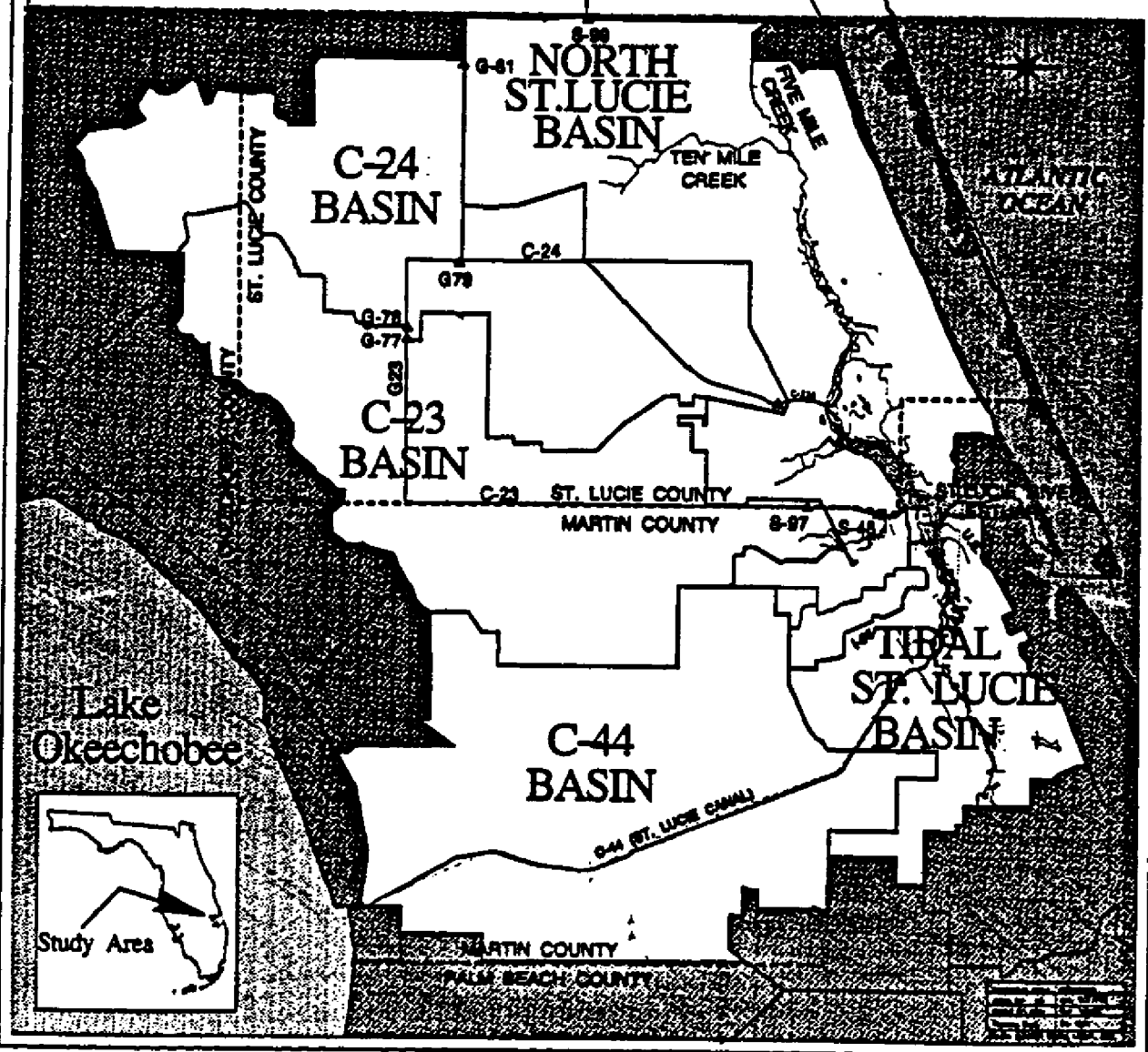


FIGURE 6-8. St. Lucie Estuary Watershed

NSLWCD. The C-23 provided drainage to the St. Lucie Estuary for the Allapattah Flats Marsh.

Following severe flooding in 1947, the U.S. Congress authorized the design and construction of the Central and South Florida Flood Control (C&SF) Project. The C-23, C-24, and C-44 canals were improved under the C&SF Project.

Salinity Envelope for the St. Lucie Estuary

To determine appropriate water quantity inflows to the estuary, reasonable biological indicators with definable salinity preferences must be chosen along with its desired range within the estuary. Highly dynamic conditions within systems, such as the St. Lucie Estuary, discourage the use of transient, adaptable indicators such as fishes which can be readily influenced by short-term conditions caused by the weathering of soils (edaphic conditions) rather than weather conditions. However, fishes and other biota would be considered in a final evaluation. Within northern portions of the Indian River Lagoon, the salinity tolerance of clam larvae has provided a basis for evaluating the appropriate freshwater inflows to the system.

The long-term salinity regime within the St. Lucie Estuary can be assessed based upon favorable salinity conditions for the oyster and shoal grass. Oyster populations are most abundant in salinities over a range from about 5 to 18 ppt, and the lowest salinity tolerated by shoal grass is near 3 ppt. To maintain viable oyster and shoal grass populations within the St. Lucie Estuary, flows from contributing basins must be managed such that the aggregate flow maintains salinities within the appropriate salinity range over the appropriate geographic area of the estuary. An inflow/salinity model was used to generate St. Lucie Estuary inflow/salinity curves for the inner and middle estuary. Historical oyster and shoal grass distributions within the estuary have been compared to the inflow/salinity curves to develop a preliminary "salinity envelope" for the St. Lucie Estuary which is 350 to 1500 cfs (Figure 6-9).

Analysis of the 1995 Wet Season Flows

Since a salinity envelope has been established for the estuary, the distribution of historical wet season flows can be assessed in relation to desired levels of flow that would allow oysters and shoal grass to populate the estuary. Figure 6-10 shows that flows greater than 1500 cfs have occurred numerous times during the period of record (May through December, 1965 through 1990). Clearly, from an historical perspective, the salinity envelope is violated frequently enough to nearly exclude oyster and shoal grass populations from developing in the inner estuary.

Salinity Gradients and Preferred Salinity Envelope for the St. Lucie Estuary

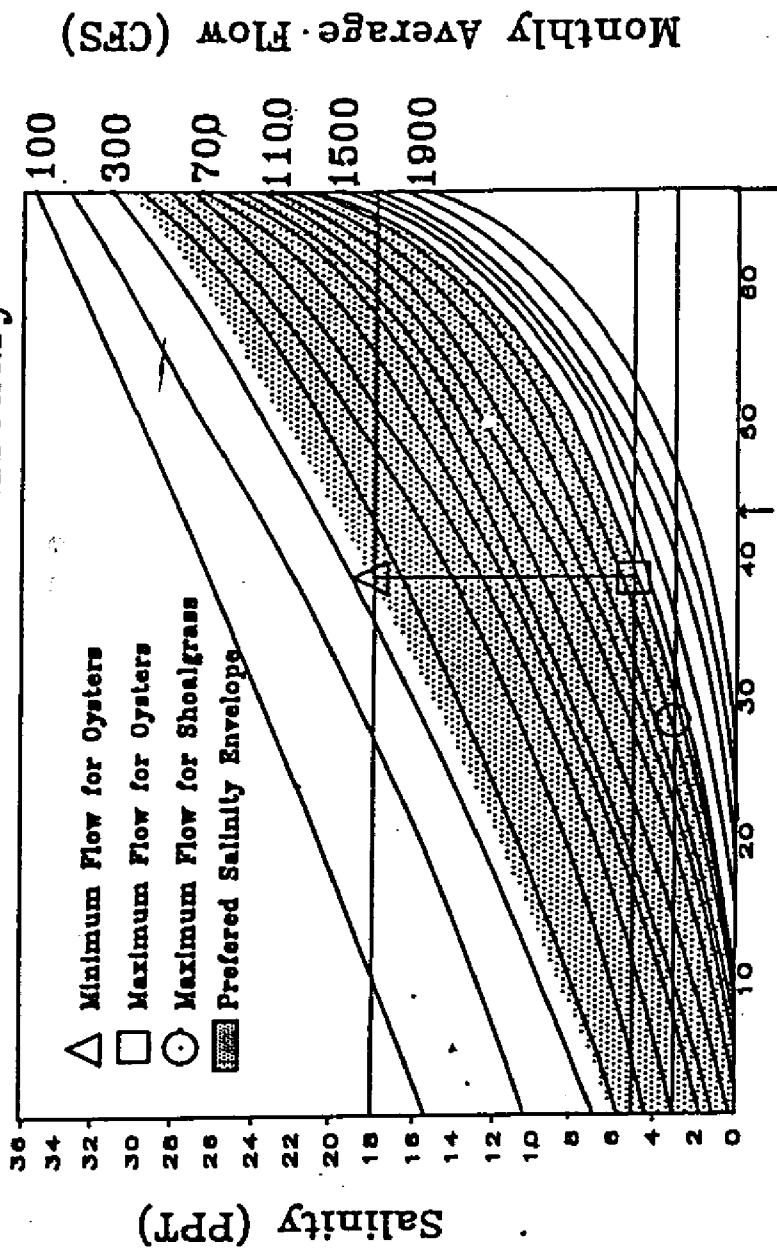


FIGURE 6-9. Salinity Gradients and Preferred Salinity Envelope for the St. Lucie Estuary

Historical Flows to the St. Lucie Estuary May through December, 1965 through 1990

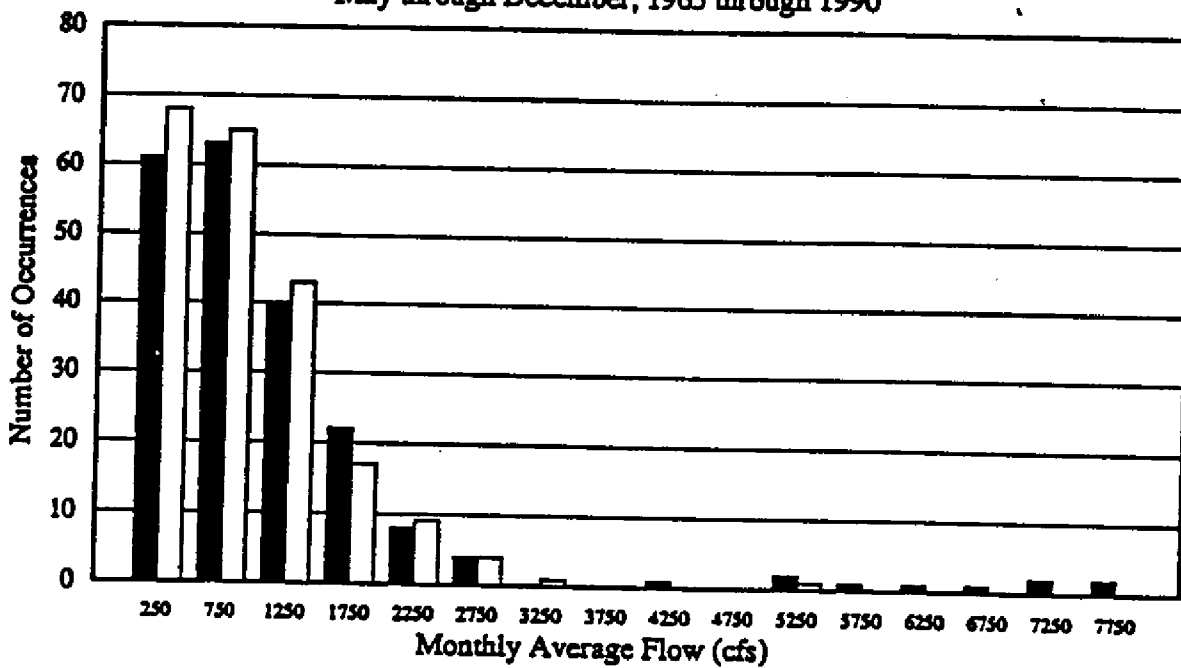


FIGURE 6-10. Historical Flows to the St. Lucie Estuary

St. Lucie Estuary

Flows to the St. Lucie Estuary that occurred during the 1995 wet season (Table 6-1) were evaluated by comparing them to the historical flows (Figure 6-10). Inflows during August through November severely violated the salinity envelope (Figure 6-9) to the point that the entire estuary was freshwater for these four months. The inflow of 9,864 cfs in October has not been experienced in the estuary for over 40 years. Even without regulatory discharges from Lake Okeechobee, watershed runoff alone far exceeded the salinity envelope from August to October.

TABLE 6-1. Wet Season 1995 Flows to the St. Lucie Estuary

Month	S-80	S-97	S-49	South Fork	North Fork	Total Flow with L.O.	Total Flow without L.O.
May	52	0	0	0	0	52	0
June	203	41	17	6	17	284	81
July	175	186	224	75	224	879	709
August	2648	1212	1288	430	1288	6866	4218
September	3479	673	724	241	724	5841	2362
October	4054	1799	1719	573	1719	9864	5810
November	3700	16	58	19	58	3851	151
December	988	0	0	0	0	988	0

Indian River Lagoon

From field observations of the St. Lucie Estuary and adjacent Indian River Lagoon, it has been noted that, if total flows to the estuary are under about 2,000 cfs, there is minimal exchange of estuarine waters with Indian River Lagoon waters north and south of the St. Lucie Inlet. However, when flows exceed about 2,000 cfs for more than a month, water exchange begins to become apparent. As flows increase above 2,000 cfs, salinity in the lagoon decreases more rapidly. In addition, if north winds occur while flows are greater than approximately 2,500 cfs, additional estuarine waters are driven south in the Intracoastal Waterway towards Jupiter Inlet. Table 6-1 shows that flows much greater than 2,000 cfs occurred between August and November 1995, with flows ranging from about 3,800 to 10,000 cfs.

Salinities in the Indian River Lagoon between Ft. Pierce Inlet and the Jupiter Inlet rarely are less than 25 ppt. Exceptions to this are most often related to extreme wet seasons and regulatory discharges from Lake Okeechobee. Figures 6-11 and 6-12 demonstrate how the 1995 wet season flows affected the salinity of the Indian River Lagoon during this wet season. The salinity distribution has been partitioned into three categories. The first category is 26 to 35 ppt, representing salinities most favorable to marine organisms that utilize the Indian River Lagoon between Jupiter and Ft. Pierce. The second category is 19 to 25 ppt, or caution areas where salinities have decreased and may become low enough to be represented in the third (0 to 18 ppt). Once the salinity reaches about 18 ppt and continues to decline, marine organisms with limited mobility (e.g. marine snails and clams) will be severely stressed and may perish. Figure 6-11, depicts conditions on October 9, 1995; it reveals a large area north and a limited area south of the St. Lucie Inlet that is being exposed to severe salinity stress. Large discharges continued and on November 9, 1995, the category 3, (0 to 18 ppt) had moved north and south, and included a large portion of the lagoon between the St. Lucie and Jupiter Inlets (Figure 6-12). Field observations on January 9, 1996 revealed that salinities had returned to normal levels.

As the amount of color and suspended material in the water increases, the depth of appropriate light penetration required to support photosynthesis of submerged aquatic vegetation decreases rapidly. Therefore the introduction of colored, turbid water to the Indian River Lagoon can have severe impacts on the health of submerged aquatic vegetation, especially those located in the deeper areas.

Although the density of submerged aquatic vegetation is naturally low during the winter months, some vegetation is usually present. Field observations on November 9, 1995 showed that nearly all of the submerged aquatic vegetation was absent along established sea grass transects throughout the study area. It is speculated that defoliation resulted, since the transparency of the water was reduced dramatically during the large releases. The potential for the sea grasses to recover depends on the length of time the roots are able to survive under the stressful conditions.

Environmental Issues: St. Lucie Estuary and Indian River Lagoon

The estuarine environment is sensitive to freshwater inflows, and modification of the quality, quantity and timing of these inflows can cause severe stress upon the entire ecosystem. The entire watershed of the St. Lucie Estuary has been extensively modified and increased in size due to agricultural and residential development. Major effects of these man-made alterations are increased drainage, manifested by a lowered groundwater table and dramatic changes in storm water runoff characteristics. Typically, when a watershed is well drained like the St. Lucie Estuary watershed, all three freshwater runoff factors (quality, quantity and timing) are

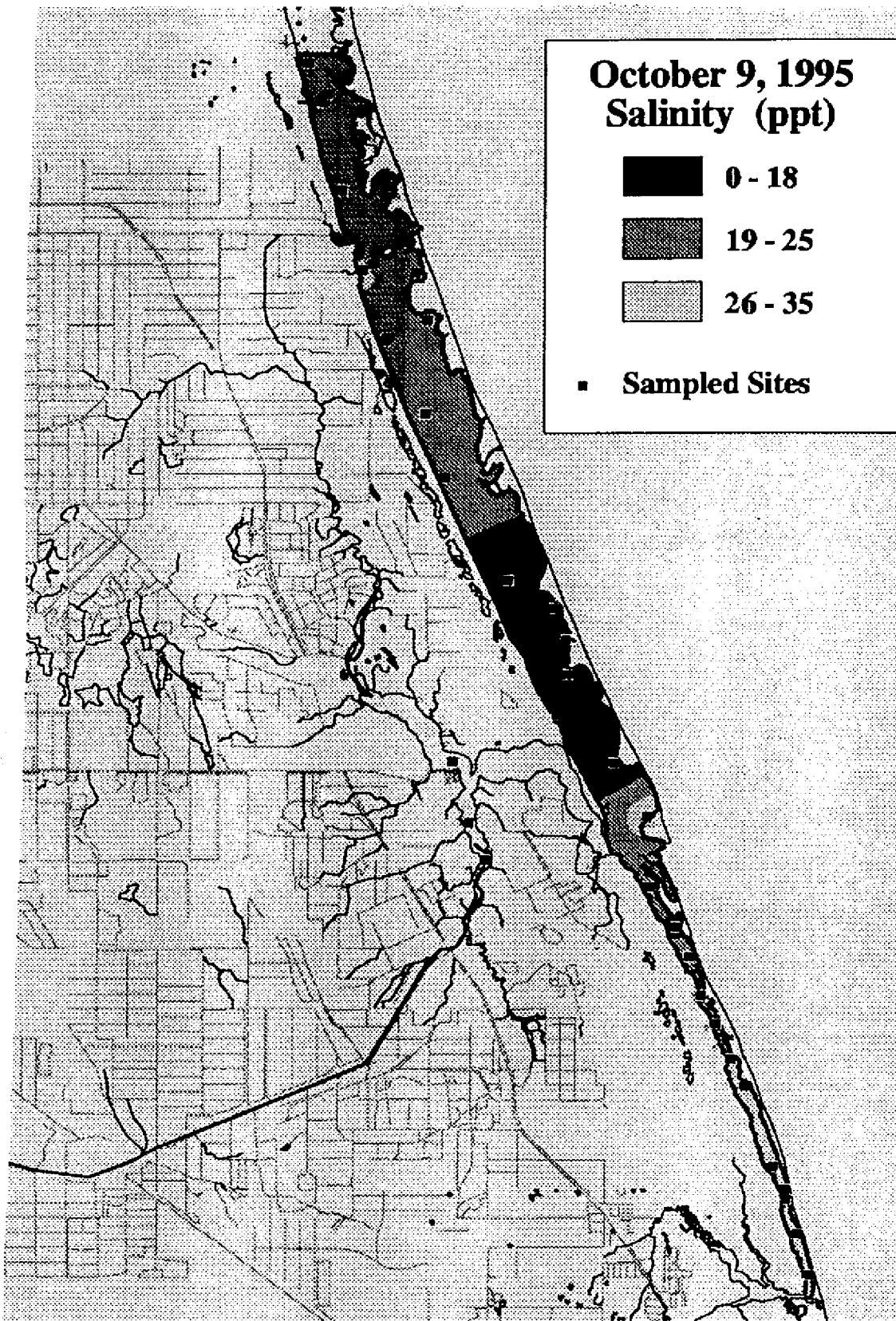


FIGURE 6-11. Salinity distribution in the Indian River Lagoon (November 9, 1995).

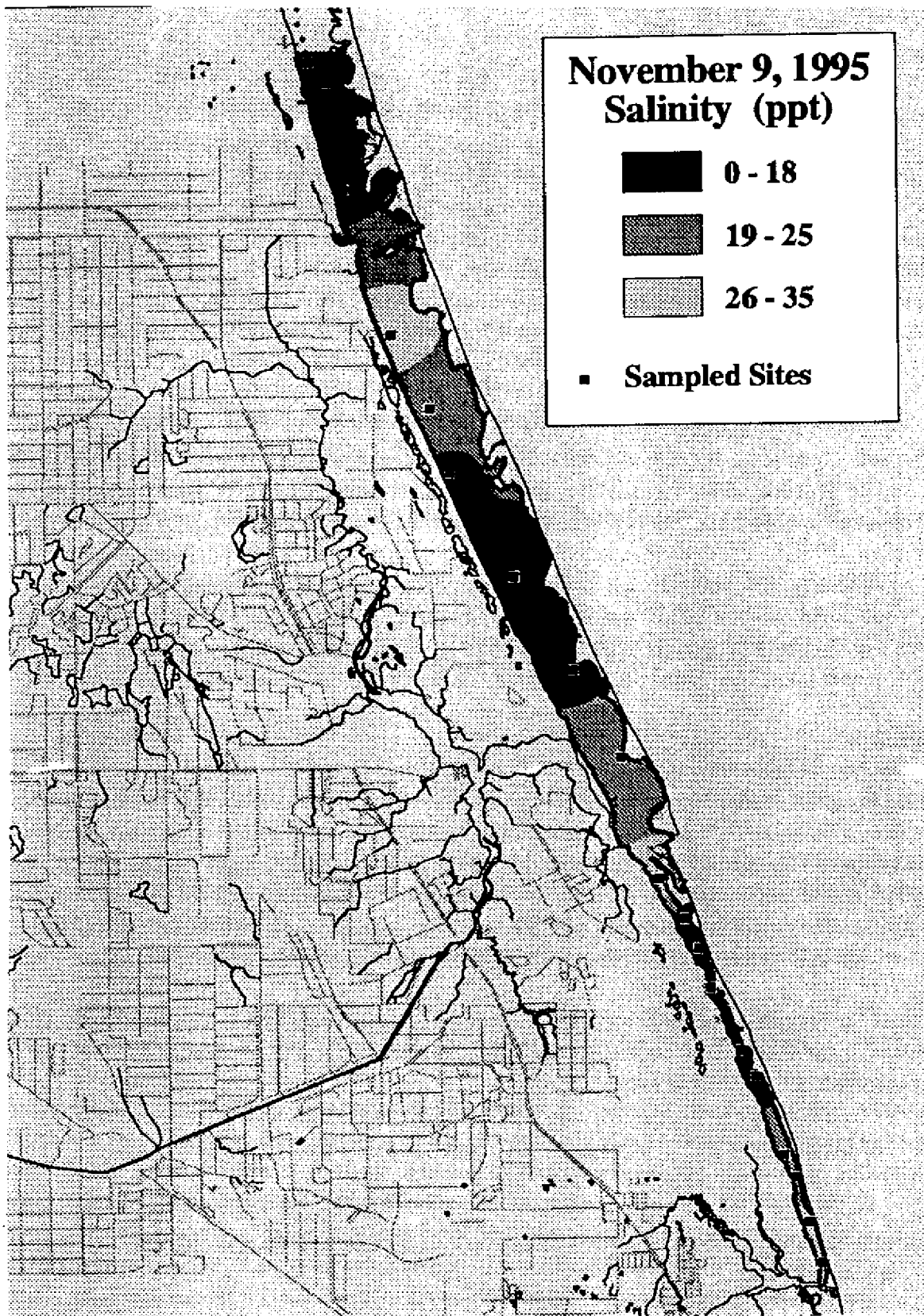


FIGURE 6-12. Salinity distribution in the Indian River Lagoon (November 9, 1995).

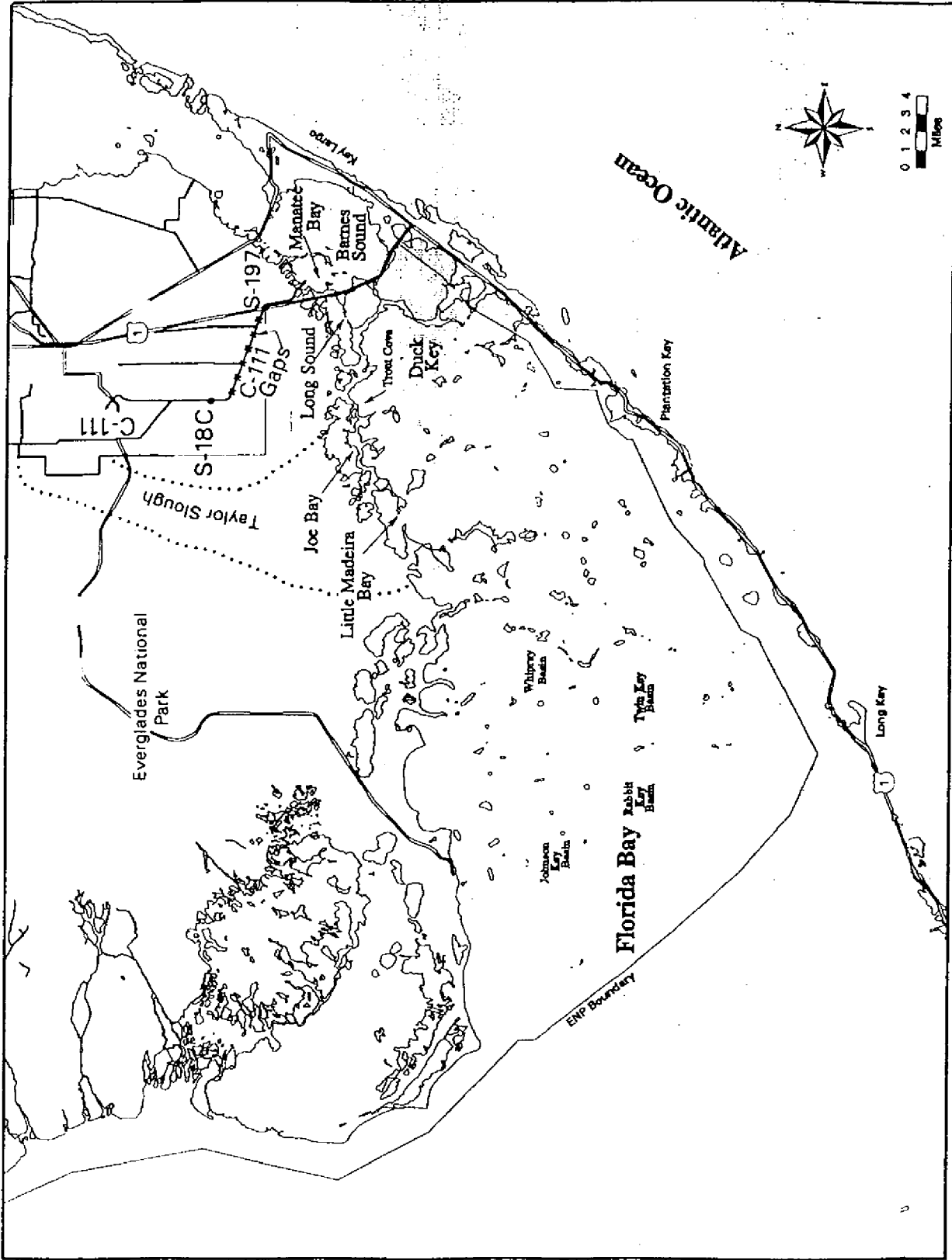


FIGURE 6-13. Florida Bay.

Rainfall and Freshwater Discharge

In Florida Bay, as in other areas of South Florida, very high rainfall occurred during the 1995 wet season. Rainfall during the 1995 water year (November 1994-October 1995) was the highest ever recorded at S-18C and wet season rainfall was the second highest on record at 52 inches (Figure 6-14). Periods of heavy rainfall occurred during June, August, September and October. S-18C had a monthly average rainfall of 9.1 inches during this period. The rainfall pattern at the Joe Bay station in northeastern Florida Bay was similar to that of S-18C, with a monthly average of 7.7 inches in June through September, compared to an average of 9.1 inches at S-18C.

With the record rainfall of 1995, fresh water discharge to the southern Everglades also reached record levels. Fresh water flow past the Taylor Slough bridge during the 1995 wet season was 57,000 acre-feet, the second highest on record. Wet season flow into Taylor Slough has continued to increase since the drought of 1989.

Along with large discharges into Taylor Slough, fresh water flow through lower C-111 reached a record level. It is estimated that over 193,000 acre-feet flowed past S-18C during the 1995 wet season (Figure 6-15) and this quantity greatly exceeded all previous wet season totals. Thus, the absolute amount of water entering Taylor Slough was very high in 1995, and much more water continued to be diverted to the east through C-111.

Water that flowed from the southern part of C-111 (Figure 6-16) generally followed one of two paths: it either flowed out through the C-111 gaps toward Joe Bay and Long Sound, or it flowed through S-197 into Manatee Bay when the S-197 culverts were opened. With high water levels and the potential for flooding that existed in the 1995 wet season, the S-197 culverts were open during 55 days of the 1995 wet season, allowing more than 94,000 acre-feet to flow into Manatee Bay. The number of days and the flow volume were the highest for S-197 since measurements began in 1970. Peak flows of 4700 to 5100 acre-feet per day from S-197 occurred from June 22 to 24, 1995. These rates were only exceeded by flows during June 1992.

Salinity in Manatee Bay and Florida Bay

Salinity decreased in Manatee Bay and Florida Bay during the 1995 wet season as a result of the high rainfall and fresh water discharge volumes. At a station near the southern end of Manatee Bay (near Barnes Sound), salinity dropped from 26 ppt in May 1995 to 15 ppt in October 1995 (Figure 6-17). Salinity at this station has exhibited a pattern of decline since monitoring began in 1991, following the 1989-1990 drought.

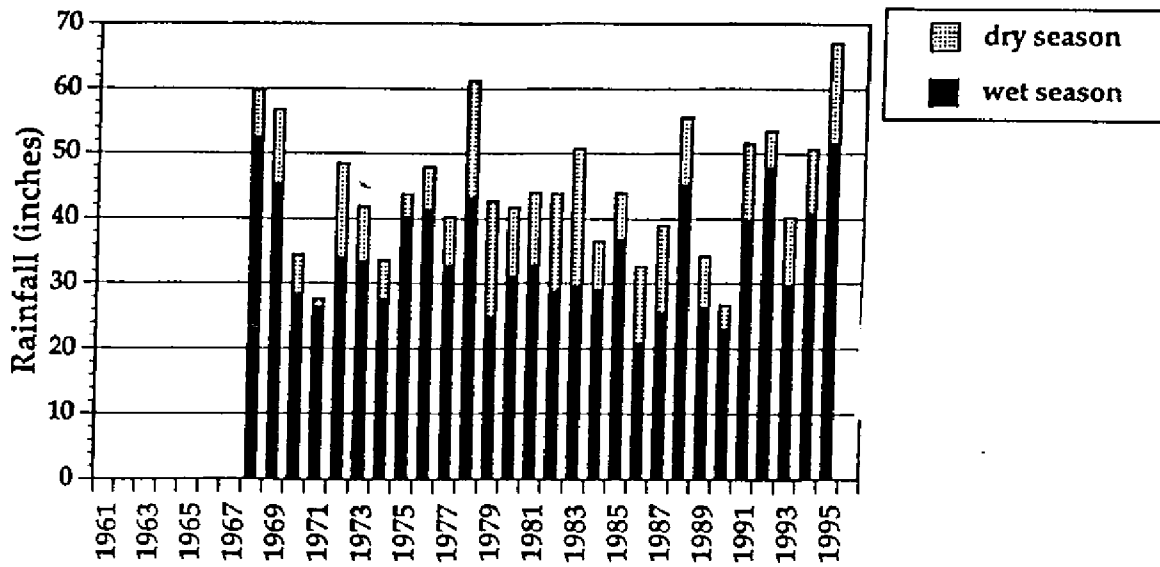


FIGURE 6-14. Rainfall in the Southern Everglades (S-18C).

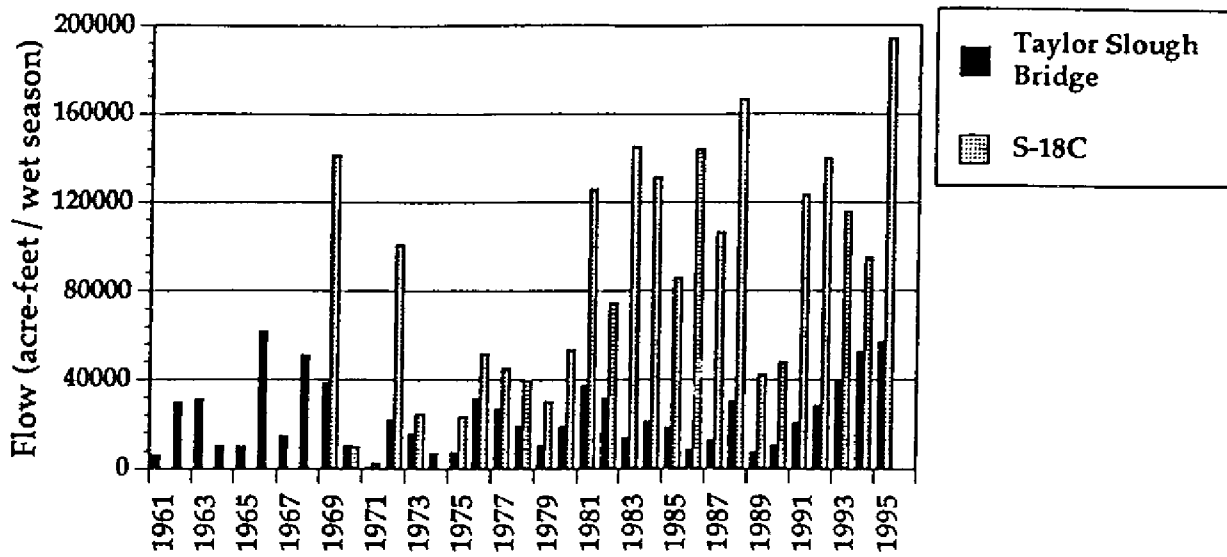


FIGURE 6-15. Water flow in Taylor Slough and Southern C-111.

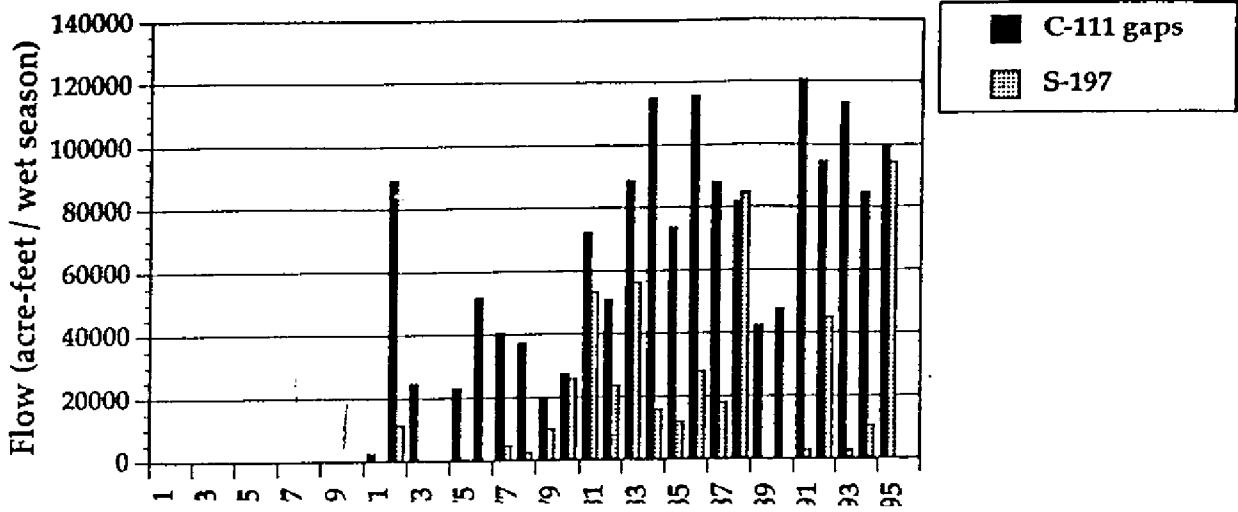


FIGURE 6-16. Water Flow from Southern C-111.

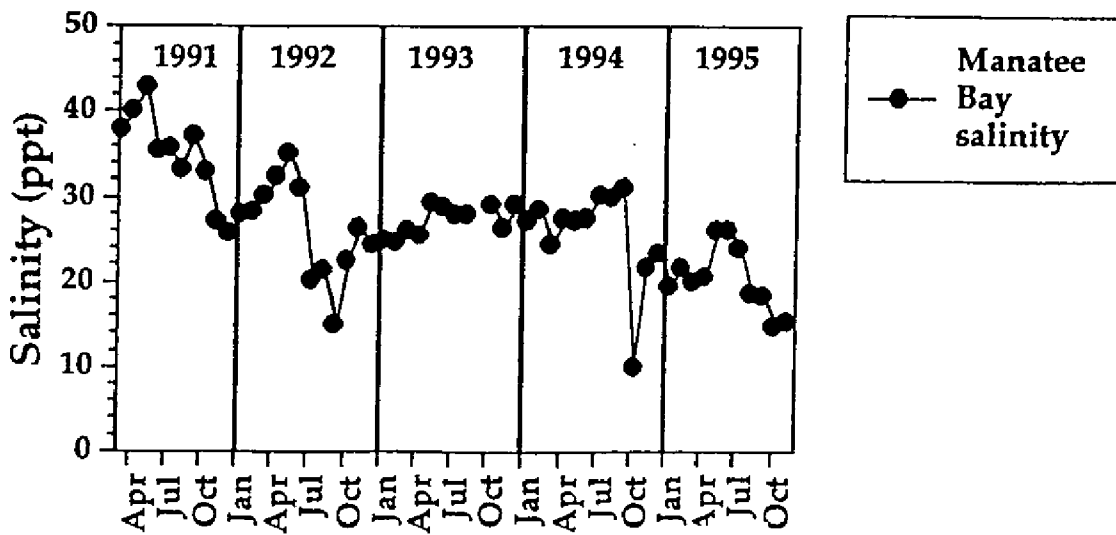


FIGURE 6-17. Salinity in Manatee Bay.

Florida Bay has followed the same general pattern of decreasing salinity since 1991. Salinity time-series data for three Florida Bay stations, Duck Key, Joe Bay, and Whipray Basin, are shown in Figure 6-18. As in Manatee Bay, salinity in Joe Bay followed a regular seasonal pattern of increasing during the dry season and decreasing during the wet season. At the beginning of the 1995 wet season, salinity was 15 ppt, but from August through November 1995, water was nearly fresh in Joe Bay, with 1.5 ppt to 0.2 ppt salinity. Salinity at Duck Key was higher than in Joe Bay, but a record low salinity of 13 ppt was measured in October 1995. Salinity in Whipray Basin followed a different seasonal pattern than is found in the northeastern Bay, with salinity peaking during the summer and reaching its lowest point during the winter. This station is less directly influenced by fresh water runoff from the Everglades than are the northeastern bay stations. Despite this difference, the general pattern of decreasing salinity since 1991 was found in Whipray Basin, with a record low salinity of 20 ppt being measured in November 1995.

Water Quality in Florida Bay

Chlorophyll *a* concentrations at two Florida Bay stations are shown in Figure 6-19, top panel. Chlorophyll *a* in the water is indicative of the concentration of phytoplankton in the water. These data illustrate the absence of phytoplankton blooms in eastern Florida Bay and the occurrence of blooms in central Florida Bay. At Duck Key, chlorophyll concentrations remained below 1 $\mu\text{g}/\text{L}$ during the 1995 wet season. In Whipray Basin, elevated chlorophyll concentrations were first observed in September 1992 and have varied widely since that time. However, during the late 1995 dry season and early 1995 wet season, chlorophyll concentrations did drop to their lowest level since 1992. This trend, which potentially indicated an end to the bay's algal blooms, reversed in October, with high chlorophyll levels once again.

Total phosphorus concentrations at these two Florida Bay stations also reflect marked regional differences within the Bay (Figure 6-19, middle panel). While phosphorus was very low (generally $< 10 \mu\text{g}/\text{L}$) at Duck Key in the eastern bay, Whipray Basin in the central basin has much higher total phosphorus (generally 15 to 40 $\mu\text{g}/\text{L}$). However, total phosphorus concentrations were relatively low in 1995.

Total nitrogen concentrations at these Florida Bay stations show a regional pattern similar to the total phosphorus pattern, with lower nutrient concentrations in the eastern bay than in the central bay (Figure 6-19, bottom panel). However, the absolute value of these concentrations is much higher for nitrogen than for phosphorus in both regions. Total nitrogen concentrations in 1995 were similar to concentrations measured since 1991.

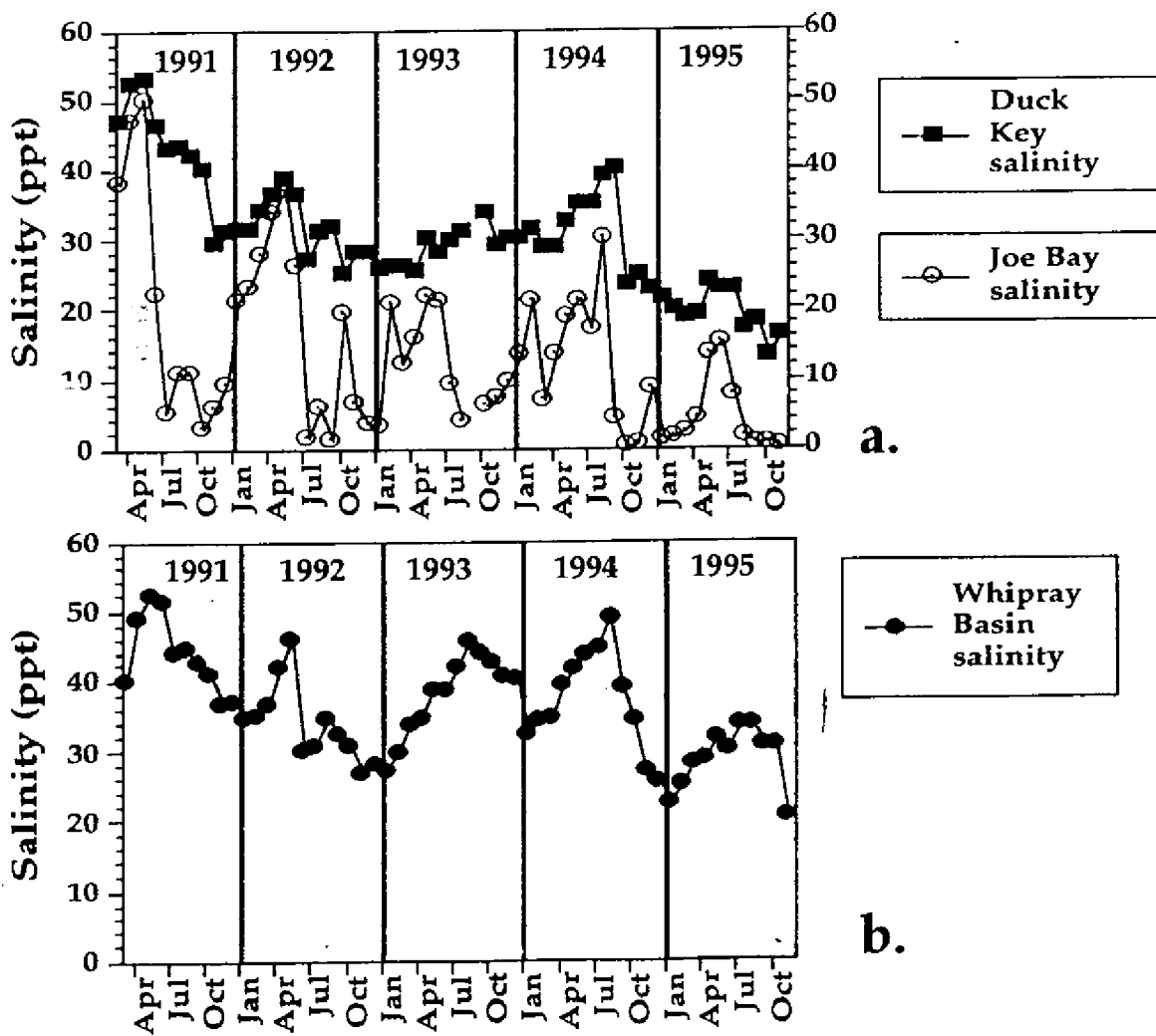


FIGURE 6-18. Salinity in Florida Bay.

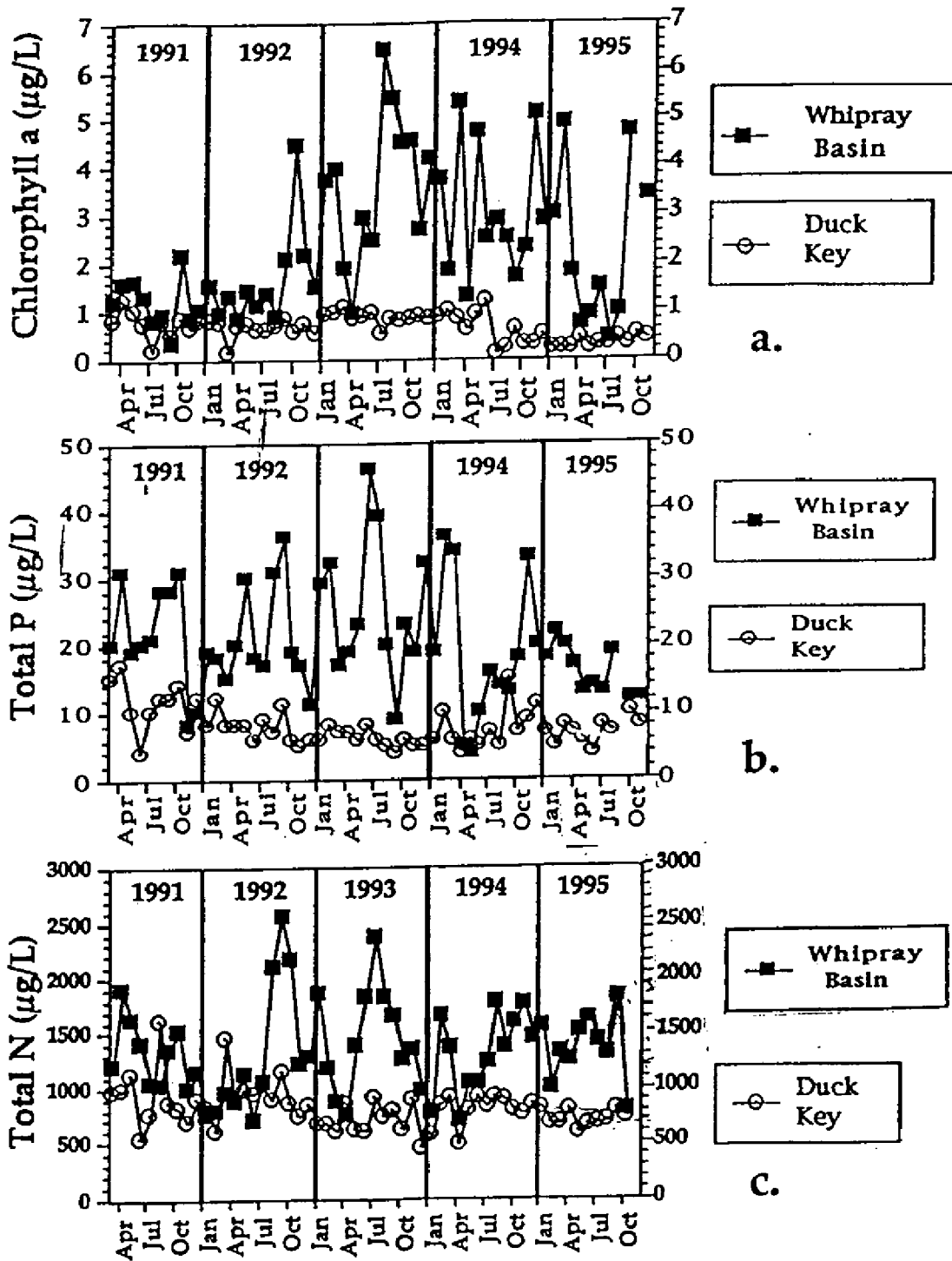


FIGURE 6-19. Water quality in eastern (Duck Key) and central (Whipray Basin) Florida Bay.

Thus, while the inflow of fresh water to Florida Bay during the 1995 wet season reached record levels, there was no dramatic change in the water quality of the bay. While water quality problems (particularly phytoplankton blooms and high turbidity) persist in the central bay, these problems were apparently not aggravated by increased fresh water flow to the bay.

Sea Grass Status

During the past year, FDEP scientists conducted extensive monitoring of sea grasses throughout most of Florida Bay, with over 300 sample sites within 10 basins (personal communication, Dr. M. Durako). Results from this effort showed that *Thalassia* die-off is continuing in western Rabbit Key basin and Johnson Key basin. Furthermore, *Thalassia* was found to be declining in the Twin Key basin. Elsewhere in the bay, little change has occurred; neither further die-off nor recovery was evident for *Thalassia*. Information regarding *Halodule* change is incomplete at this time, but no widespread growth of *Halodule* in die-off areas is evident.

The status of sea grasses along the coast of northeastern Florida Bay and Manatee Bay is being monitored by Dade DERM, with funding from the District and in coordination with the FDEP monitoring program. From October 1993 through September 1995, little change was noted in the abundance or biomass of *Thalassia* in northeastern Florida Bay. This species is the dominant sea grass at 4 of the 6 monitoring sites (Long sound, Trout Cove, the mouth of Little Madeira Bay, and the mouth of the Taylor River), with mean abundances of 210 to 410 shoots/m² at these sites. As expected, greater changes were found for *Halodule* and *Ruppia*, which dominate the two remaining sites (Joe Bay and Highway Creek). In Joe Bay, both species decreased from 1994 to 1995, while in Highway Creek, *Halodule* decreased and *Ruppia* increased over this time.

The status of sea grasses in Manatee Bay and Barnes Sound is also of concern, given the large releases of water from S197 during the 1995 wet season. These releases appear to have had little impact on these sea grasses. Note, however, that evidence of negative effects of fall and summer releases may not be evident until this spring. Two sites in Manatee Bay (M1 in the northeastern part, and M3 at the southern channel to Barnes Sound) were dominated by *Thalassia*, averaging 380 shoots/m² and 250 shoots/m², respectively, over the past 6 years. These populations have changed little over this time. The third site in Manatee Bay (M2) is near the outlet of C-111 and is dominated by *Halodule*, with mean abundance of 1650 shoots/m² (Figure 6-20a). This population fluctuated seasonally, with wet season peaks from 1989 to the present. A peak mean abundance of 3250 shoots/m² population was measured during the 1993 wet season. A decline did occur during the past year, but in December 1995, there were still 1820 shoots/m².

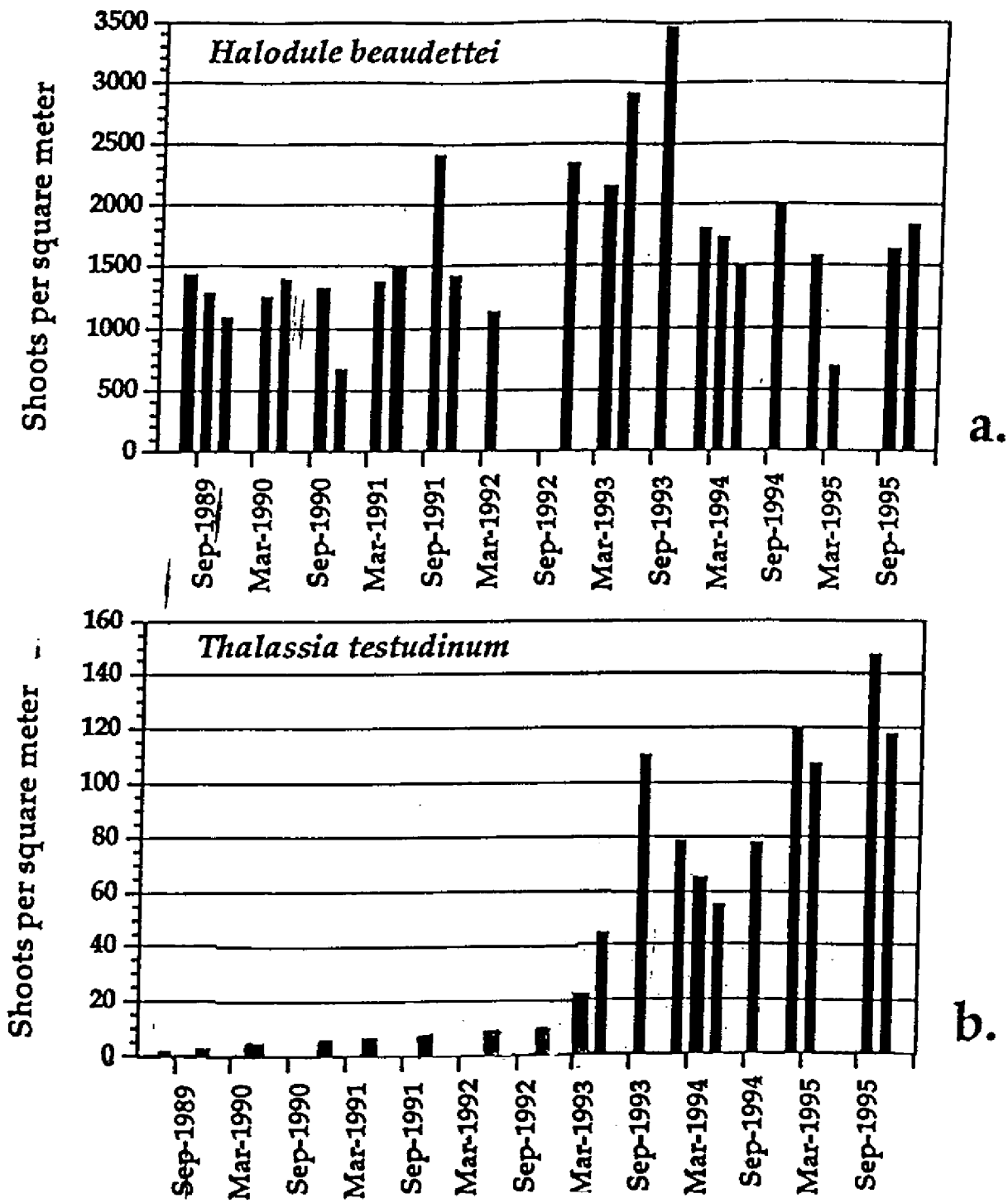


FIGURE 6-20. Sea Grass Abundance in Manatee Bay near C-111.

Thalassia shoot abundance at Manatee Bay station M2, near the outlet of C-111, increased slightly during the 1995 wet season, from a mean of 107 shoots/m² in March 1995 to 147 shoots/m² in September 1995 (Figure 6-20b). *Thalassia* at this station was quite patchy, with almost all of the shoots occurring at only one of three fixed plots. Nevertheless, a clear trend has been observed at M2, with the growth of *Thalassia* from near zero abundance in 1989 to current levels. Low abundance in 1989 may have been caused by the large releases of water from S197 that occurred in 1988 (personal communication, D. Haunert); following this discharge, *Thalassia* mortality was qualitatively observed.

Conclusions

1. Unusually high rainfall during 1995 resulted in record levels for freshwater inflows and discharges into Florida Bay. Rainfall during the 1995 water year was the highest ever recorded at S-18C and wet season rainfall was the second highest on record. The fresh water which flowed past the Taylor Slough bridge during the wet season was the second highest on record and freshwater discharges through the lower C-111 and the S-197 culverts reached record levels.
2. Salinity continued the general pattern of decline it has exhibited since 1991, reaching record lows in Joe Bay, Duck Key, and Whipray Basin.
3. Phytoplankton blooms and high turbidity persist in the central bay, but the increased inflow of fresh water into the bay does not appear to have aggravated the water quality problems.
4. The effects of the high fresh water inflows on sea grasses varied depending upon location and species. In the northeastern portion of the bay little change was noted in the abundance or biomass of *Thalassia*, while greater changes occurred with *Halodule* and *Ruppia*. The releases of water from S197 have had little impact on sea grasses in Manatee Bay and Barnes Sound.

CHAPTER 7

WATER QUALITY CONDITIONS

ANALYSIS OF WATER QUALITY

A wet year, such as 1995, can impact water quality by moving nutrients and sediments that have accumulated through the water conveyance system. As a result, both concentrations and loads tend to be higher than those expected during a year with average rainfall. If rainfall intensities are such that a lot of sediment materials are not dislodged and transported with the storm runoff, resulting loads may be high, but the overall concentration of nutrients will be low due to dilution by the relatively pure rainwater.

In this section, time series graphs are presented for total phosphorus (TP), total nitrogen (TN), and total suspended solids (TSS), for all structures where sufficient data have been collected for interpretation of water quality trends. Each graph is identified with a structure name or location. All time series graphs are in monthly time increments to show seasonality and major storms. Each graph contains data for the period of record to provide an historical perspective.

For all structures, three groups of graphs are provided. The "a" time series plots for total phosphorous (TP) load (metric tons) and flow (cubic meters per day) are designated by a generic caption of "xxxTPC.mth," where xxx is a specified station name. The "b" time series plots total nitrogen (TN) and total suspended solid (TSS) load (metric tons), and have the generic caption of "xxx.lod". At sites where TSS data are not available, a dotted line is plotted across the graph at 0. The "c" time series plots TP and TN concentration (mg/L) and total nitrogen concentration (mg/L) are labeled with the generic caption of "xxx.cnc". At sites where the 1995 data did not document any notable deviation in loads or concentrations from the historical record, graphs "b" or "c" are not included in the report.

Time series plots depict monthly historical flow through the structures and reflect the material load of P, TN and TSS. Displaying flow, loading and concentration data allows the reader to interpret water quality observed at a particular location. Material load is calculated by the flow volume multiplied by the material concentration in that volume. It is important to note that monthly concentrations are flow weighted values and that TSS were not measured at all structures.

KISSIMMEE RIVER WATER QUALITY

The chain of lakes north of the Kissimmee River are the headwaters of the Everglades watershed. S65 is the first major structure that controls flow from the headwater, however, flow and material concentrations are measured at five additional structures downstream. In this report, we include graphics for three of the five structures, as well as for two structures along the flow from Lake Istokpoga. Additional water from surrounding improved pastures join the flow at these and other structures. Most of the water and material passing through these structures eventually flows into Lake Okeechobee.

Due to the high volume of rain which fell during 1995, the total flow volume at most structures was the highest it has been in over 10 years with the exceptions of S65C, which is located in the middle section of the Kissimmee River valley, and S154, located about 5 miles northwest of Lake Okeechobee. In most cases, high material loads in 1995 can be directly attributed to high flow volumes. At structure S65, the increase of P loads was greater than the increase of flow volume (Figure 7-1) which indicates that some movement of P from the improved pastures occurred in the headwater area. However, TN and TSS (Figure 7-2) did not show the same increase relative to historical records. These observations are consistent with the concentration data shown in Figure 7-3.

The recorded flow and loads through S65C were well within the range of values seen in earlier years (Figure 7-4). The TP and TN became somewhat diluted at S65E due to the heavy rains, but the loads remained high (Figures 7-5 and 7-6); no data were available for total suspended solids. Relatively high TN loads and concentrations were recorded at several on the Kissimmee River. The large water volume out of Lake Istokpoga through structures S68 and S84 (Figures 7-7 and 7-10) carried very high loads of nitrogen (Figures 7-8 and 7-11). However, the loads for TP and TSS through these structures were within the range of values commonly seen over the last 10 years. Concentrations (Figures 7-9 and 7-12) reflect relatively greater amounts of nitrogen than phosphorus in 1995, although recorded concentrations are not out of the ordinary for these structures. At S154 neither TP nor TN loads were not very high compared to historical load (Figures 7-13 and 7-14). Total suspended solids was not recorded at S154.

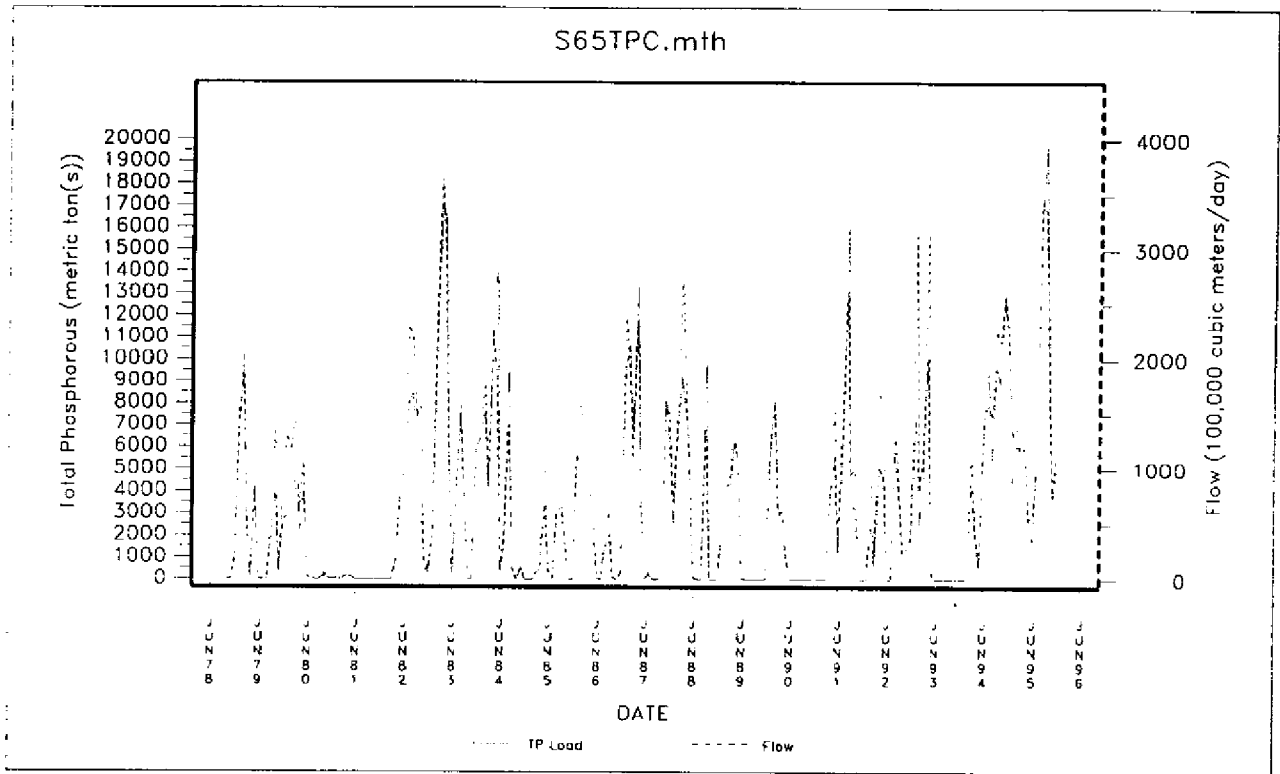


FIGURE 7-1. Historical Monthly Total Phosphorus Load and Water Flow at S65.

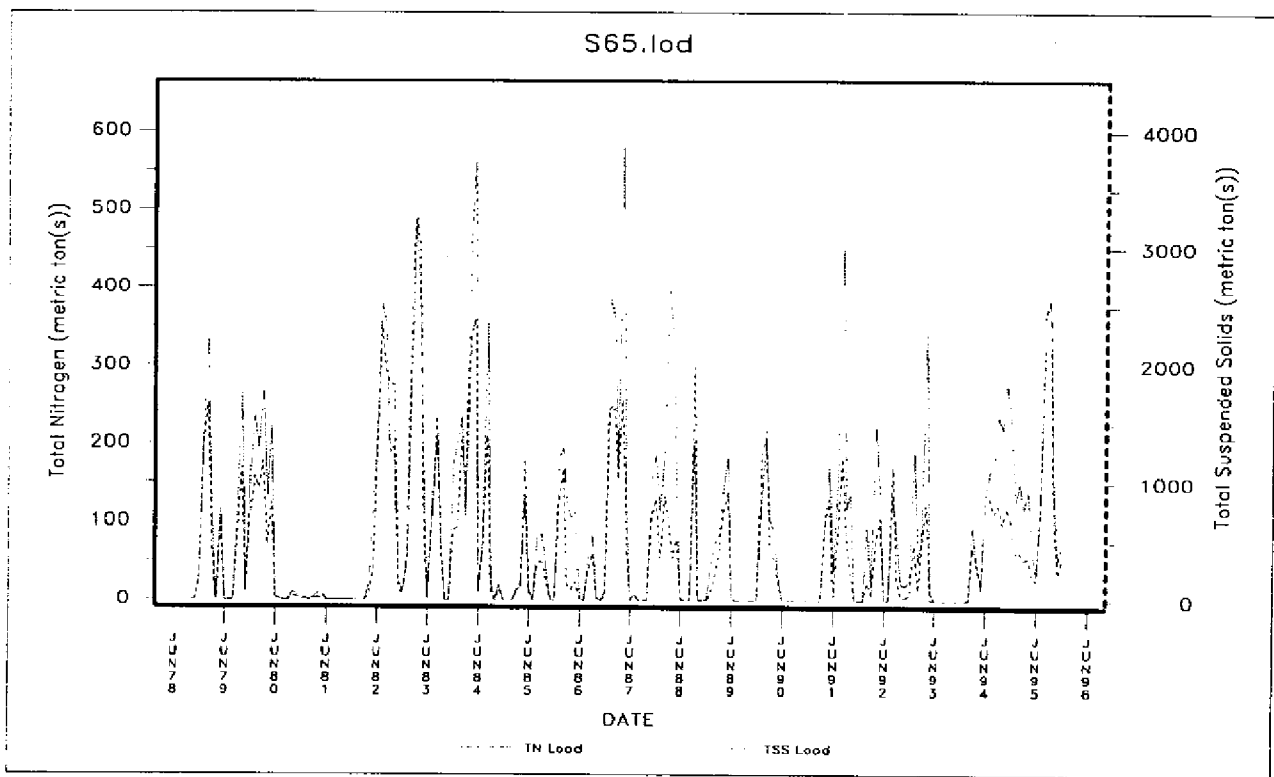


FIGURE 7-2. Historical Monthly Total Nitrogen and Total Suspended Solids at S65.

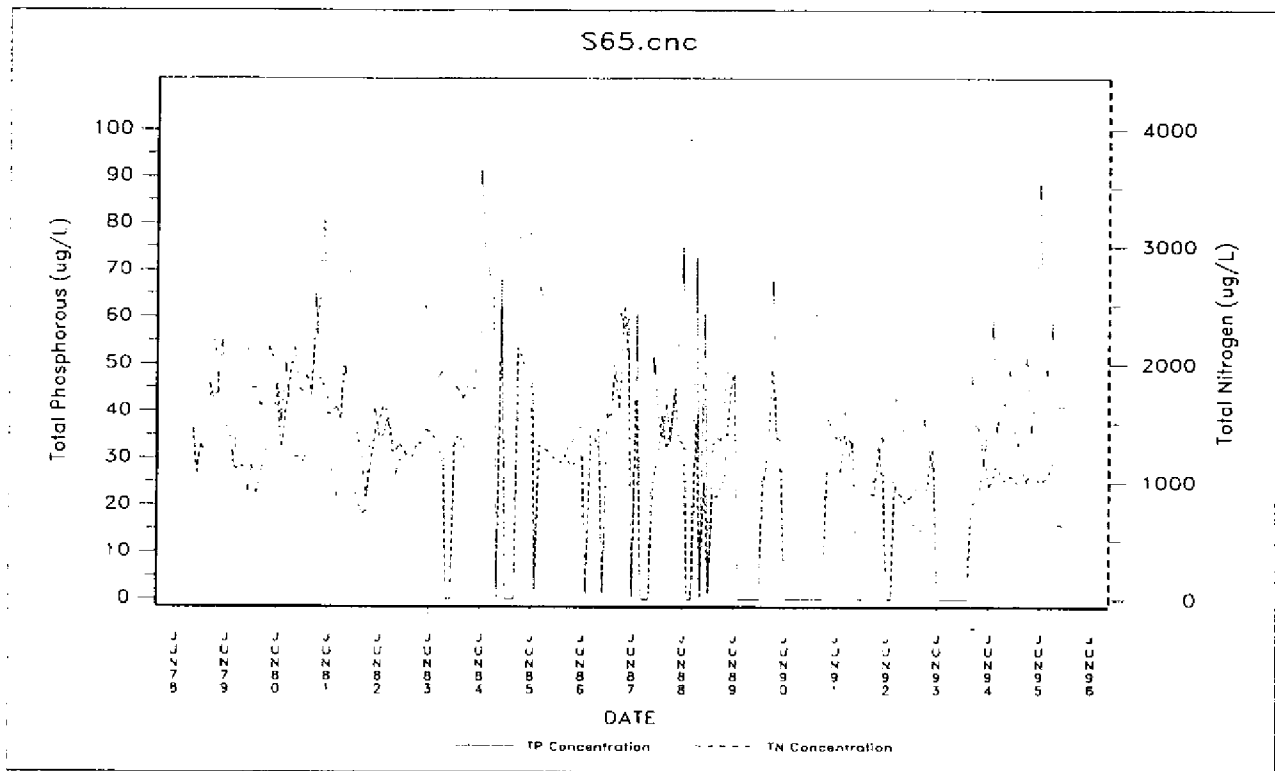


FIGURE 7-3. Historical Monthly Total Phosphorus and Total Nitrogen Concentrations at S65.

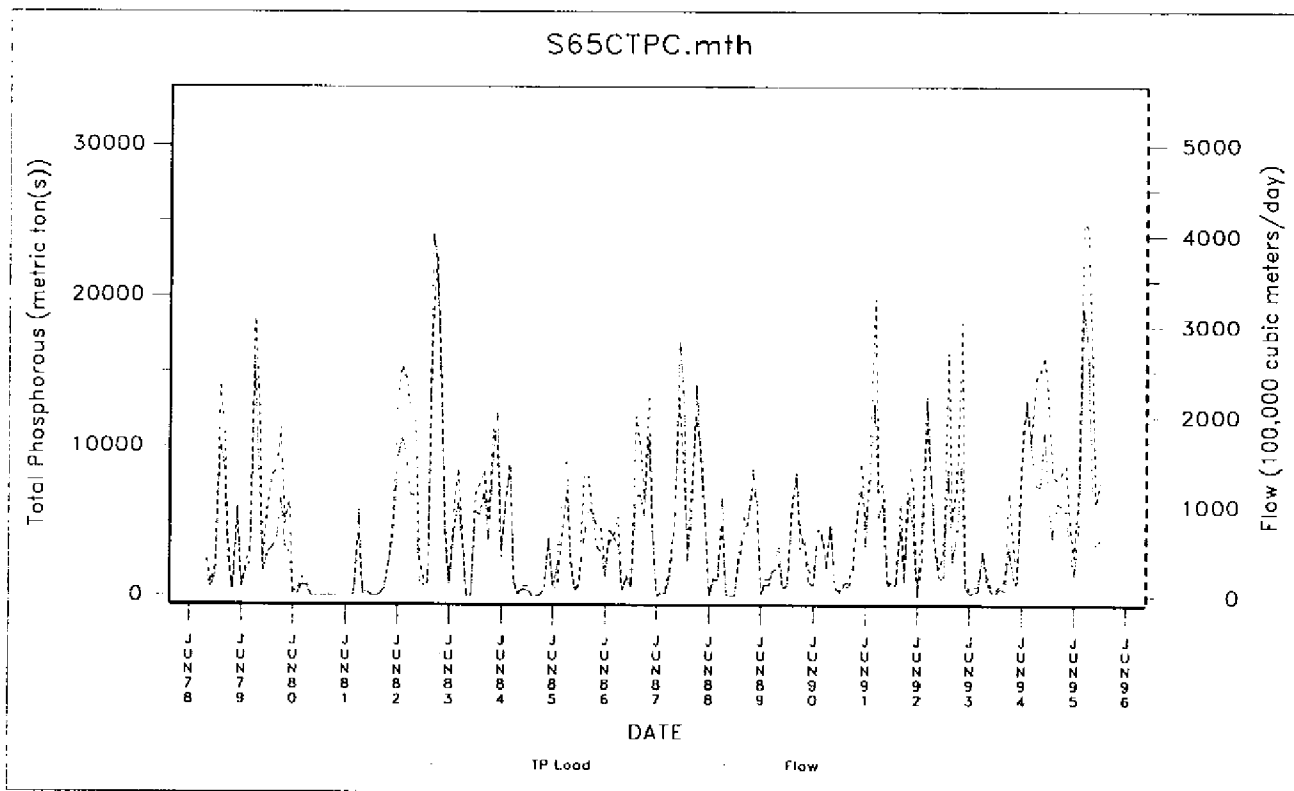


FIGURE 7-4. Historical Monthly Total Phosphorus Load and Water Flow at S65C.

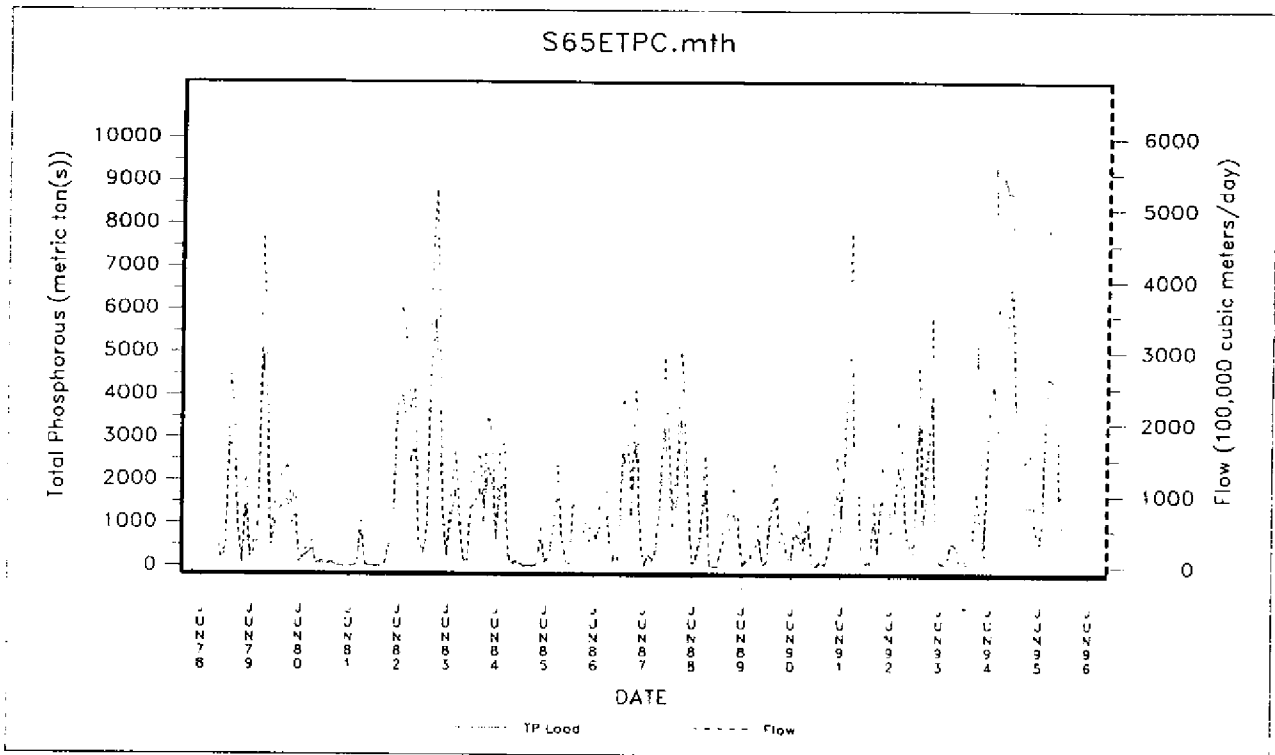


FIGURE 7-5. Historical Monthly Total Phosphorus Load and Water Flow at S65E.

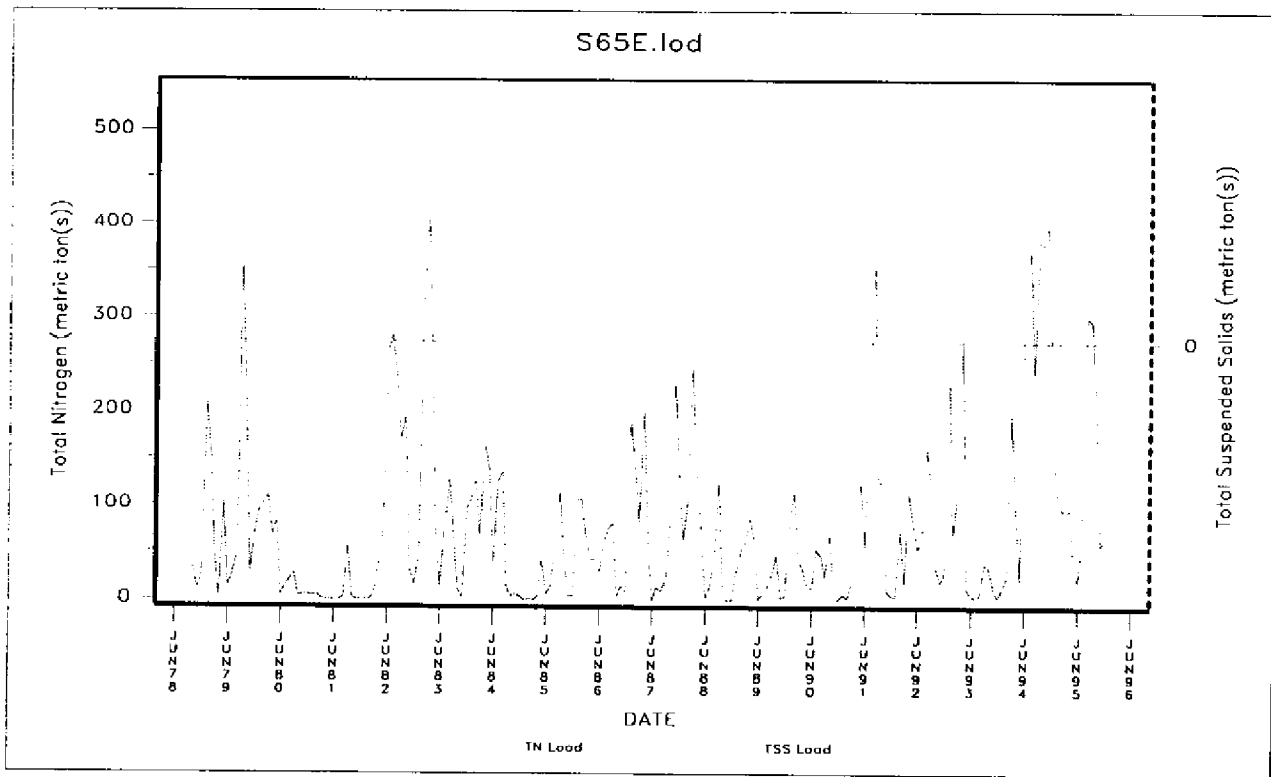


FIGURE 7-6. Historical Monthly Total Nitrogen and Total Suspended Solids at S65E.

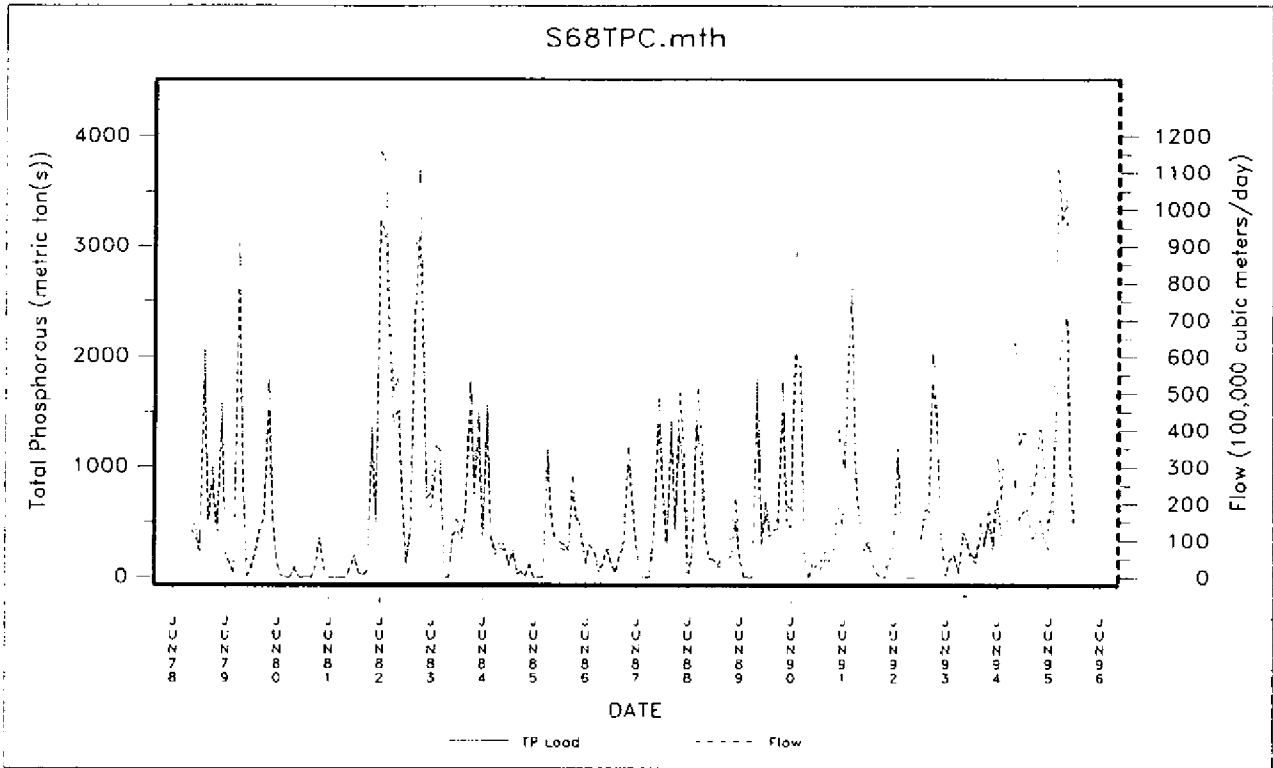


FIGURE 7-7. Historical Monthly Total Phosphorus Load and Water Flow at S68.

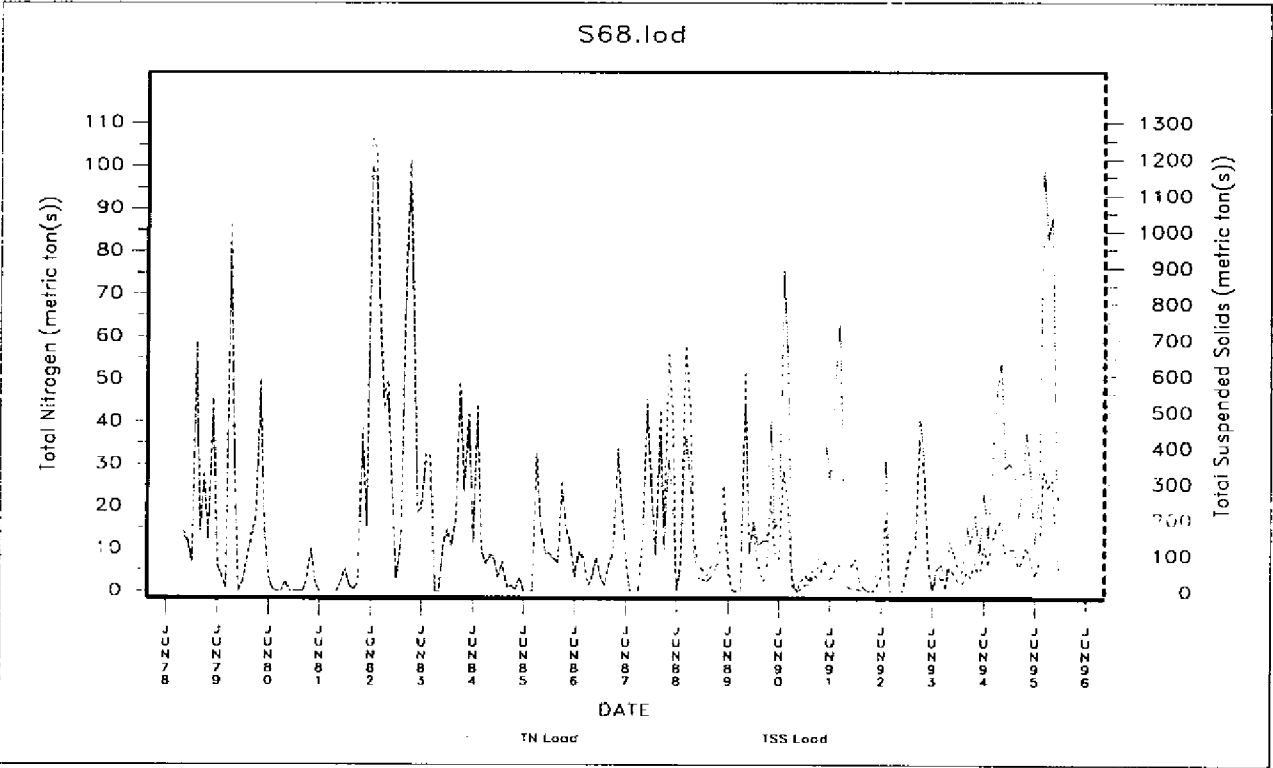


FIGURE 7-8. Historical Monthly Total Nitrogen and Total Suspended solids at S68.

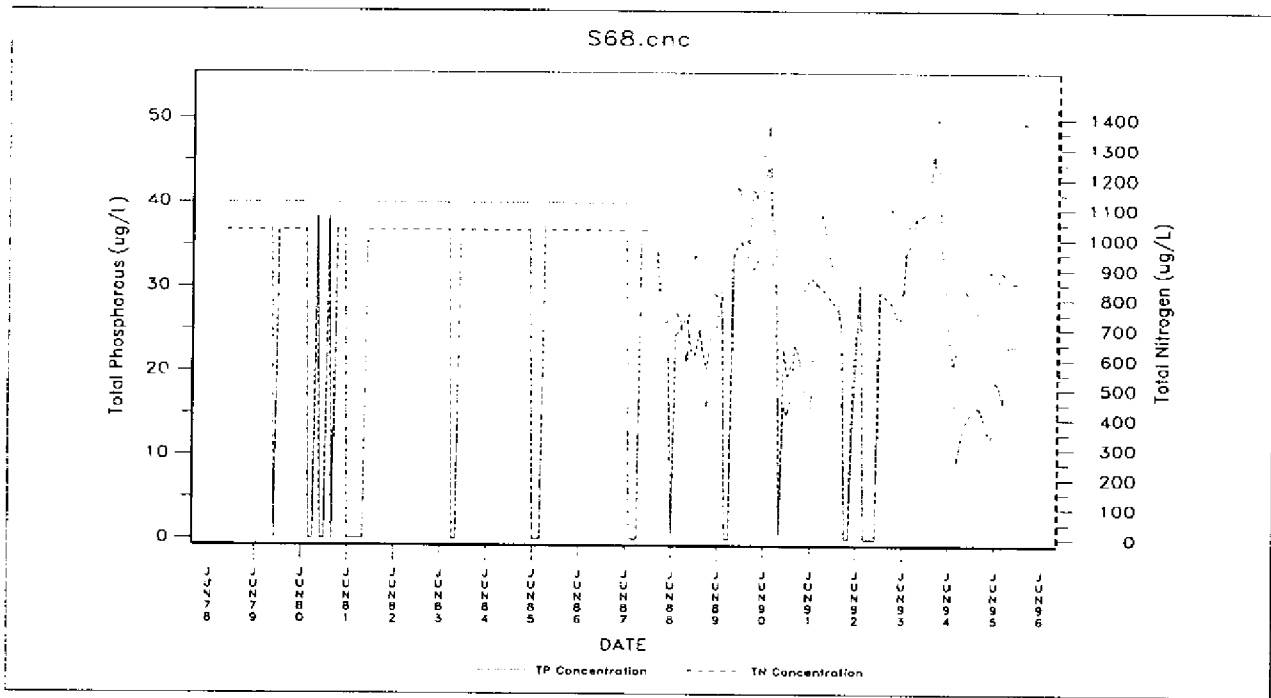


FIGURE 7-9. Historical Monthly Total Phosphorus and Total Nitrogen Concentrations at S68.

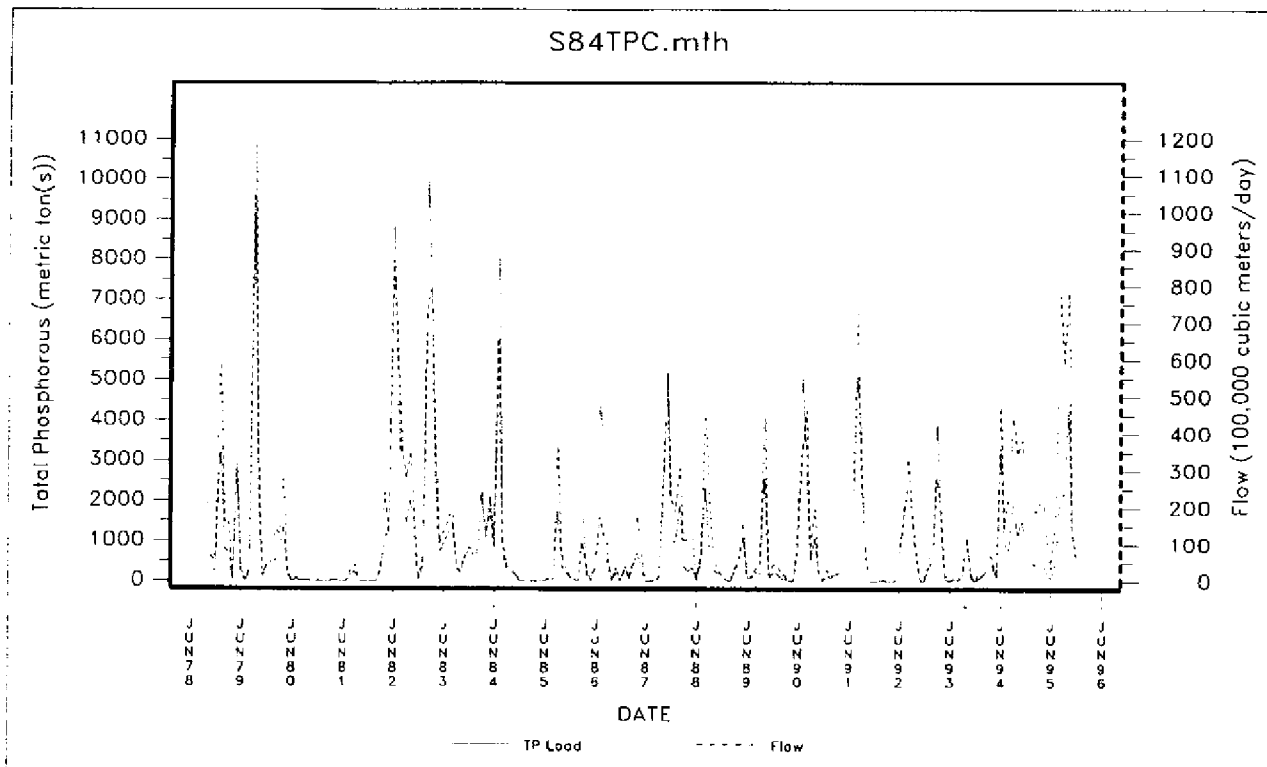


FIGURE 7-10. Historical Monthly Total Phosphorus Load and Water Flow at S84.

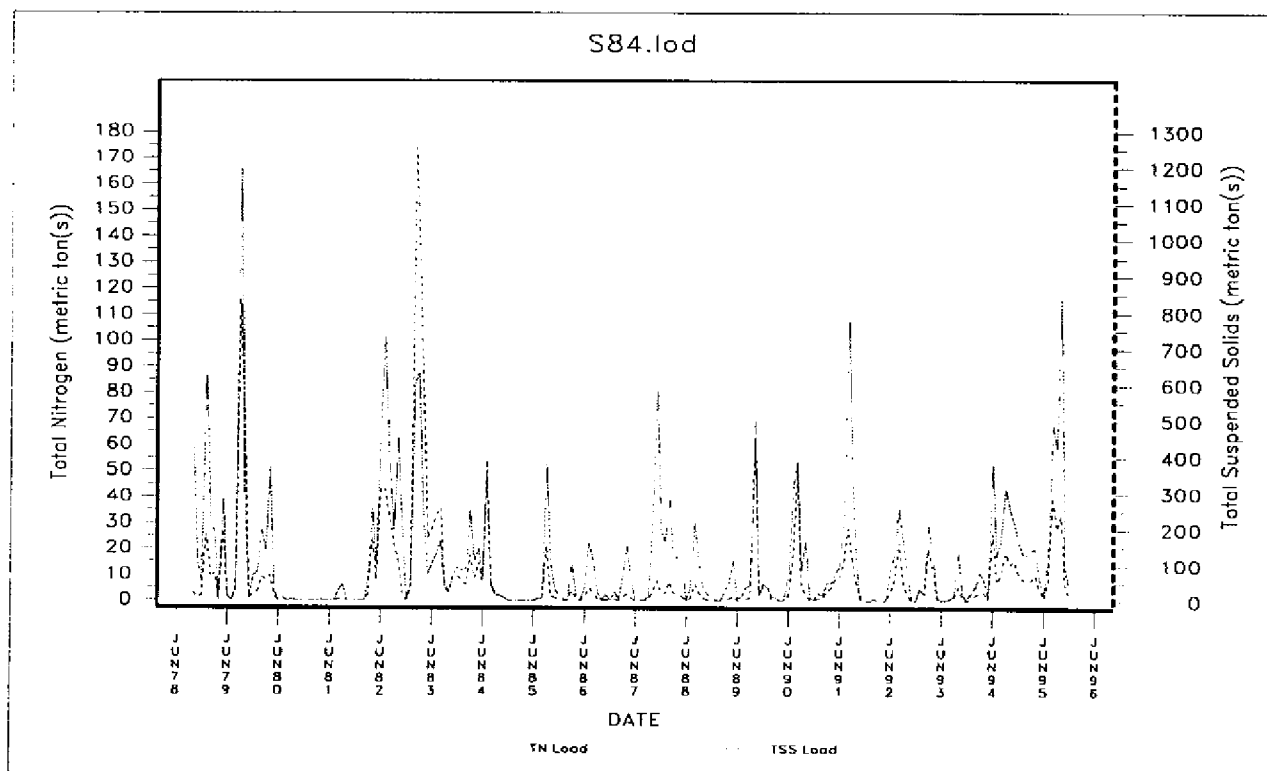


FIGURE 7-11. Historical Monthly total Nitrogen and Total suspended Solids at S84.

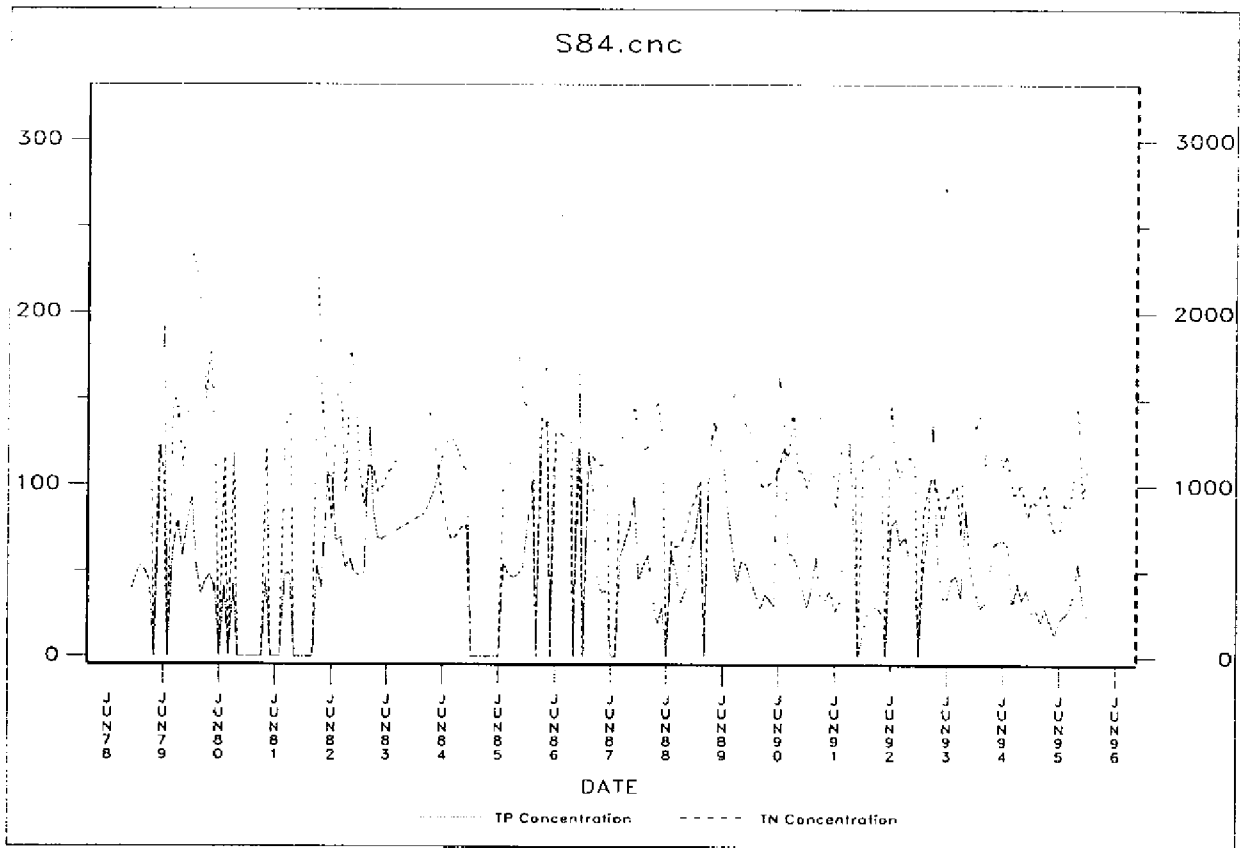


FIGURE 7-12. Historical Monthly Total Phosphorus and Total Nitrogen Concentrations at S84.

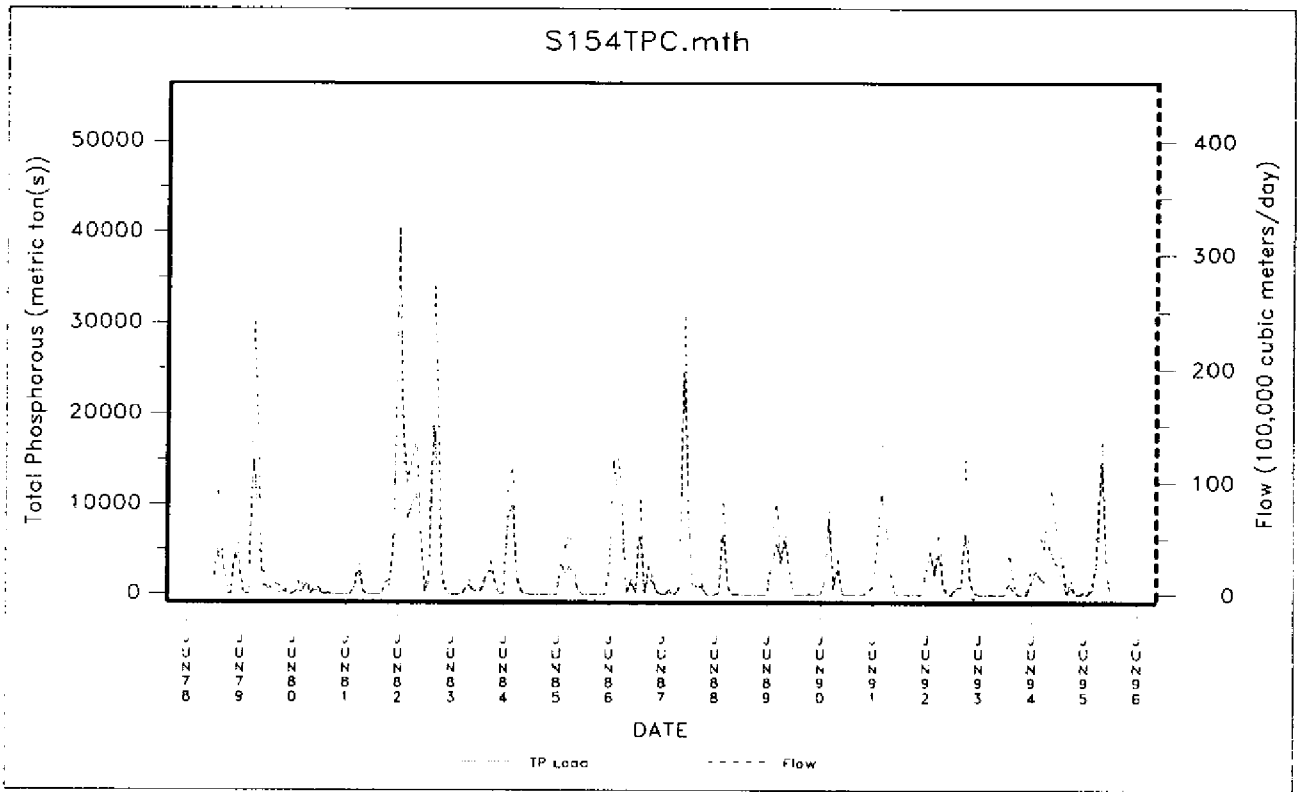


FIGURE 7-13. Historical Monthly Total Phosphorus Load and Water Flow at S154.

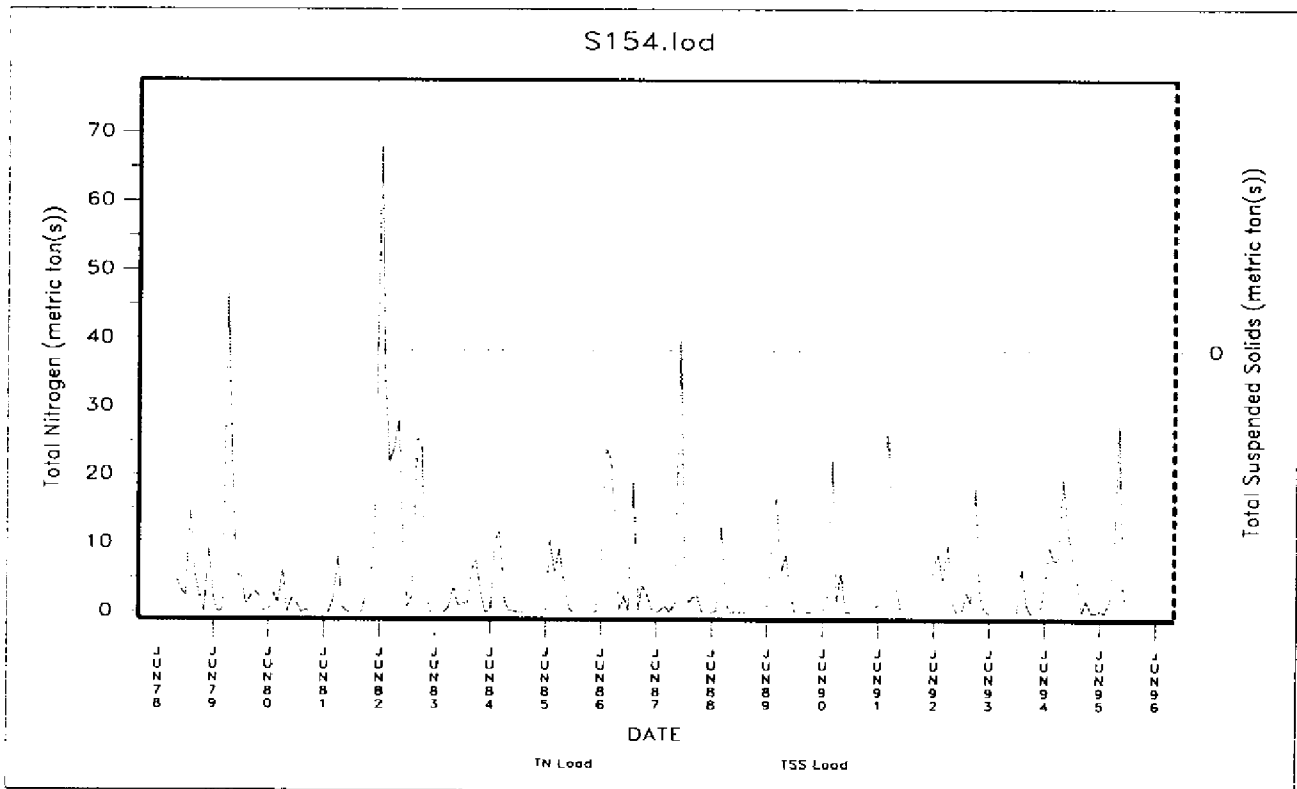


FIGURE 7-14. Historical Monthly Total Nitrogen and Total Suspended Solids at S154.

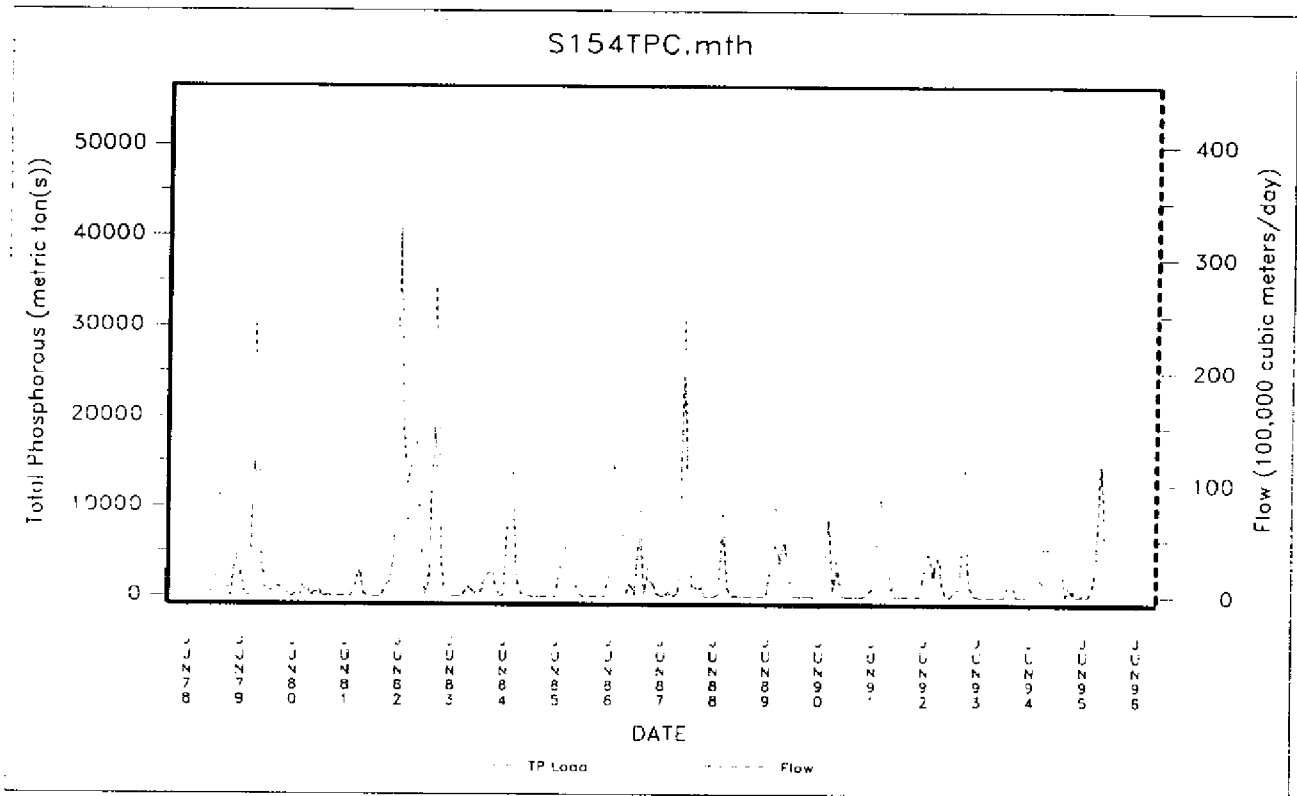


FIGURE 7-13. Historical Monthly Total Phosphorus Load and Water Flow at S154.

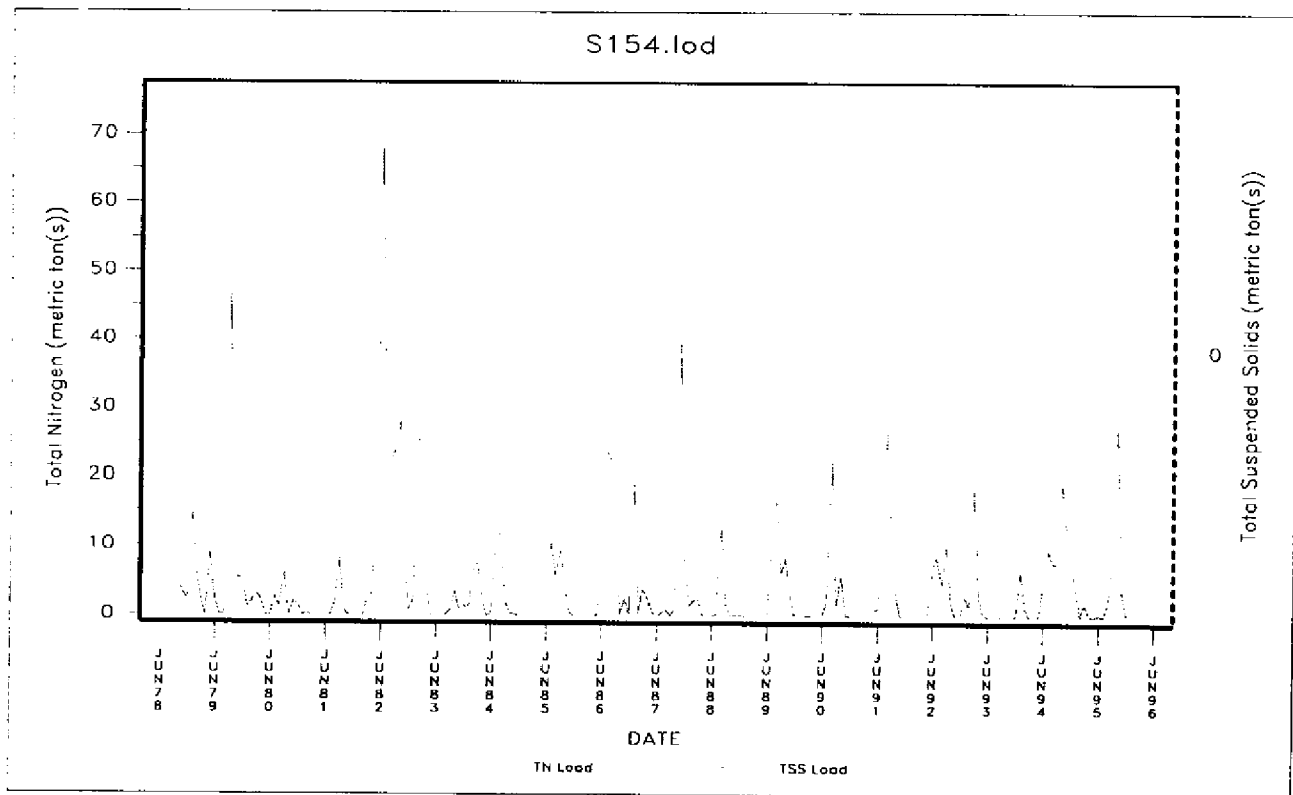


FIGURE 7-14. Historical Monthly Total Nitrogen and Total Suspended Solids at S154.

LAKE OKEECHOBEE WATER QUALITY

Many of the figures in this section are routinely reported every three months in the District's Water Quality Conditions Report. For this report, data from the Water Quality Conditions quarterly report up through September 1995 are included. Provisional data have been used to update the dataset through the end of December 1995.

Algal chlorophyll a values from samples collected in the months of October through December 1995 are shown in Figures 7-15, 7-16, and 7-17. A total of 71 chlorophyll samples are included in the summary of this three-month period; values displayed in the figures are 14, 25, and 32, respectively. This variation in the numbers of data points reflects normal seasonal changes in sampling frequency and location, and samples missed due to weather conditions. These chlorophyll a maps are generated using the Kriging method, a process which involves regionalizing and smoothing the point data.

Data collected during this three-month period indicates that moderate bloom conditions (over 40 ppb, parts per billion chlorophyll a) were present at 29 of 71 sampled sites. However no concentration reported was over 60 ppb, a level corresponding to a dense algal bloom. All told, the frequency of algal blooms in Lake Okeechobee was not unusually high during 1995 in comparison to other recent years.

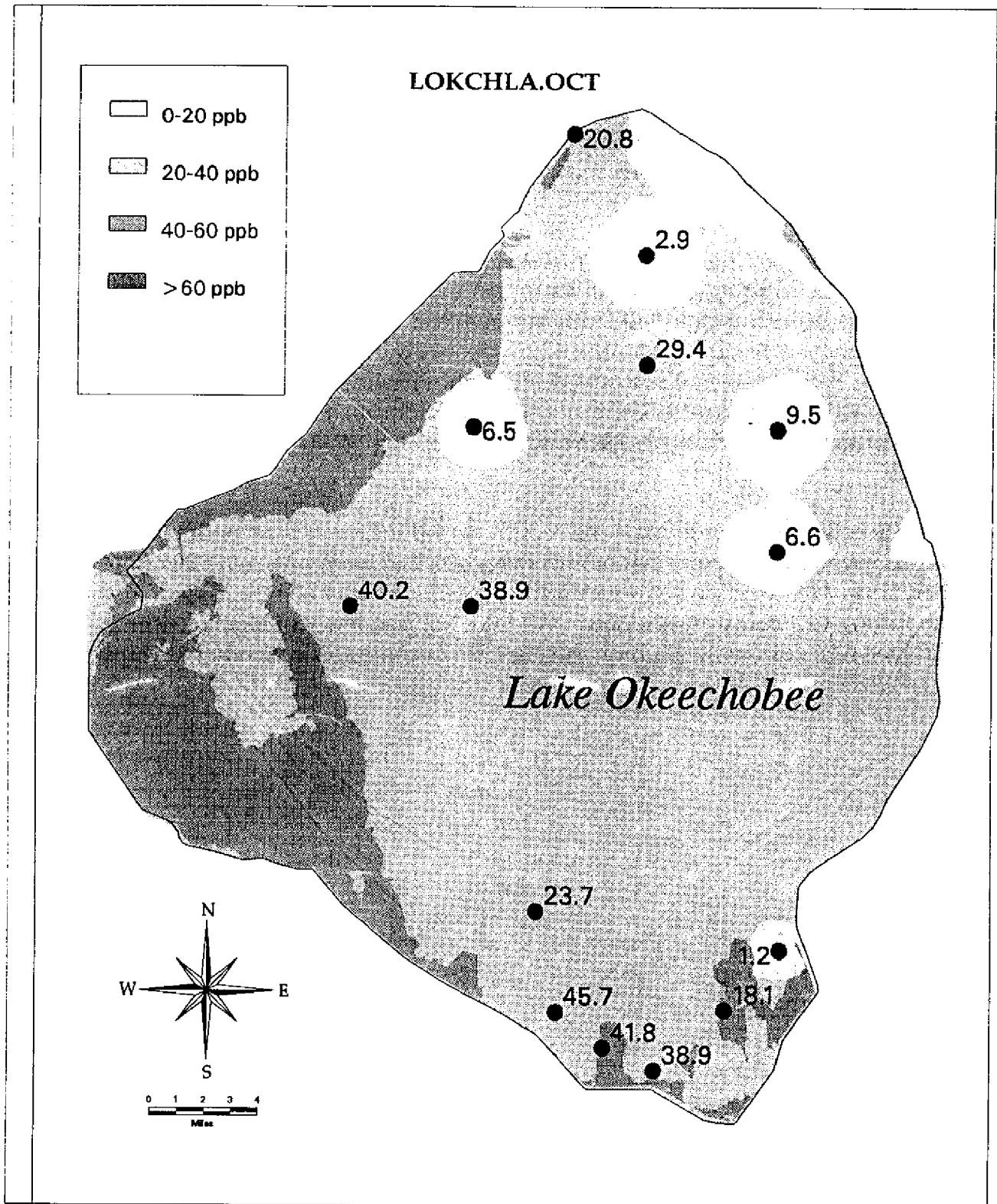


FIGURE 7-15. Lake Okeechobee Chlorophyll a Concentration (ppb) for October 1995.

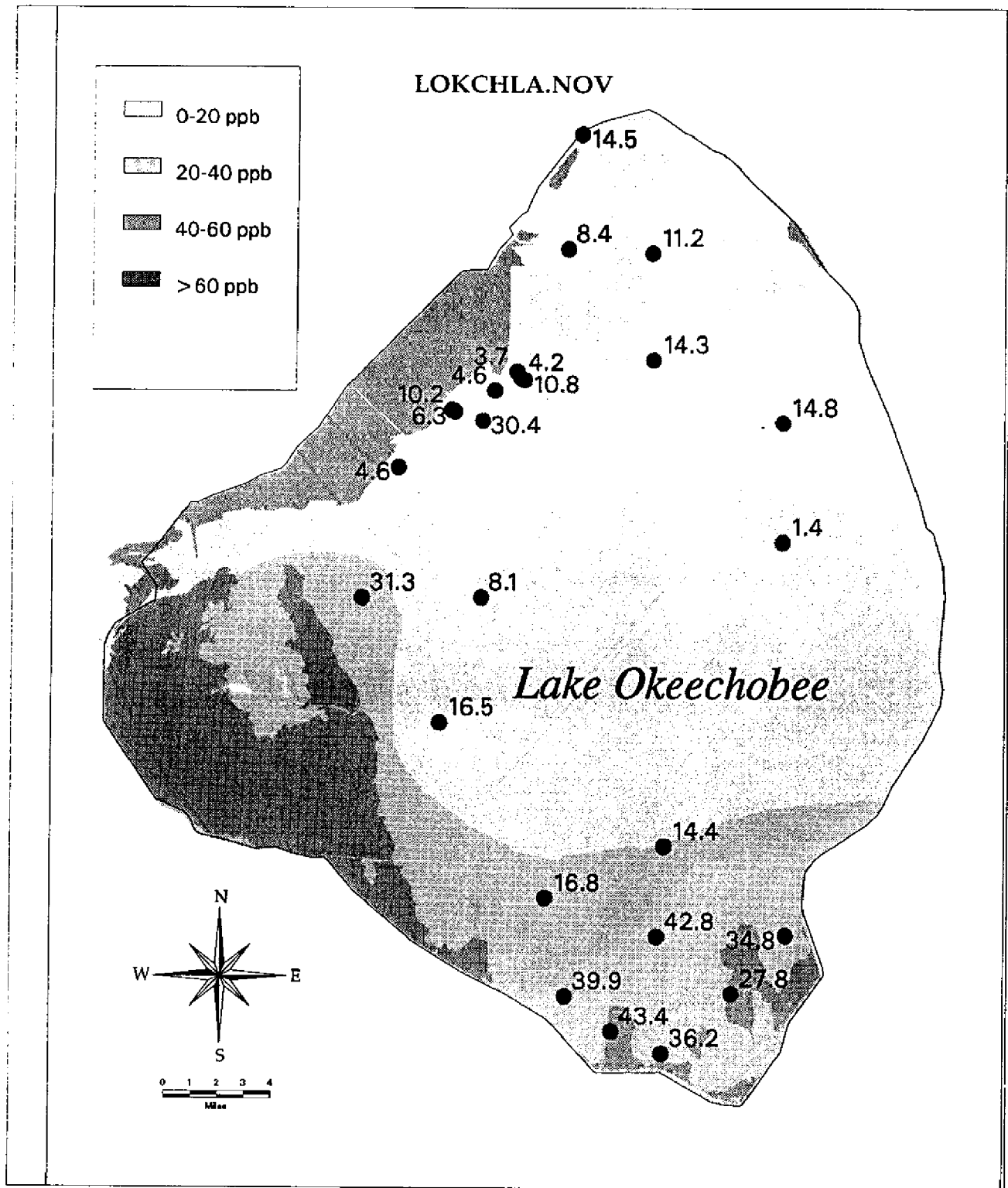


FIGURE 7-16. Lake Okeechobee Chlorophyll a Concentration (ppb) for November 1995.

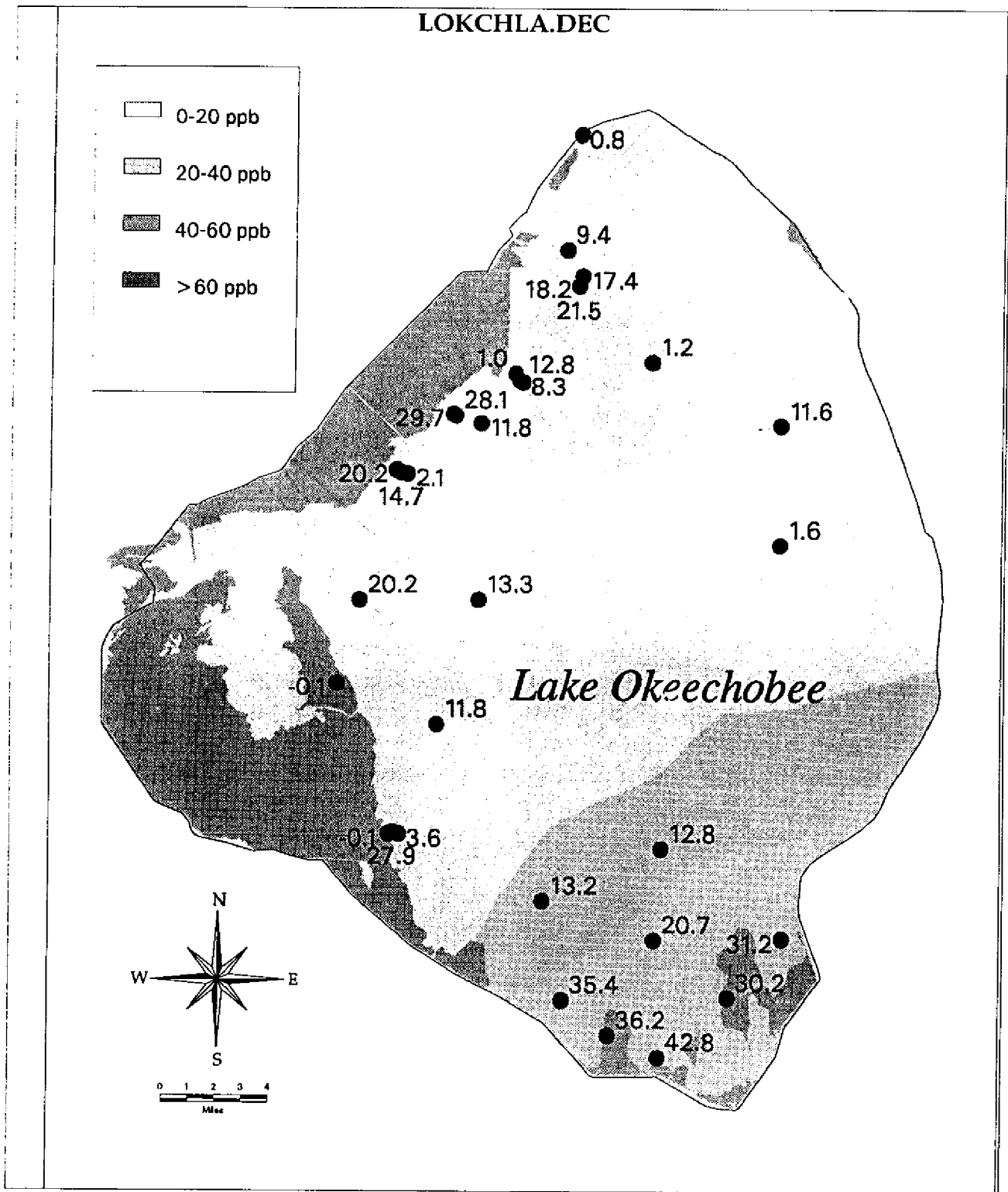


FIGURE 7-17. Lake Okeechobee Chlorophyll *a* Concentration (ppb) for December 1995.

LAKE OKEECHOBEE PHOSPHORUS INPUTS AND TRENDS

Performance Standards and Trends

This section charts the progress toward achieving the phosphorus management goals as stated in the Lake Okeechobee SWIM plan. The Plan sets a target of 0.18 milligrams per liter (mg/L = ppm, parts per million) for lake inflows that have elevated phosphorus concentrations. Other inflows with lower concentrations are limited to their historical flow-weighted averages.

To show the performance standards and trends, Figure 7-18 displays flow-weighted TP concentrations for the Lower Kissimmee River at C-38 and S-154. Data for Fisheating Creek and Taylor Creek/Nubbin Slough (S-191) basins are provided in Figure 7-19. These plots are 12-month moving flow-weighted averages; the last data point of each time series reflects the flow-weighted phosphorus concentration for the year ending December 31, 1995. For the Lower Kissimmee River basin, TP loads at S-65 (Lake Kissimmee) are subtracted from those at S-65E before calculating the flow-weighted concentration.

As shown in these figures, average TP concentrations at S-154 and S191 were above the 0.18 mg/L target concentration at about 1.1 and 0.7 mg/L, respectively, for 1995. However, measured TP concentrations at S-191 have generally shown a declining trend during the past ten years. The most recently calculated TP concentration for S-191 is 55% less than the maximum 12-month moving average concentration recorded in March 1982. The TP concentration at C-38 (0.24 mg/L) is above the target level, while the TP concentration at Fisheating Creek (0.12 mg/L) is less than the target level. The large water inflow volume for 1995 contributed to the increases in load values, particularly at S154.

S154C38.pst

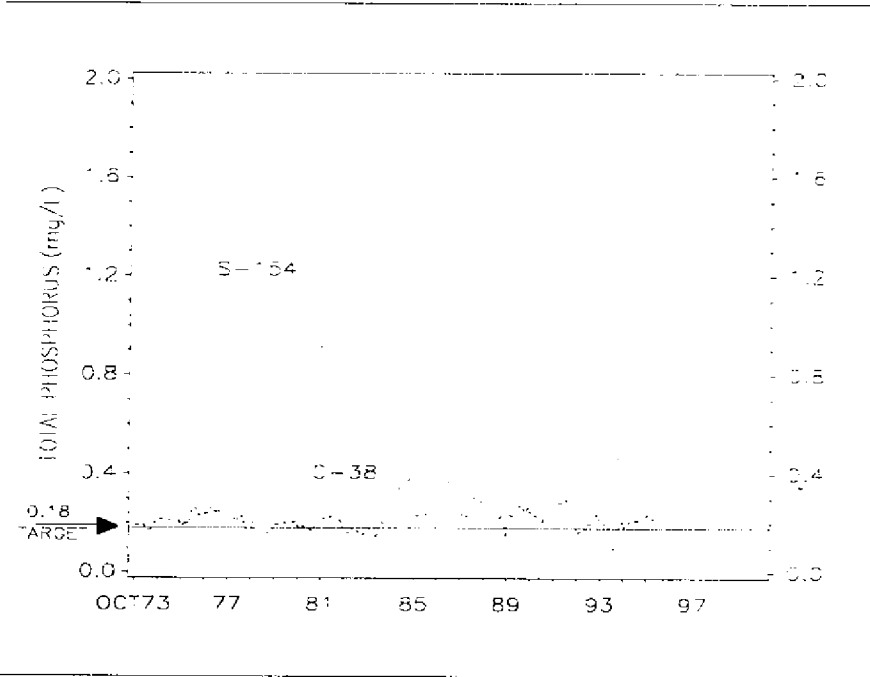


FIGURE 7-18. Phosphorus Concentrations for S-154 and C-38 Basins - 12-Month Moving Flow-Weighted Values.

S191FEC.pst

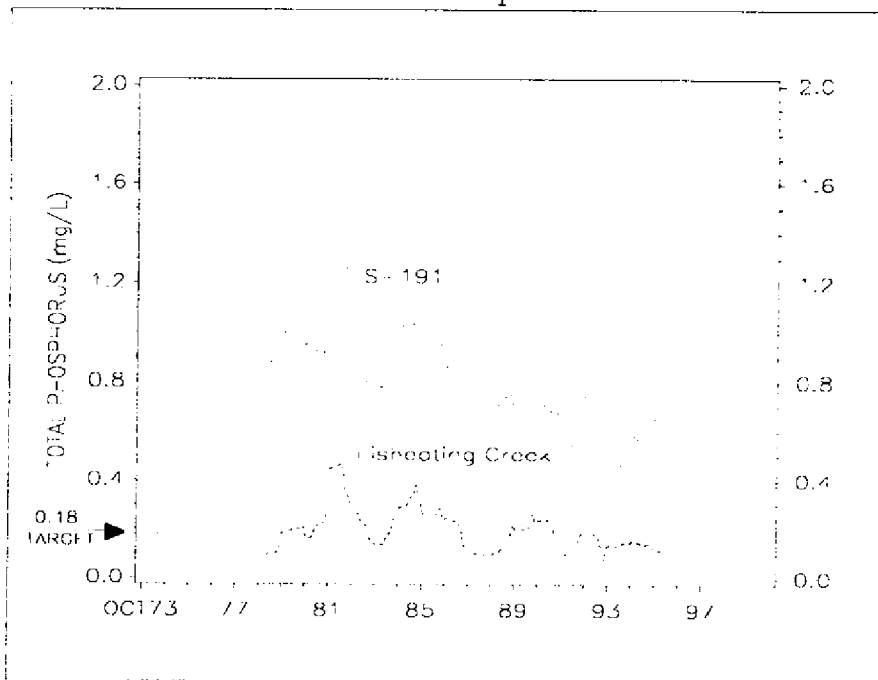


FIGURE 7-19. Phosphorus Concentrations for S-191 and Fisheating Creek Basins; 12-Month Moving Flow-Weighted Values.

Loading Trends

In the 1987 SWIM Act, the District was directed to design and implement a program to protect the water quality of Lake Okeechobee. The Act stated that this program "shall be designed to result, by July 1, 1992, in reduction of phosphorus loadings to the lake by the amount specified as excess in the South Florida Water Management District's Technical Publication 81-2."

In Technical Publication 81-2, the amount of excess phosphorus was estimated by a modified version of the Vollenweider (1976) phosphorus loading model. The target loading rate is a function of how much water enters the lake and how long that water resides in the lake. Therefore, the target loads will fluctuate due to hydrologic variability.

To compare Lake Okeechobee's phosphorus loads to the model's target loading rate, the actual and target loads were computed for successive 12-month periods. The difference between the actual and the target loads shown in Figure 7-20 for the year ending September 30, 1995 is about 260 tons (1 ton = 2000 pounds). The increases in loading above the target level for 1995 are due primarily to heavy rainfall and associated increases in phosphorus inputs to the lake. The secondary cause is that the target loading rate leveled off during this period due to high lake stages and tributary inflows caused by heavy rainfall. These two factors combined to reduce water residence time, which is a key component of the loading model. Loading values for 1995 exceeded the target by a level comparable to that recorded in 1990 and 1993. This exceedance is not unexpected for a very wet season with the volume of stormwater runoff well above average.

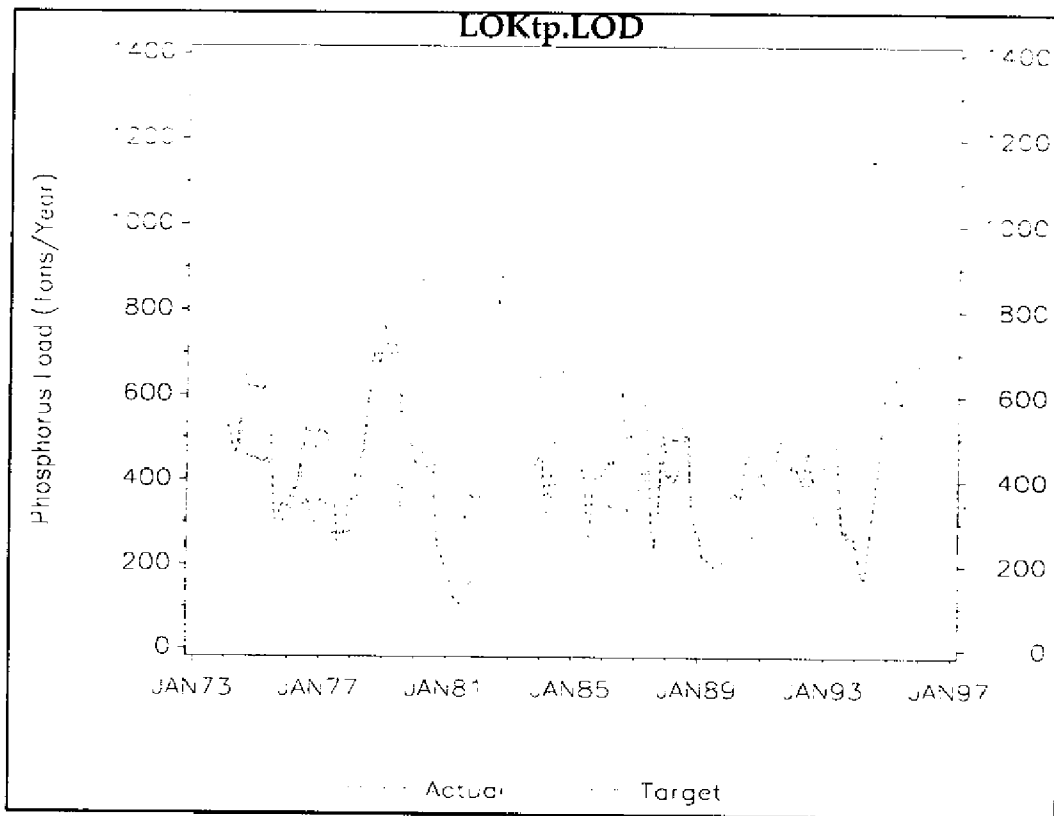


FIGURE 7-20. Actual and Target Total Phosphorus Load for Lake Okeechobee.

Inflows from the North to Lake Okeechobee

While direct rainfall contributes most of the water to the lake, most nutrients and other materials are transported to and from Lake Okeechobee by stream flows. In 1995, the total flow into the lake from the north was the greatest since 1979. TP loads at many of the inflow points from the north were high, with some reaching levels not seen in over ten years. Data on TP loads for this unusual year are displayed in Figures 7-21, 7-24, 7-27, 7-30, 7-33, 7-36, 7-39, 7-42, and 7-45. Phosphorus inputs were the highest recorded in over ten years at 7 of the 9 structures evaluated for this section of the lake .

Time series plots of TN and TSS entering Lake Okeechobee from the north are shown in Figures 7-22, 7-25, 7-31, 7-34, 7-37, 7-40, 7-43 and 7-46. As expected, the high material loads for TN are associated with corresponding increases in flow volume. In 1995, TN and TSS loads through S133, S127, S72 and S131 were the highest ever recorded. Higher-than-normal nutrient concentrations were also recorded at some of these stations (Figures 7-23, 7-26, 7-29, 7-32, 7-35, 7-38, 7-41, 7-44 and 7-47). The highest TP concentration since 1980 was observed at S135. Furthermore, a reversal in the downward trend in nutrient concentrations was recorded at S191, S133, S127, S71 and S131. Overall, waters moving into Lake Okeechobee from the north carried very high nutrient and solids loads associated with the large volume of stormwater runoff during the 1995 wet season.

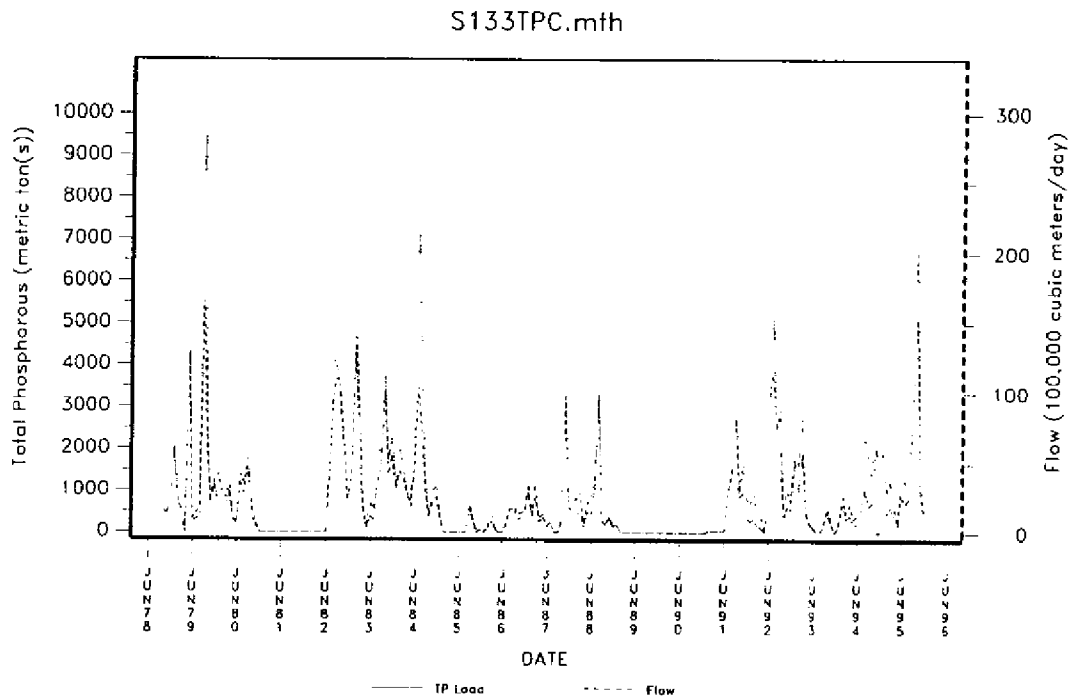


FIGURE 7-21. Historical Monthly Total Phosphorus Load and Water Flow at S133.

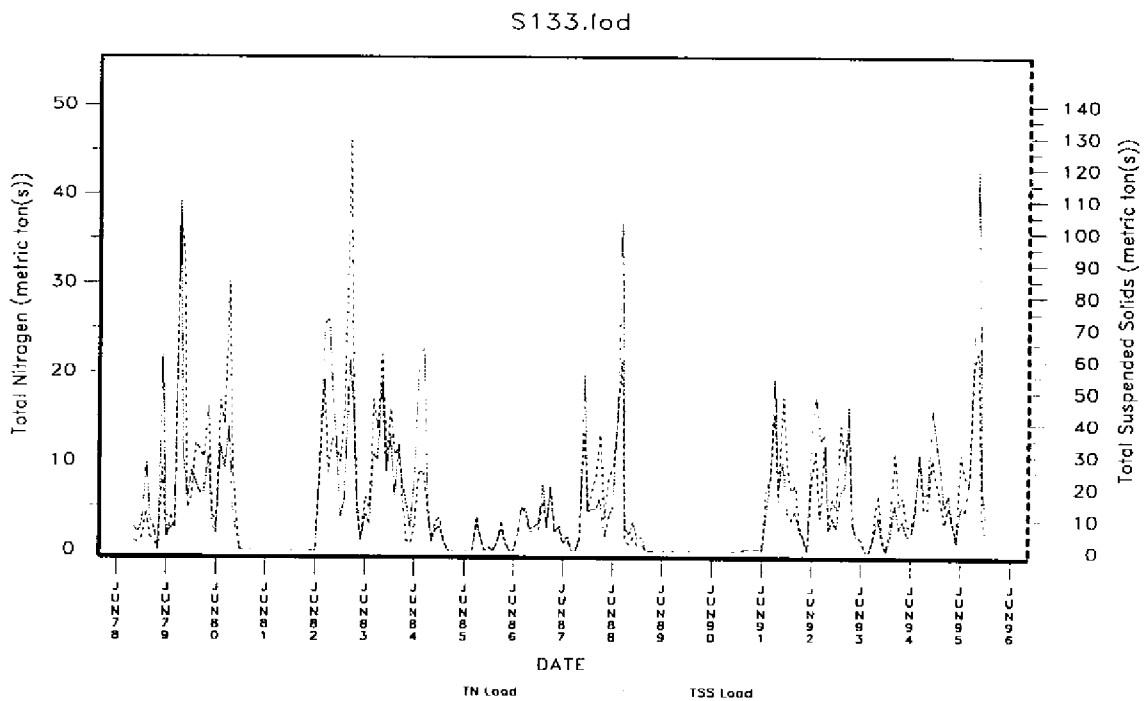


FIGURE 7-22. Historical Monthly Total Nitrogen and Total Suspended Solids at S133.

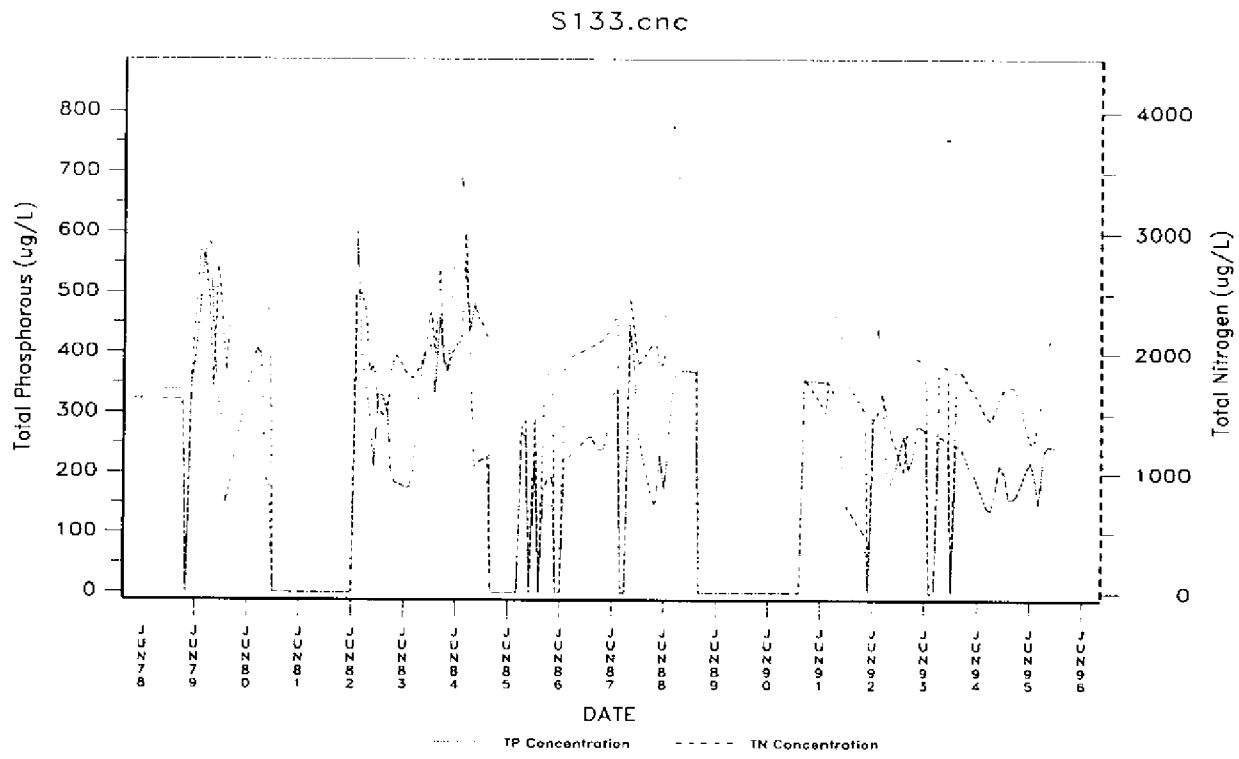


FIGURE 7-23. Historical Monthly Total Phosphorus and Total Nitrogen Concentrations at S133.

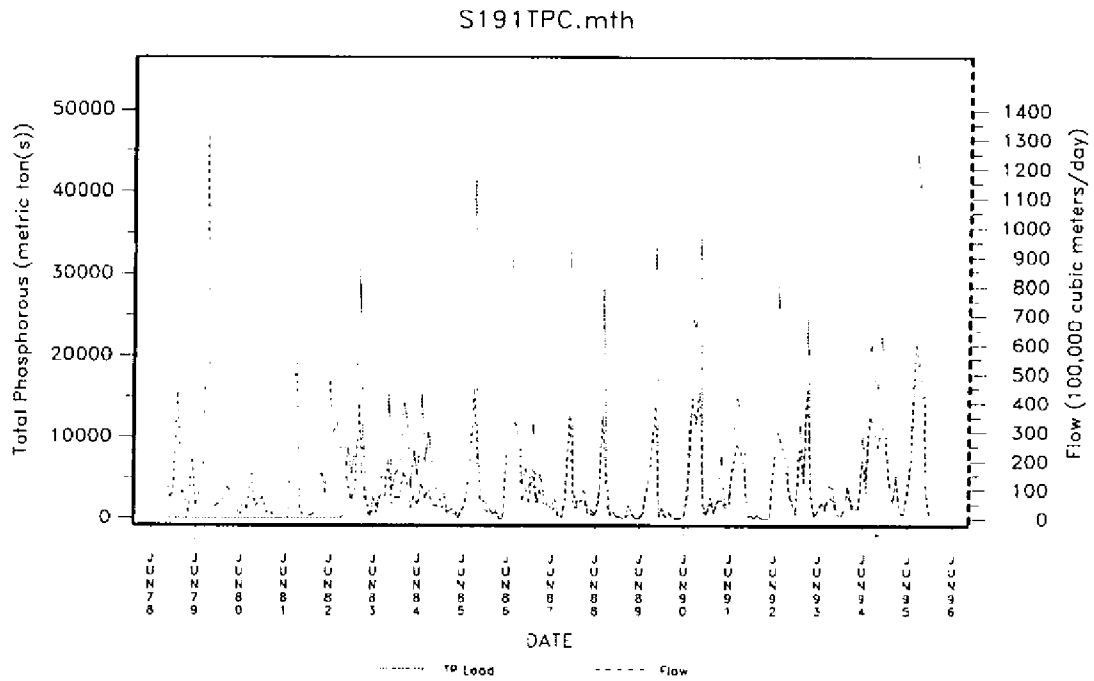


FIGURE 7-24. Historical Monthly Total Phosphorus Load and Flow at S191.

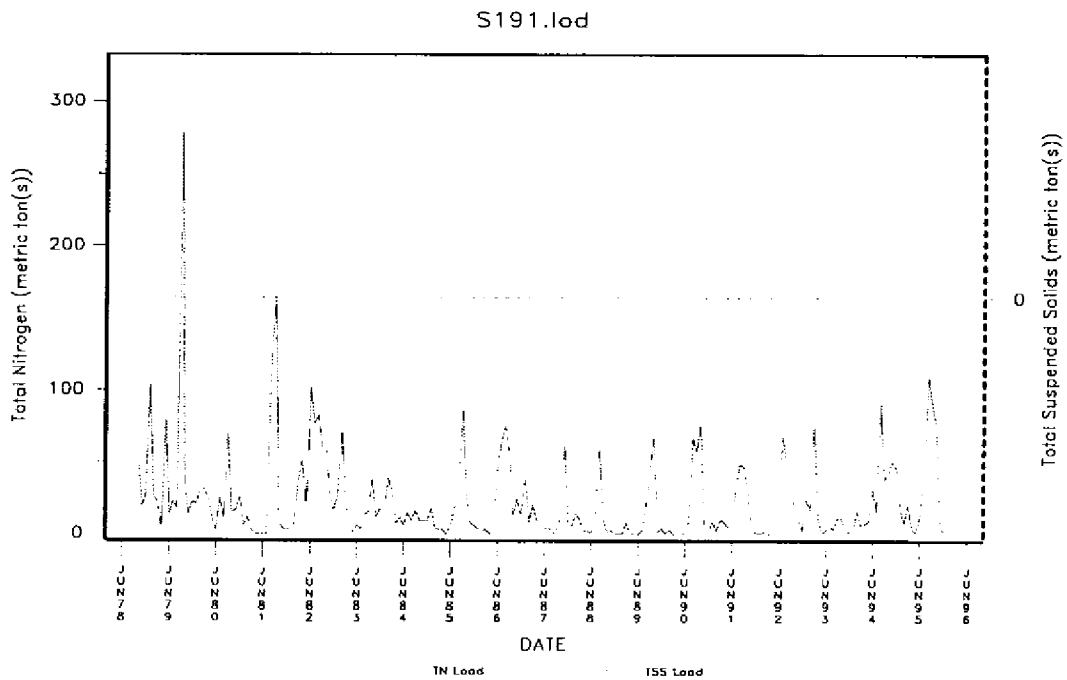


FIGURE 7-25. Historical Monthly Total Nitrogen and Total Suspended Solids at S191.

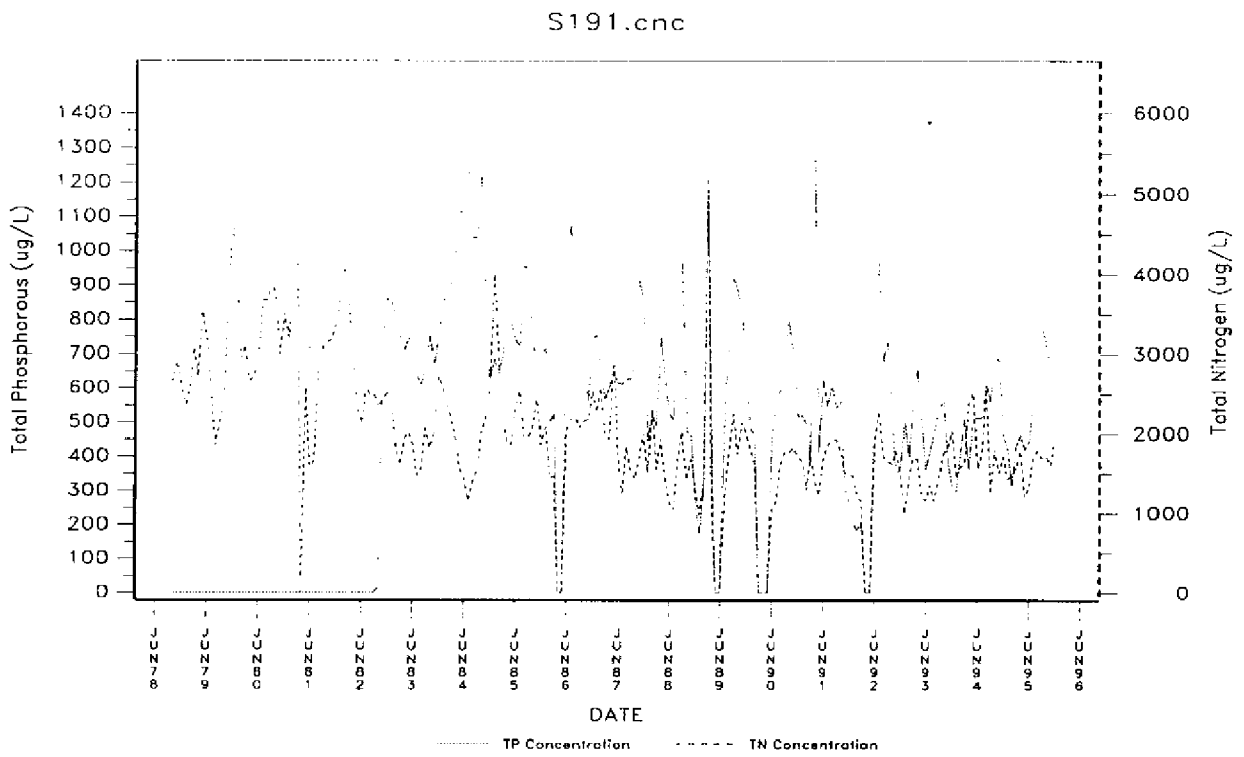


FIGURE 7-26. Historical Monthly Total Phosphorus and Total Nitrogen Concentrations at S191.

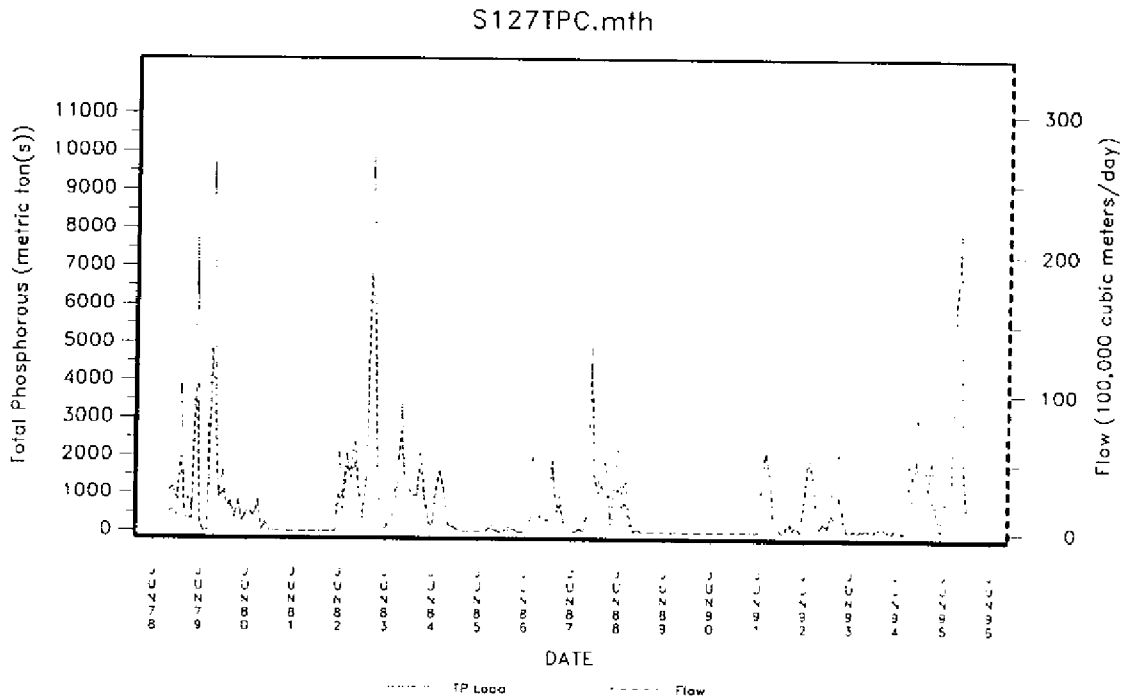


FIGURE 7-27. Historical monthly total phosphorus load and flow at S127.

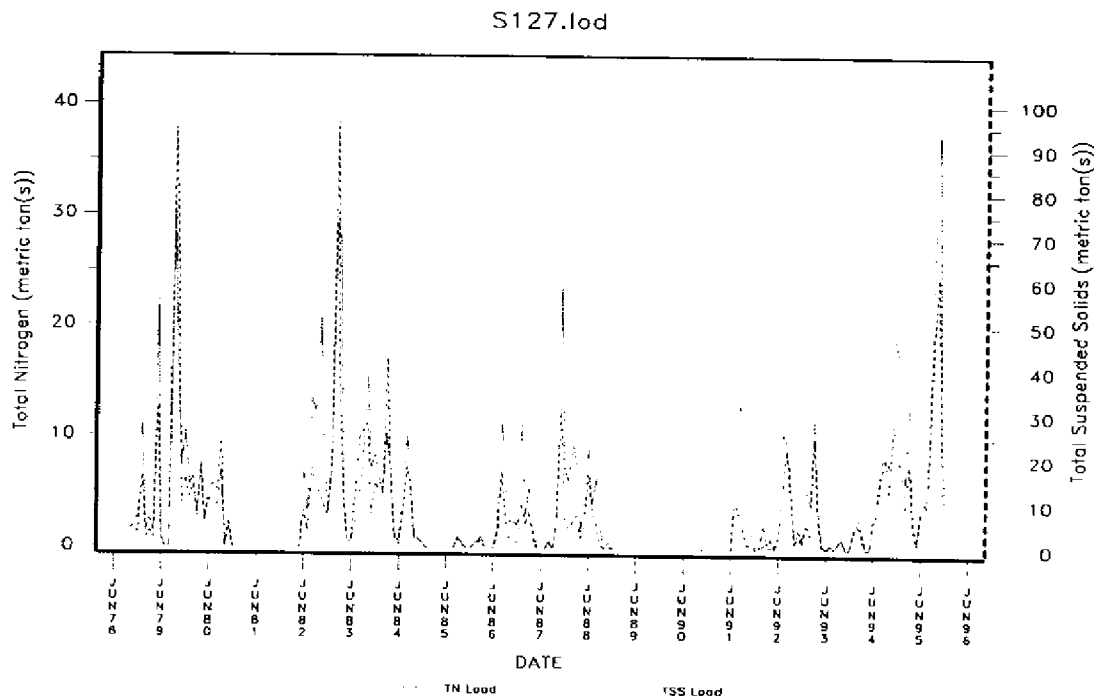


FIGURE 7-28. Historical Monthly Total Nitrogen and Total Suspended Solids at S127.

S127.cnc

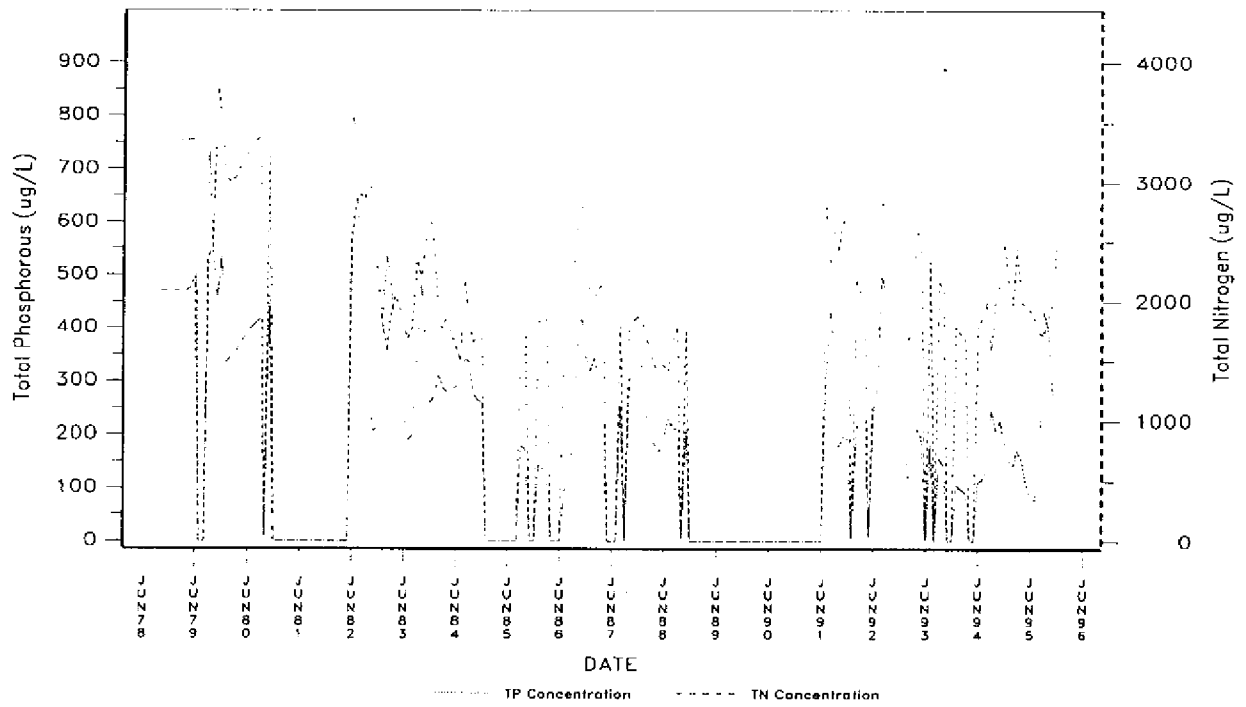


FIGURE 7-29. Historical Monthly Total Phosphorus and Total Nitrogen Concentrations at S127.

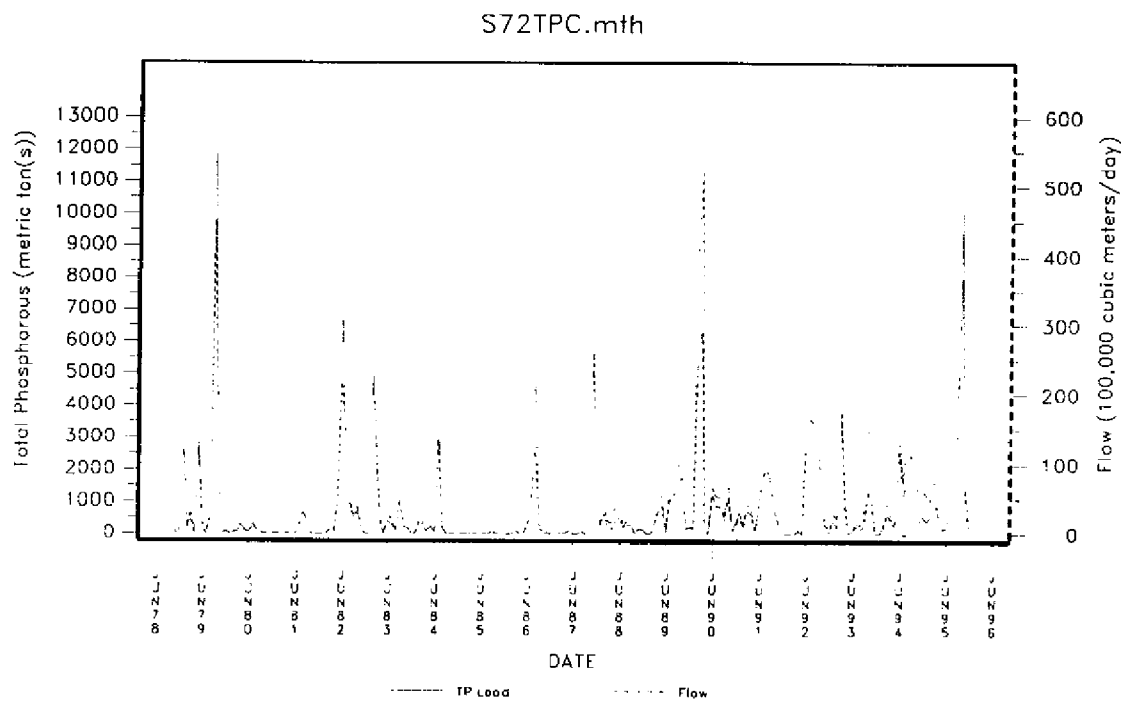


FIGURE 7-30. Historical Monthly Total Phosphorus Load and Water Flow at S72.

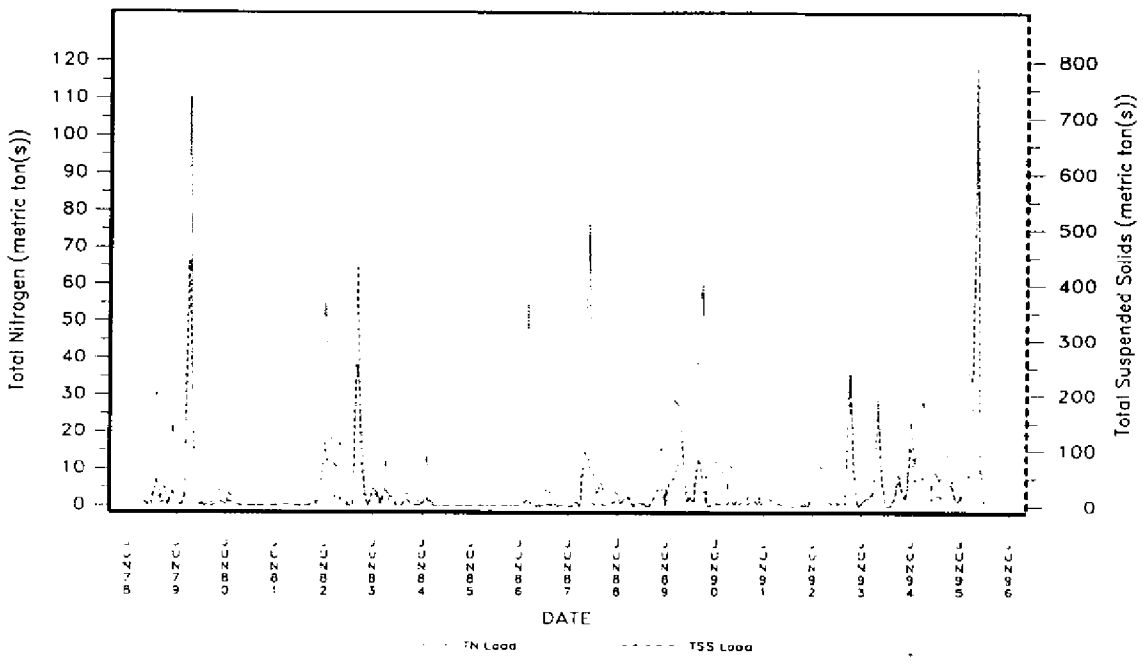


FIGURE 7-31. Historical Monthly Total Nitrogen and Total Suspended Solids at S72.

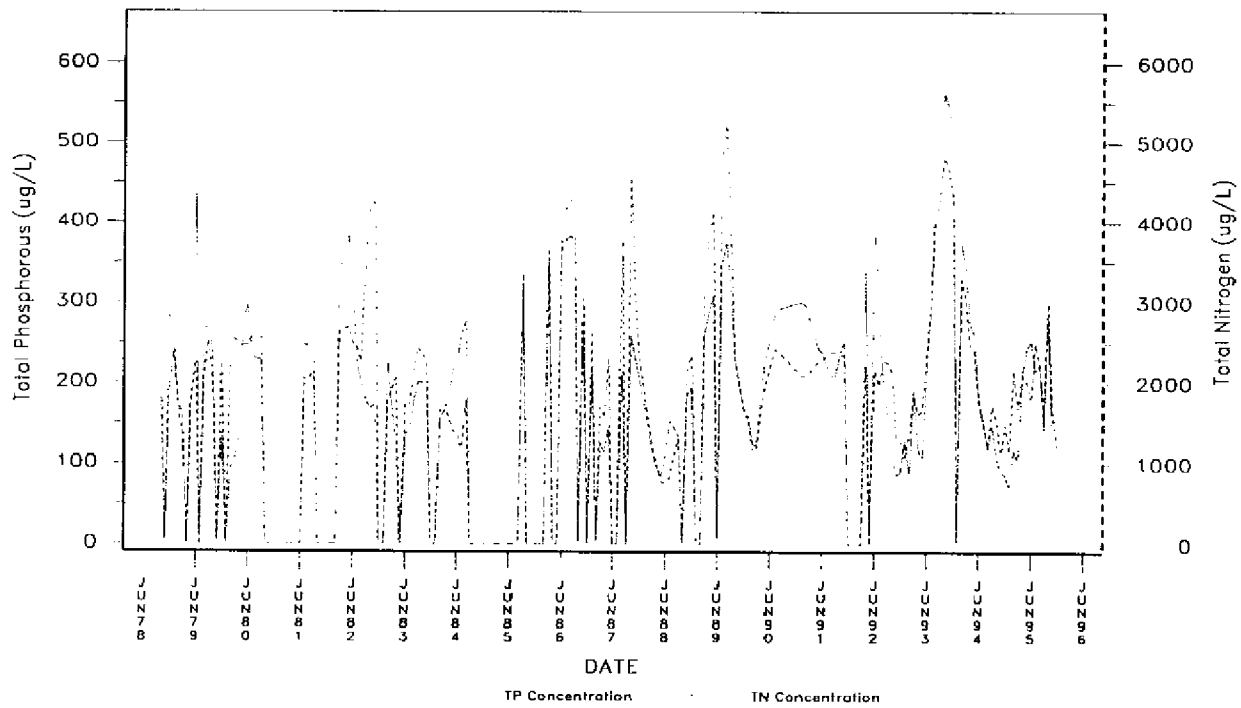


FIGURE 7-32. Historical Monthly Total Phosphorus and Total Nitrogen Concentrations at S72.

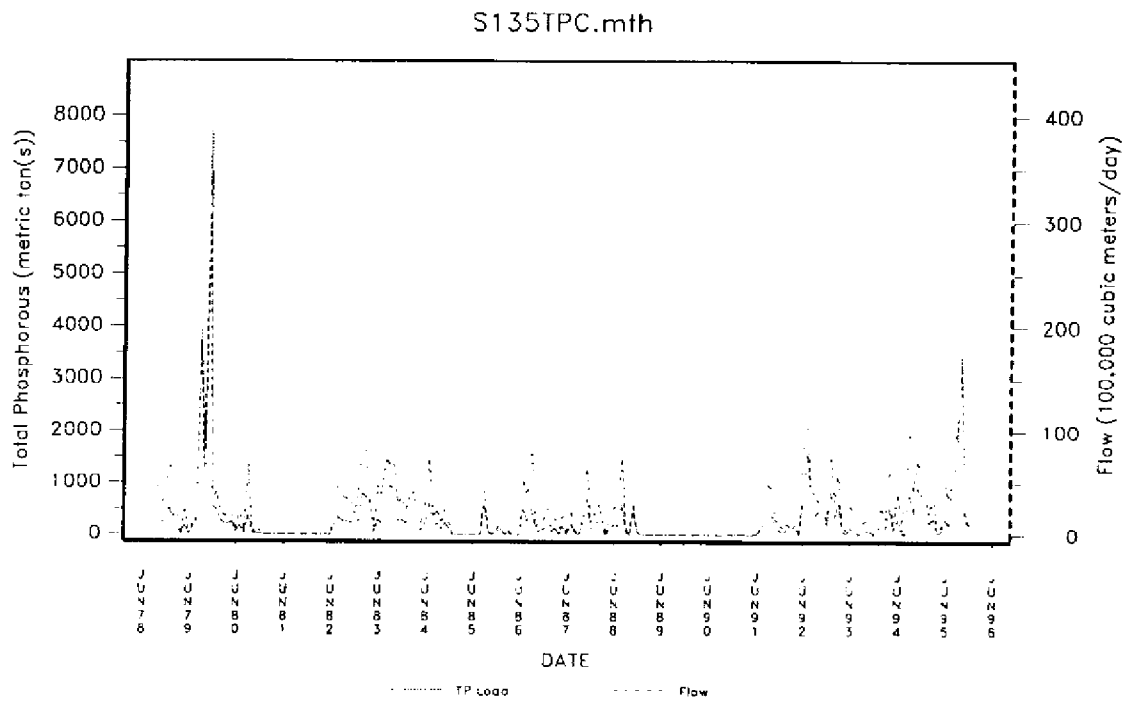


FIGURE 7-33. Historical Monthly Total Phosphorus Load and Water Flow at S135.

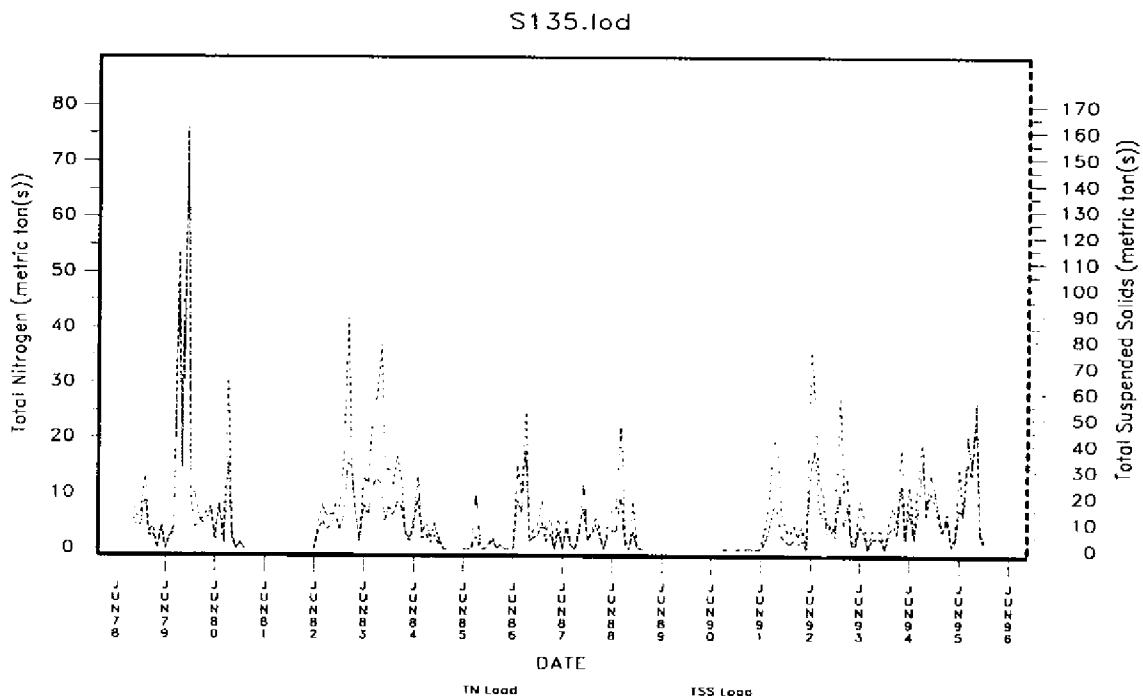


FIGURE 7-34. Historical Monthly Total Nitrogen and Total Suspended Solids at S135.

S135.cnc

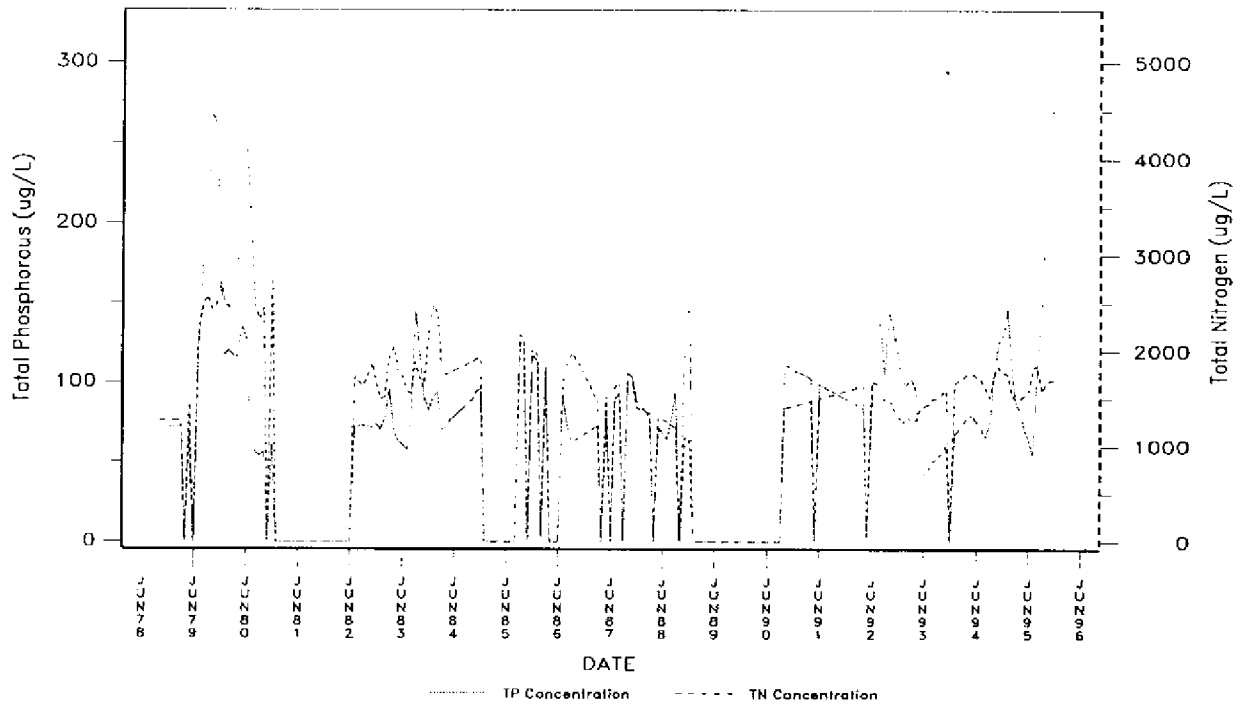


FIGURE 7-35. Historical Monthly Total Phosphorus and Total Nitrogen Concentrations at S135.

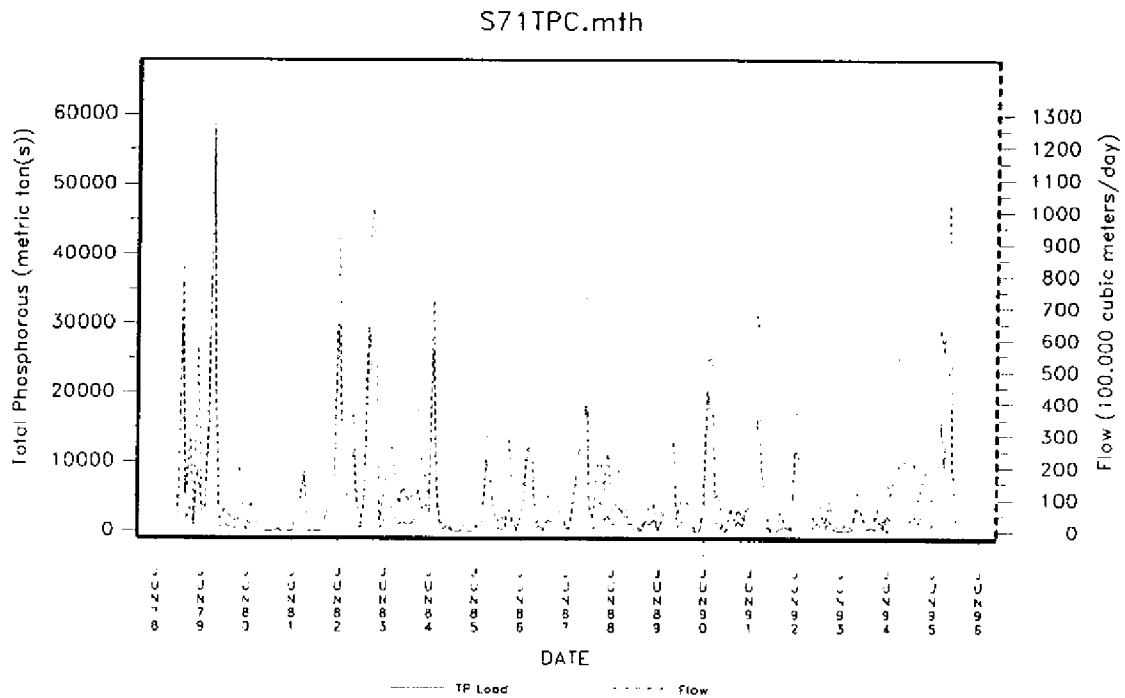


FIGURE 7-36. Historical Monthly Total Phosphorus Load and Water Flow at S71.

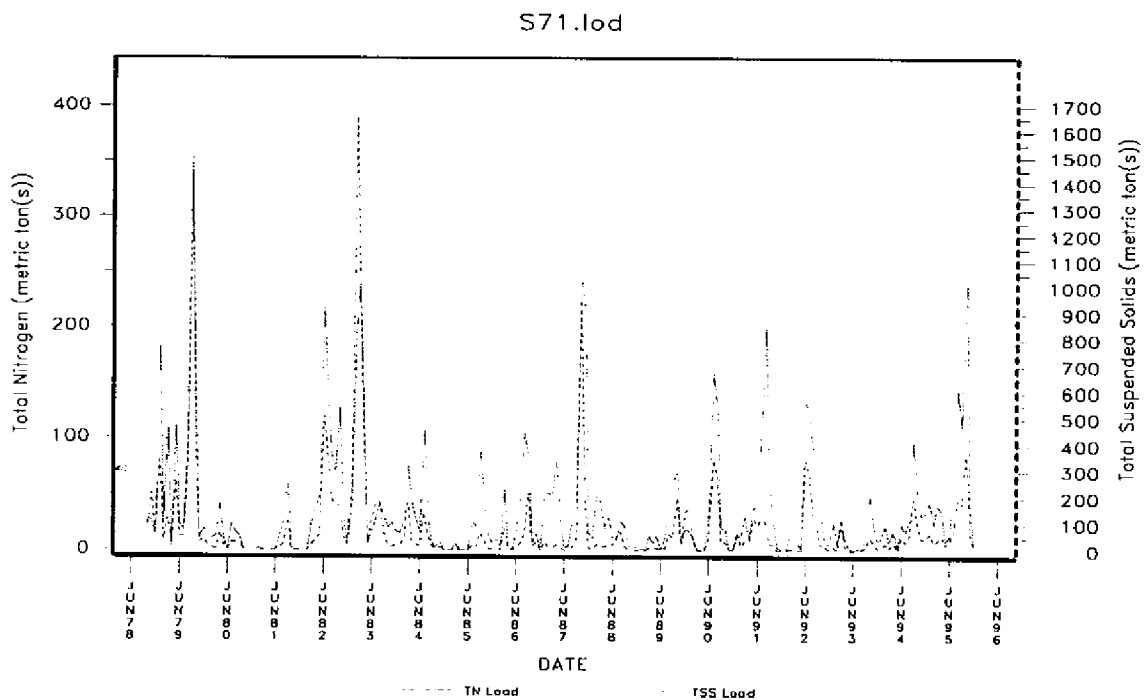


FIGURE 7-37. Historical Monthly Total Nitrogen and Total Suspended Solids at S71.

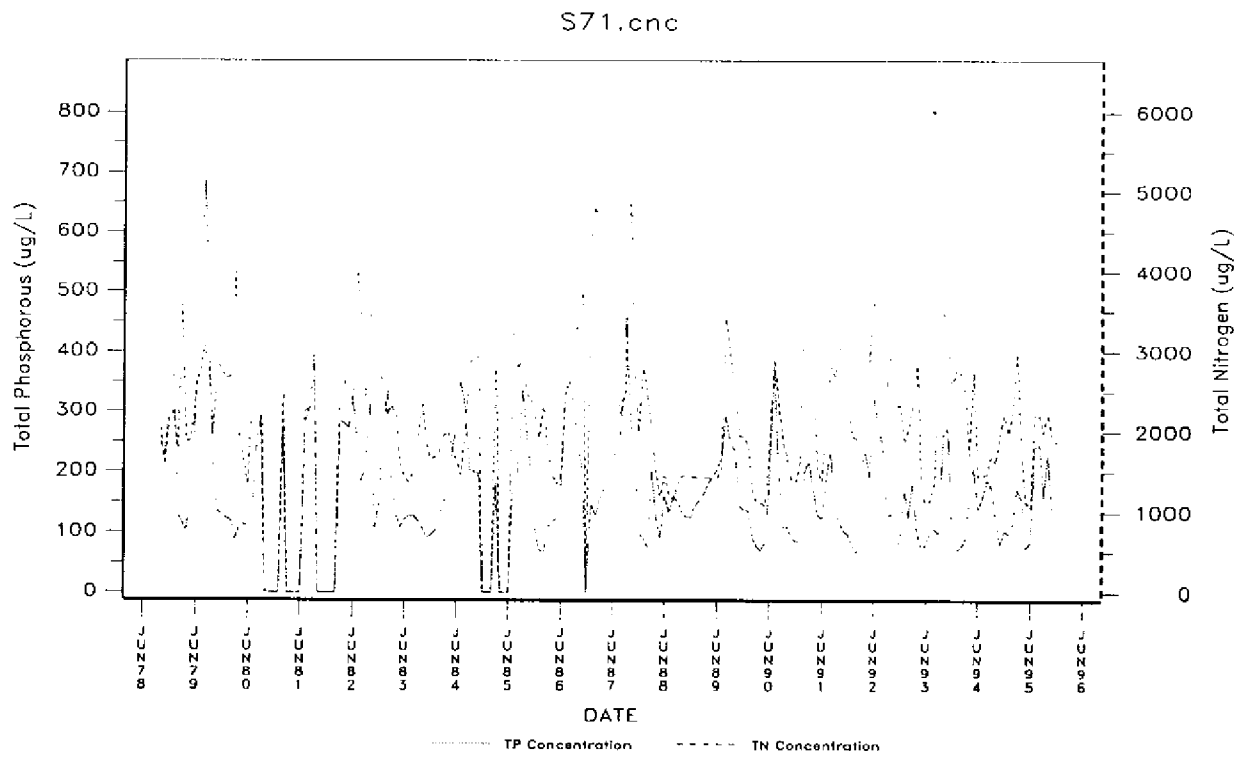


FIGURE 7-38. Historical Monthly Total Phosphorus and Total Nitrogen Concentrations at S71.

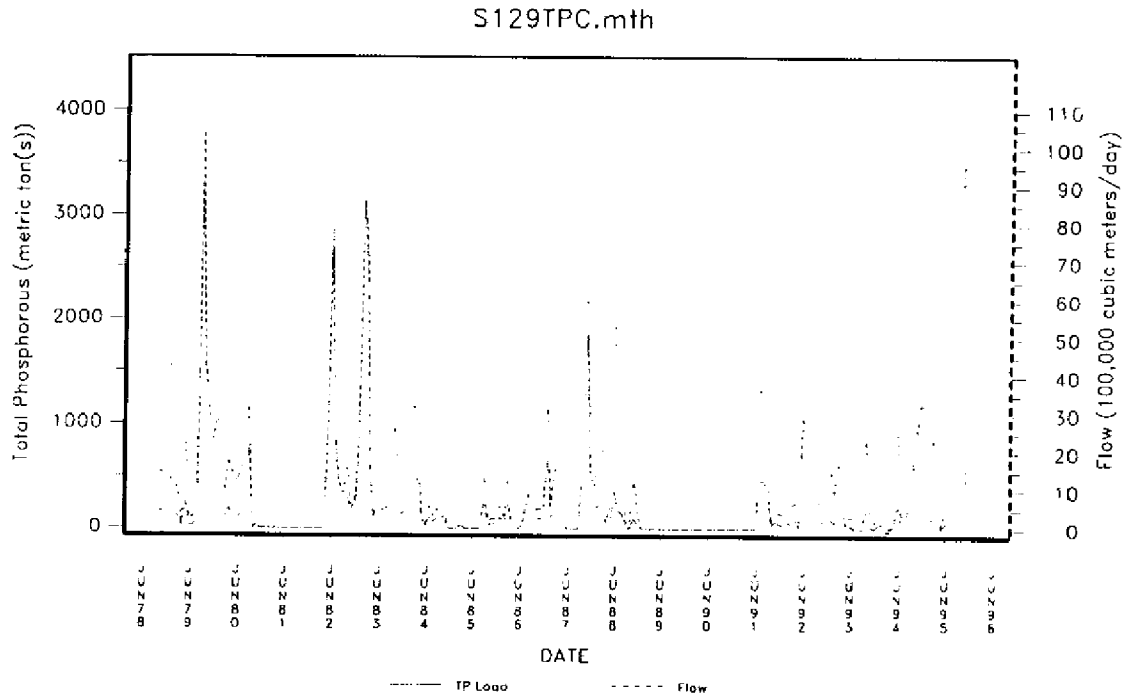


FIGURE 7-39. Historical Monthly Total Phosphorus Load and Water Flow at S129.

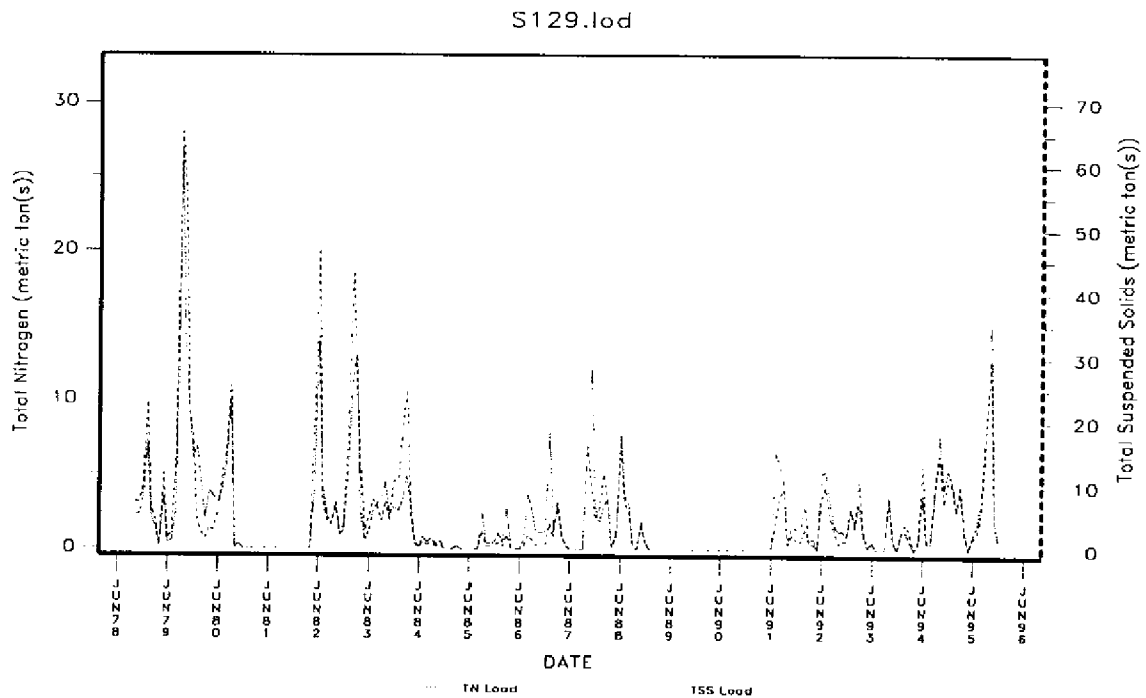


FIGURE 7-40. Historical Monthly Total Nitrogen and Total Suspended Solids at S129.

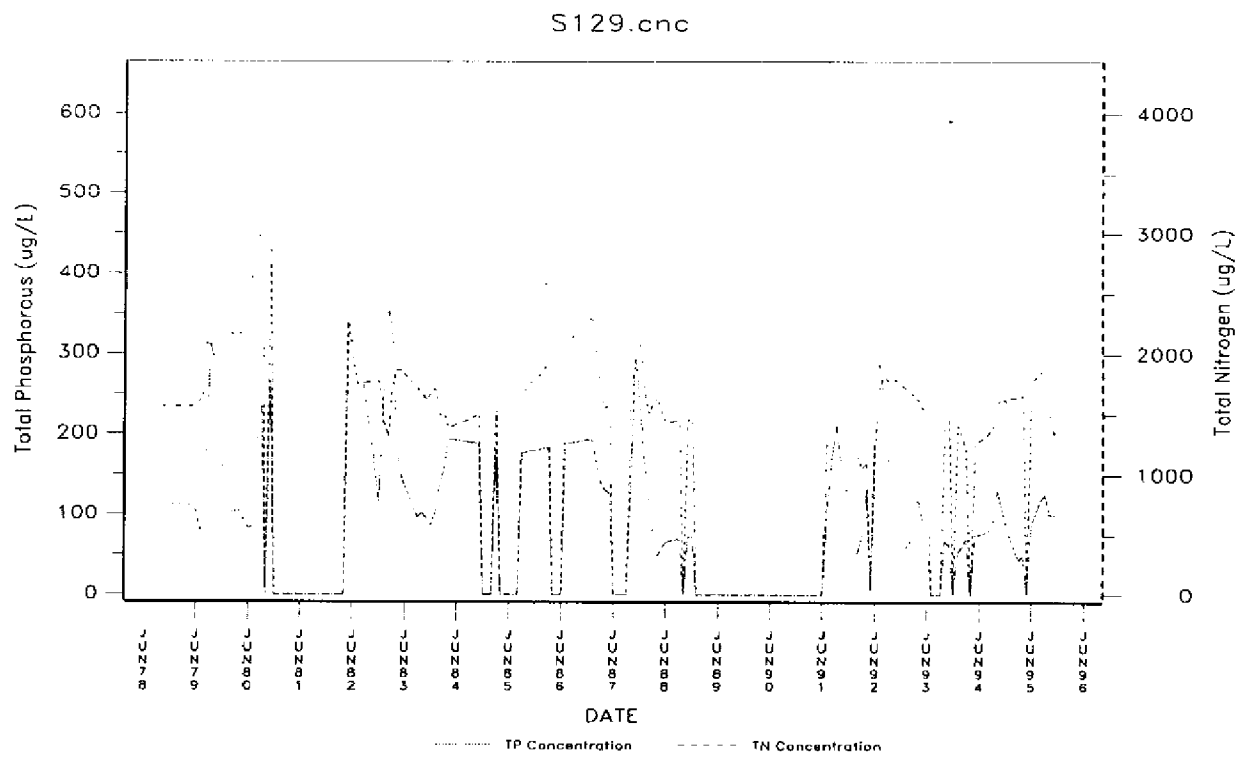


FIGURE 7-41. Historical Monthly Total Phosphorus and Total Nitrogen Concentrations at S129.

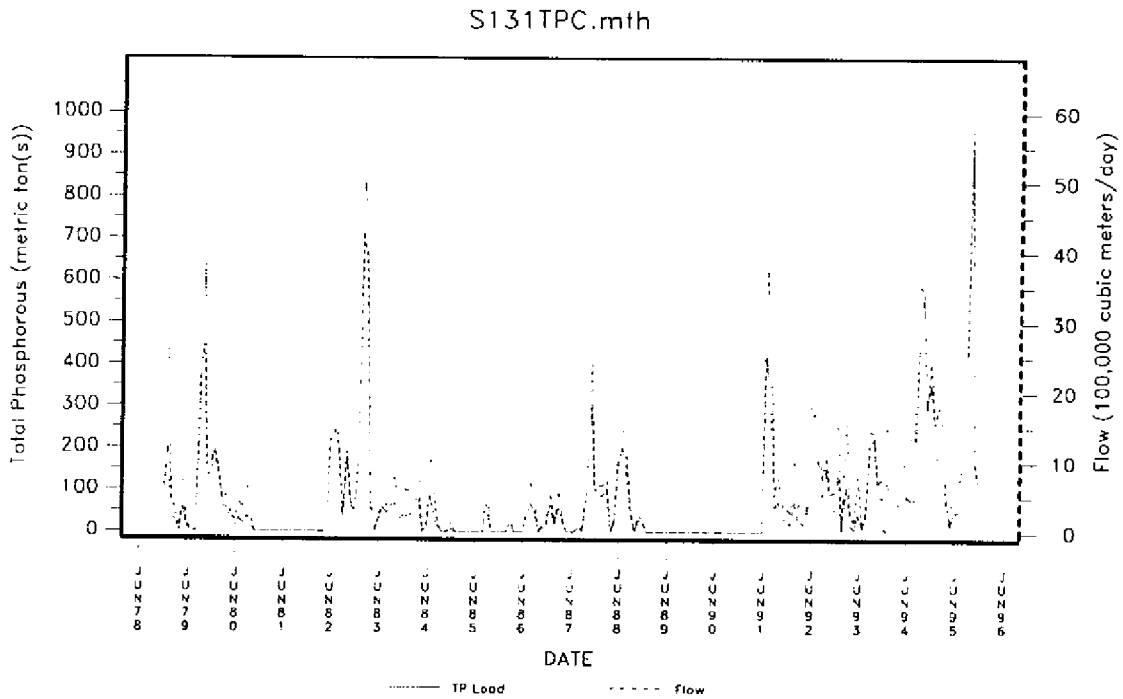


FIGURE 7-42. Historical Monthly Total Phosphorus Load and Water Flow at S131.

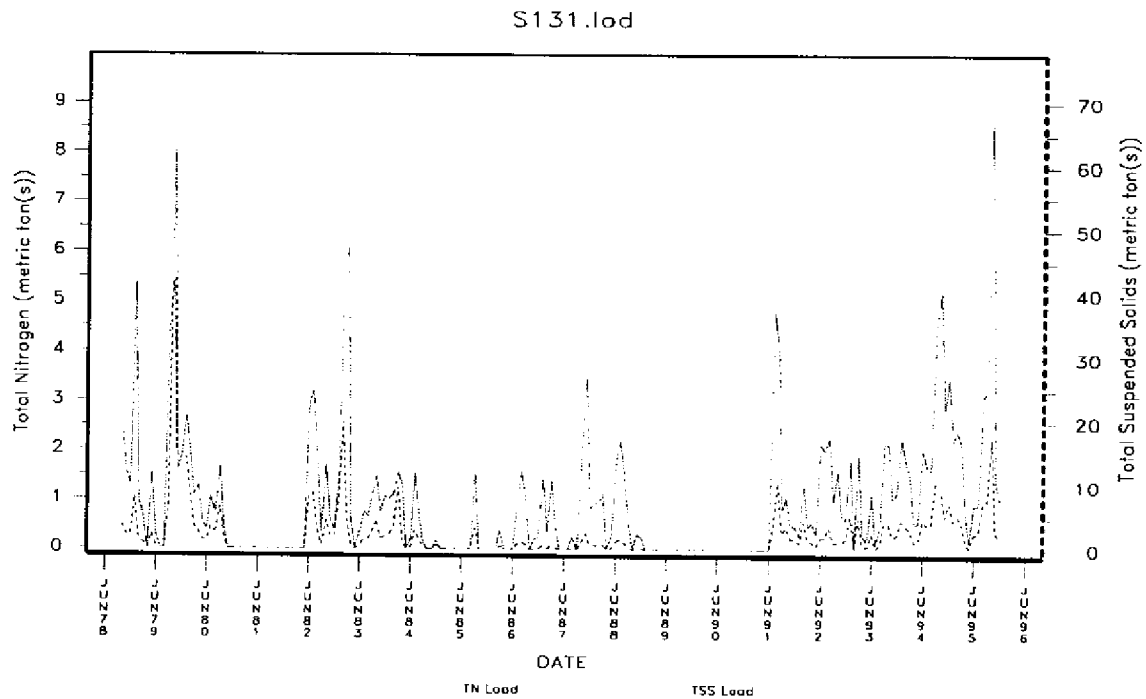


FIGURE 7-43. Historical Monthly Total Nitrogen and Total Suspended Solids at S131.

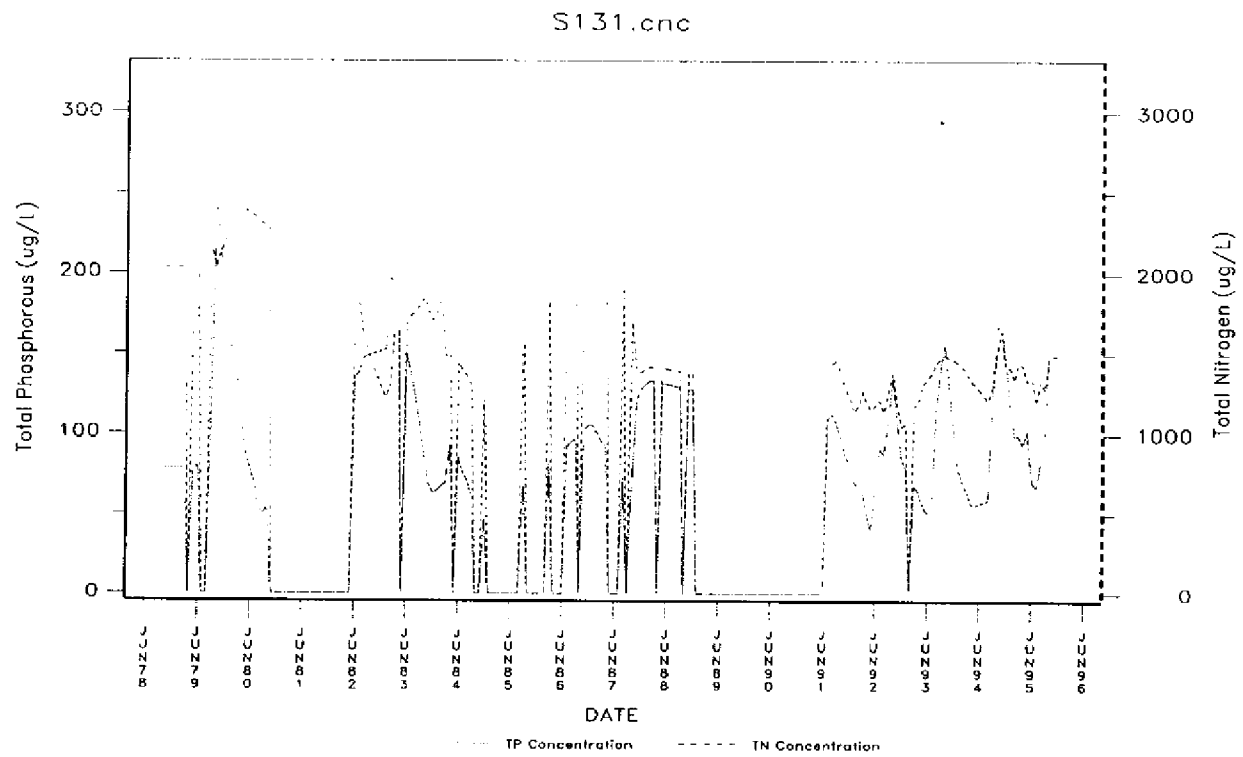


FIGURE 7-44. Historical Monthly Total Phosphorus and Total Nitrogen Concentrations at S131.

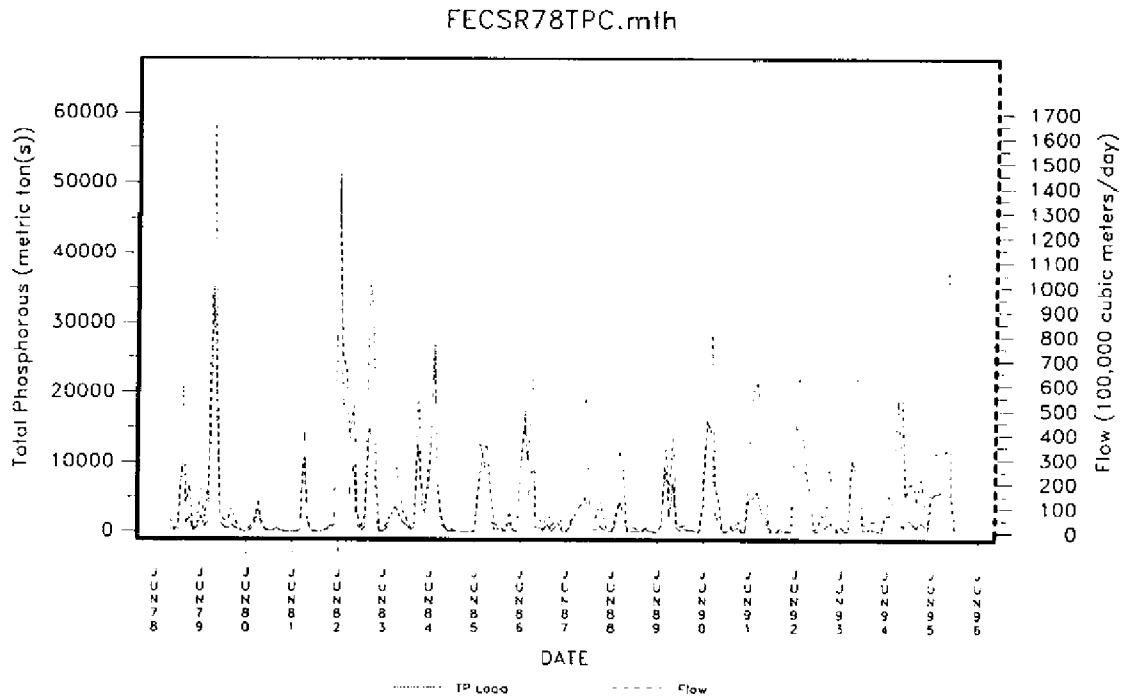


FIGURE 7-45. Historical Monthly Total Phosphorus Load and Water Flow for Fisheating Creek at SR 78.

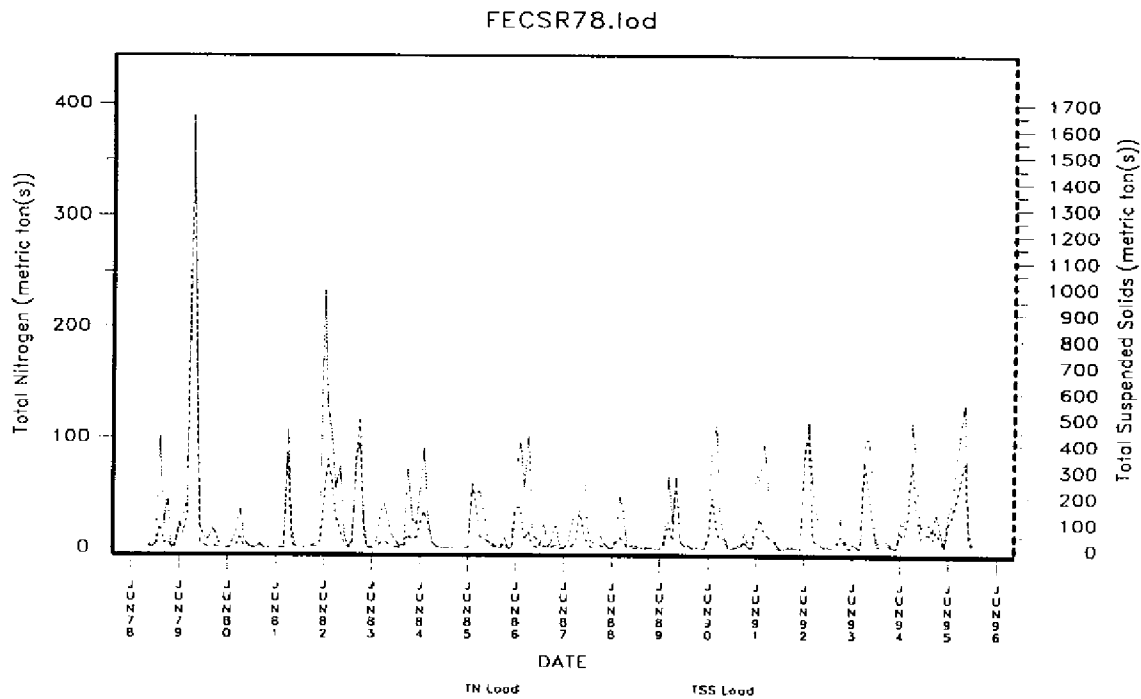


FIGURE 7-46. Historical Monthly Total Nitrogen and Total Suspended Solids for Fisheating Creek at SR 78.

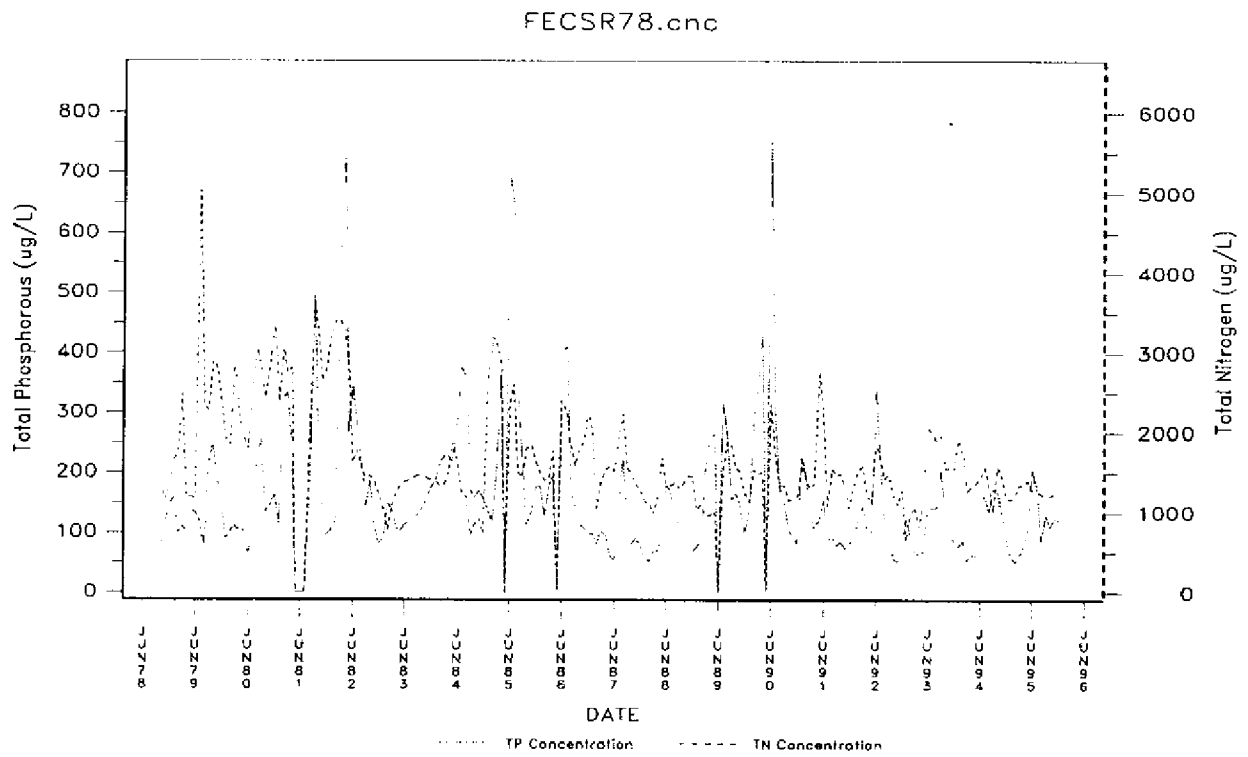


FIGURE 7-47. Historical Monthly Total Phosphorus and Total Nitrogen Concentrations for Fisheating Creek at SR78.

Outflows from Lake Okeechobee to Estuaries

Water moves from Lake Okeechobee to estuaries on both the eastern and western coasts of the Florida peninsula. On the eastern shore of Lake Okeechobee, the St. Lucie Canal provides the connection between the lake and the Indian River Lagoon, an estuary on Florida's east coast. Water from the lake is important to the estuary in that it can moderate the salinity and nutrient budget of the ecosystem or harm the biota if high flows persist for long durations. The quality of water flowing to the St. Lucie Canal is assessed at S-308, the point of inflow from the lake to the canal (Figures 7-48, 7-49 and 7-50). Even though the material loads were high in 1995, water quality in terms of concentrations was within the range of values commonly seen at this structure. As water moves down the canal to S80 (the point at which it moves from the canal into the estuary) it is subject to some loss of materials through settling, dilution by surface water runoff and chemical changes within the canal. Materials are added from local surface inflows into the St. Lucie Canal. The net result of these processes is that the quality of water existing in the St. Lucie Canal is quite similar to that entering, as can be seen in Figures 7-51, 7-52, and 7-53.

To the west, the quality of water discharging into the estuary of the Caloosahatchee River is monitored at S79. Flow through this structure was higher than has been seen in over 10 years, but phosphorus loading was quite typical for this location (Figure 7-54). Nitrogen loading through S79 was high during 1995, but within the range of values seen repeatedly during the period of record (Figure 7-55).

Both TP and TN concentrations (Figure 7-56) were within the bounds of earlier data, although phosphorus there appears to be a decline since 1993.

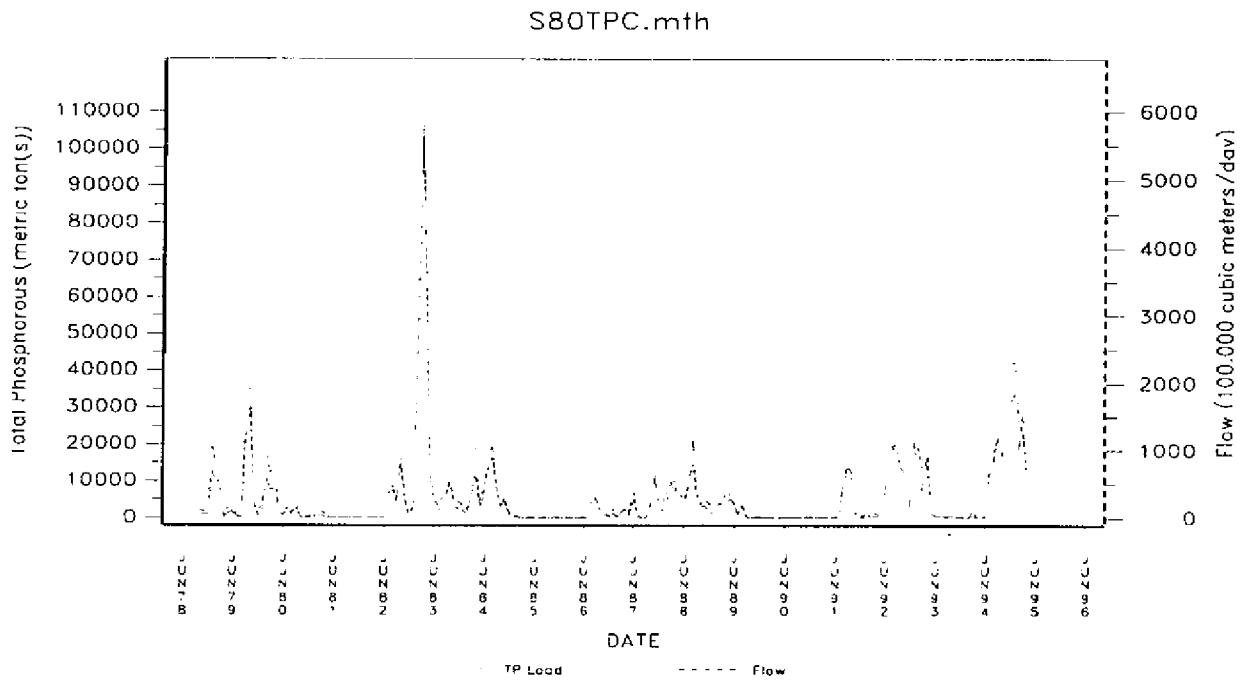


FIGURE 7-48. Historical Monthly Total Phosphorus Load and Water Flow at S80.

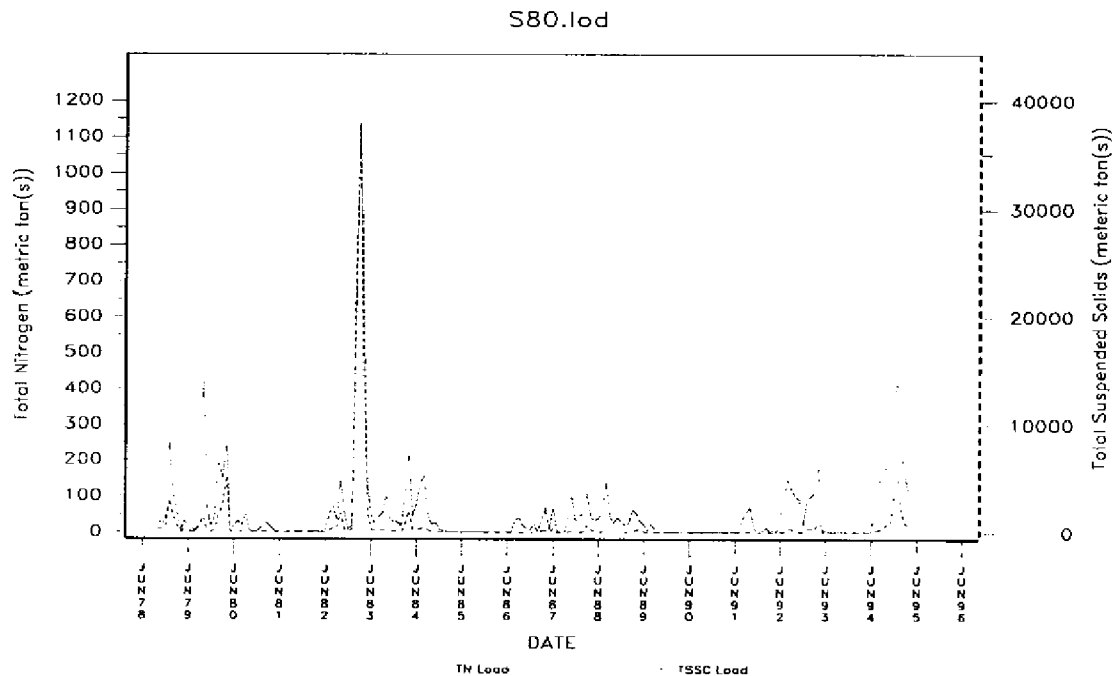


FIGURE 7-49. Historical Monthly Total Nitrogen and Total Suspended Solids at S80.

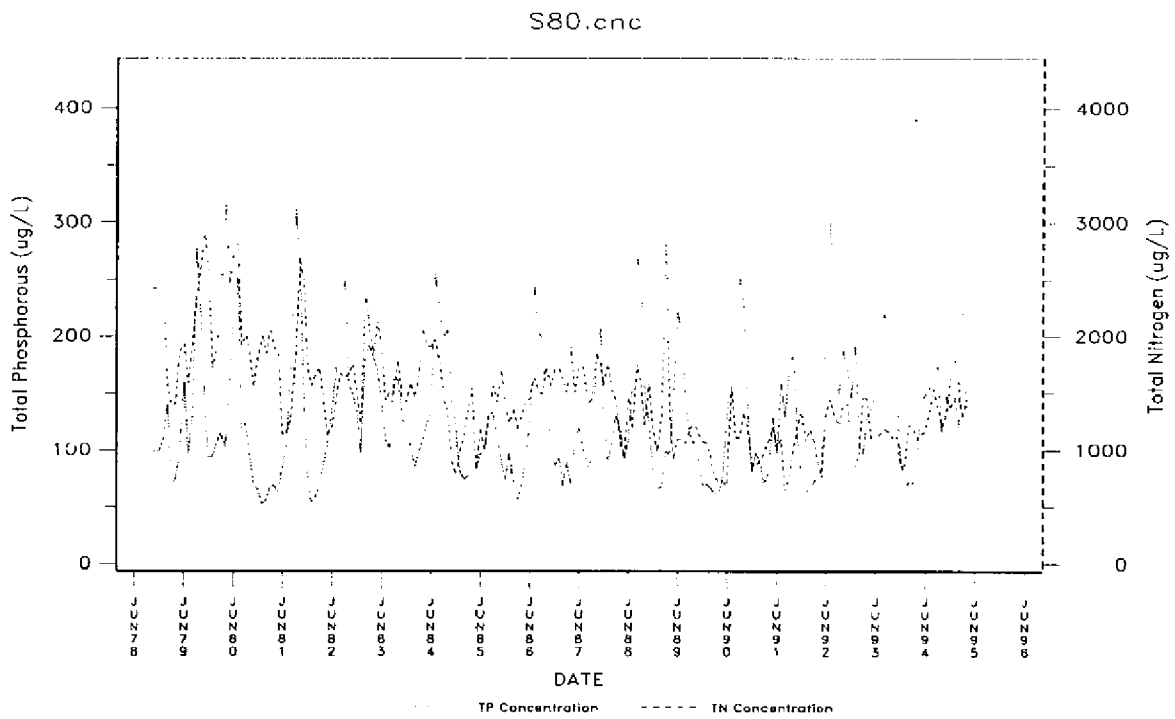


FIGURE 7-50. Historical Monthly Total Phosphorus and Total Nitrogen Concentrations at S80.

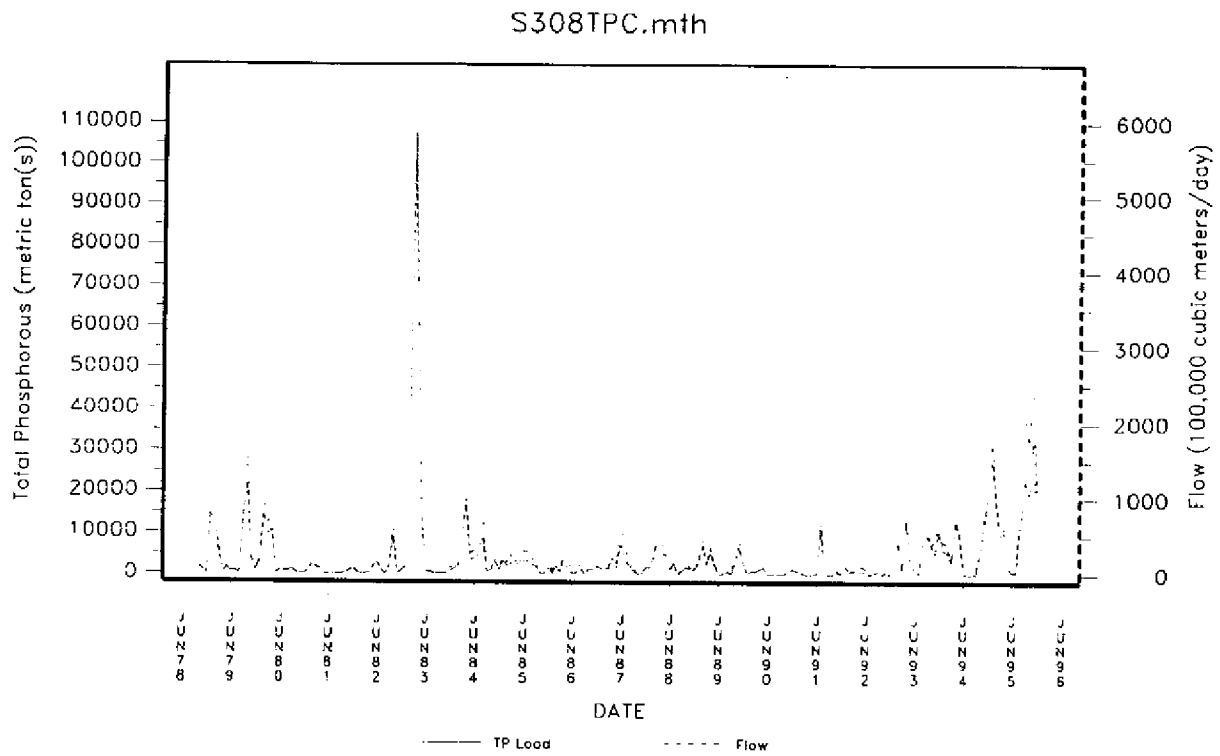


FIGURE 7-51. Historical Monthly Total Phosphorus Load and Water Flow at S308.

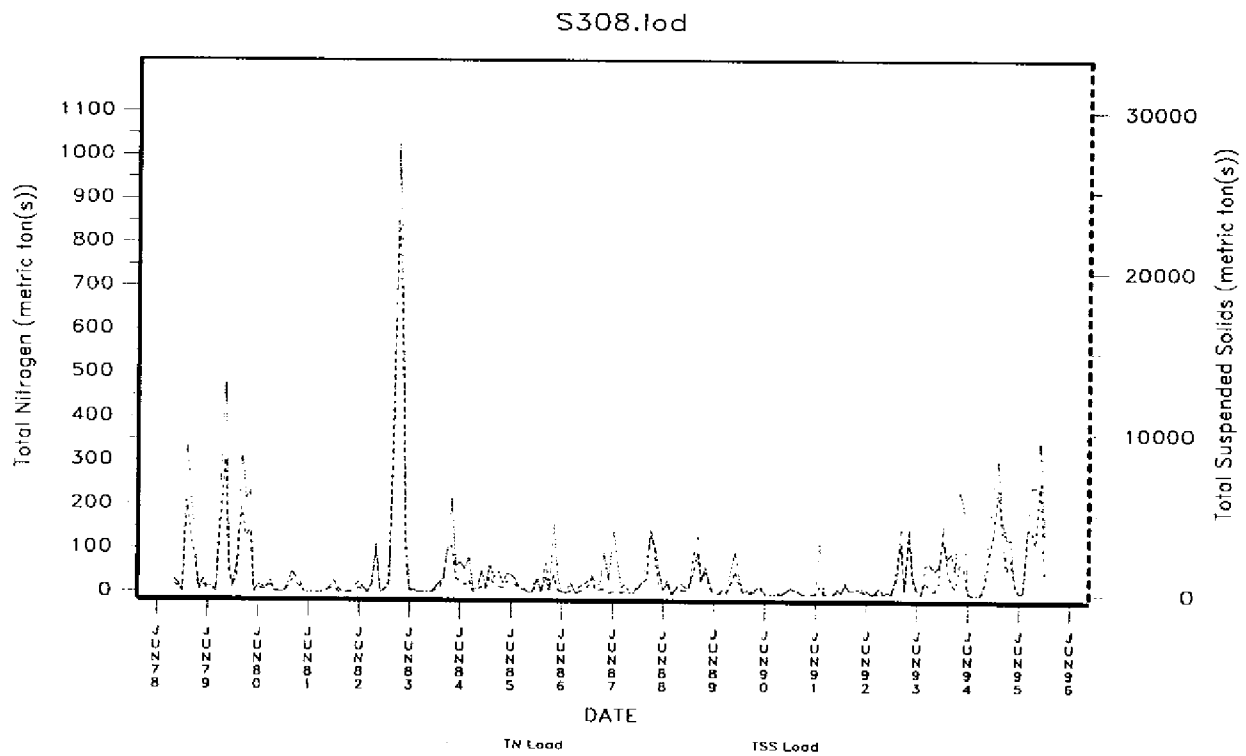


FIGURE 7-52. Historical Monthly Total Nitrogen and Total Suspended Solids at S308.

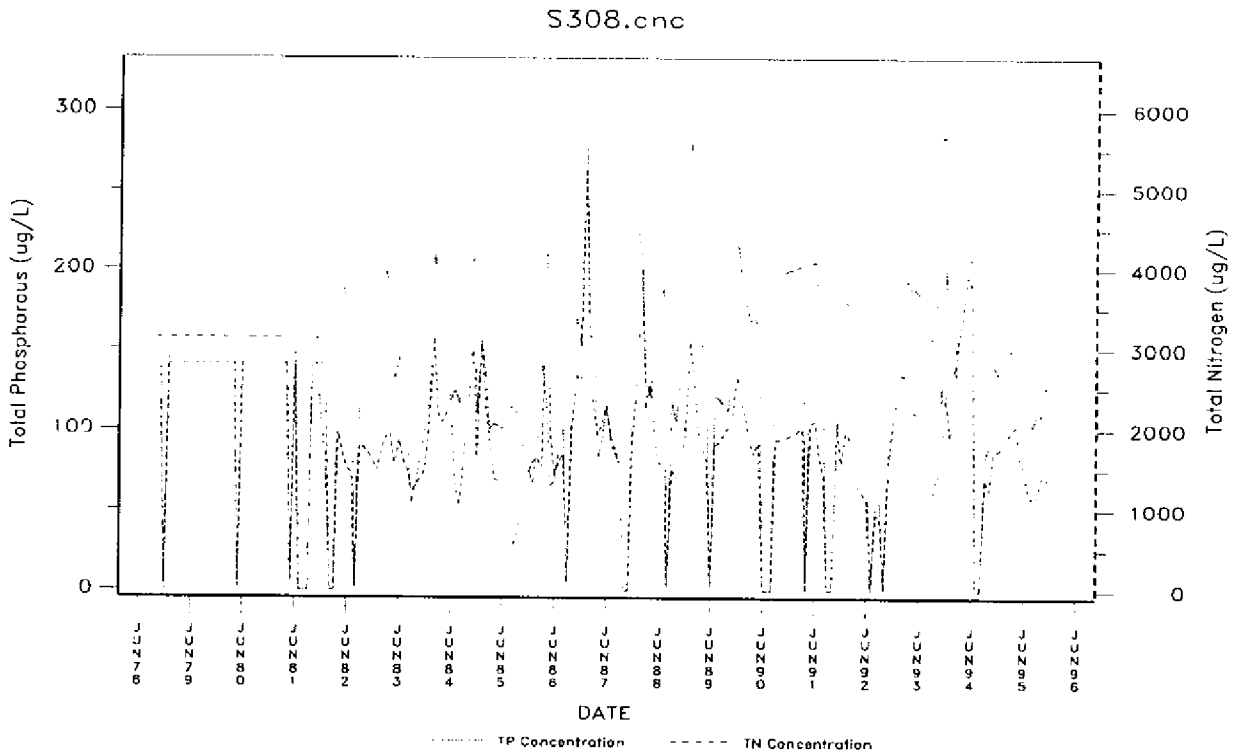


FIGURE 7-53. Historical Monthly Total Phosphorus and Total Nitrogen Concentrations at S308.

Outflows from Lake Okeechobee to the South

Water moving through structures located along the southern rim of Lake Okeechobee, including L8.441, S352, S4, S236, and S3, affects the quality of agricultural, urban, and ecological water supply downstream. Water quality at these stations on the south side of the Lake is depicted in Figures 7-57 through 7-74. At L8.441, both nutrient loads and concentrations remained unchanged from recent years, and were within the range commonly seen over the last twenty years. Relatively high flows were pumped through both S352 and S236 in 1995, but somewhat lower concentrations of TP and TN were reported than in previous years. At S3, both flow and loading were quite low for 1995; however records from S4 show the highest flow volume and TN load seen in recent years.

Several culverts provide local drainage into the lake from the south side. Flow from these structures is relatively small in volume but is often high in nutrient concentrations (Figures 7-72, 7-73, and 7-74). In 1995, Culverts 12A and 4A showed TP loads and flow levels that were quite typical of those recorded over the period of record since 1978. Culvert 12 recorded very high TP loading for this year.

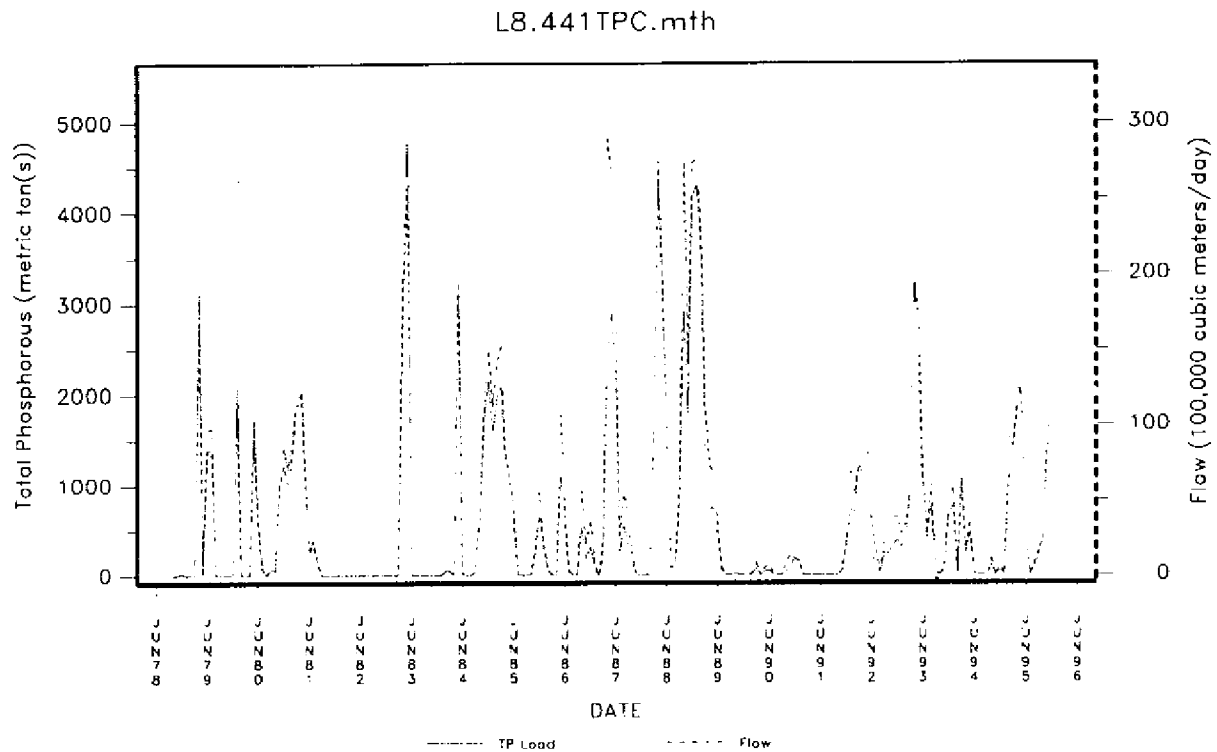


FIGURE 7-57. Historical Monthly Total Phosphorus Load and Water Flow at L8.441.

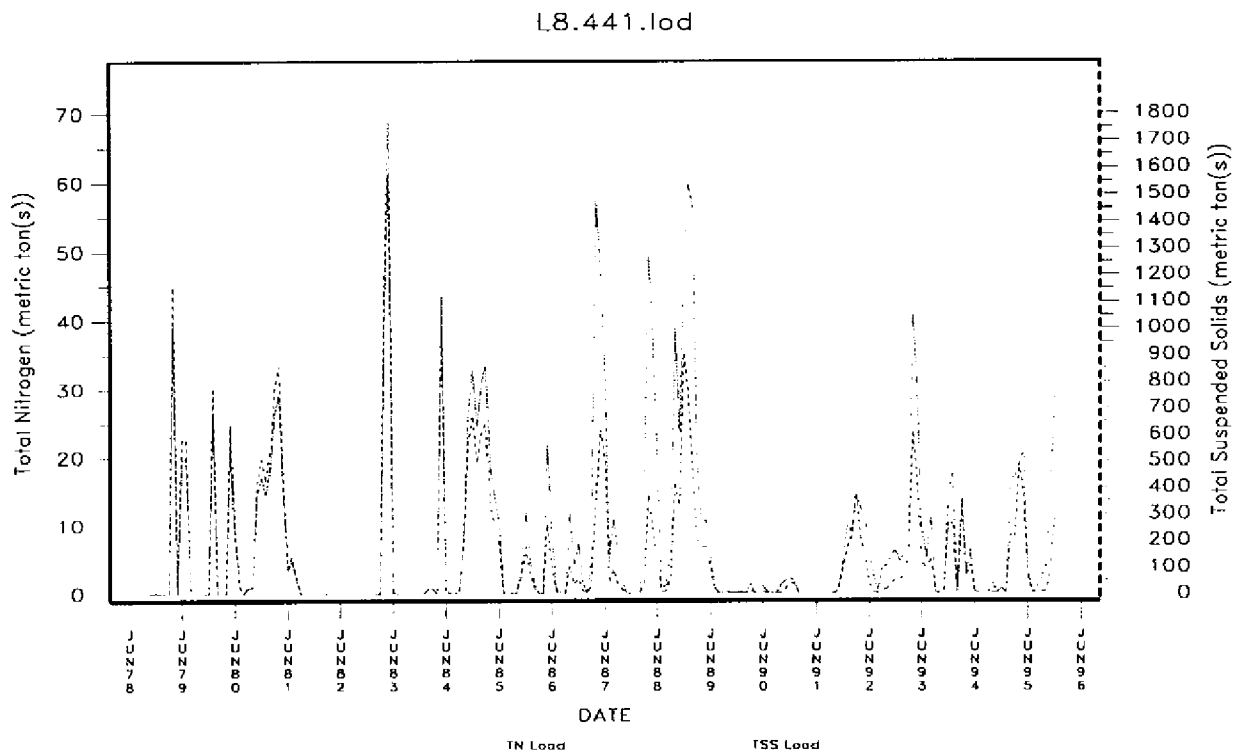


FIGURE 7-58. Historical Monthly Total Nitrogen and Total Suspended Solids at L8.441.

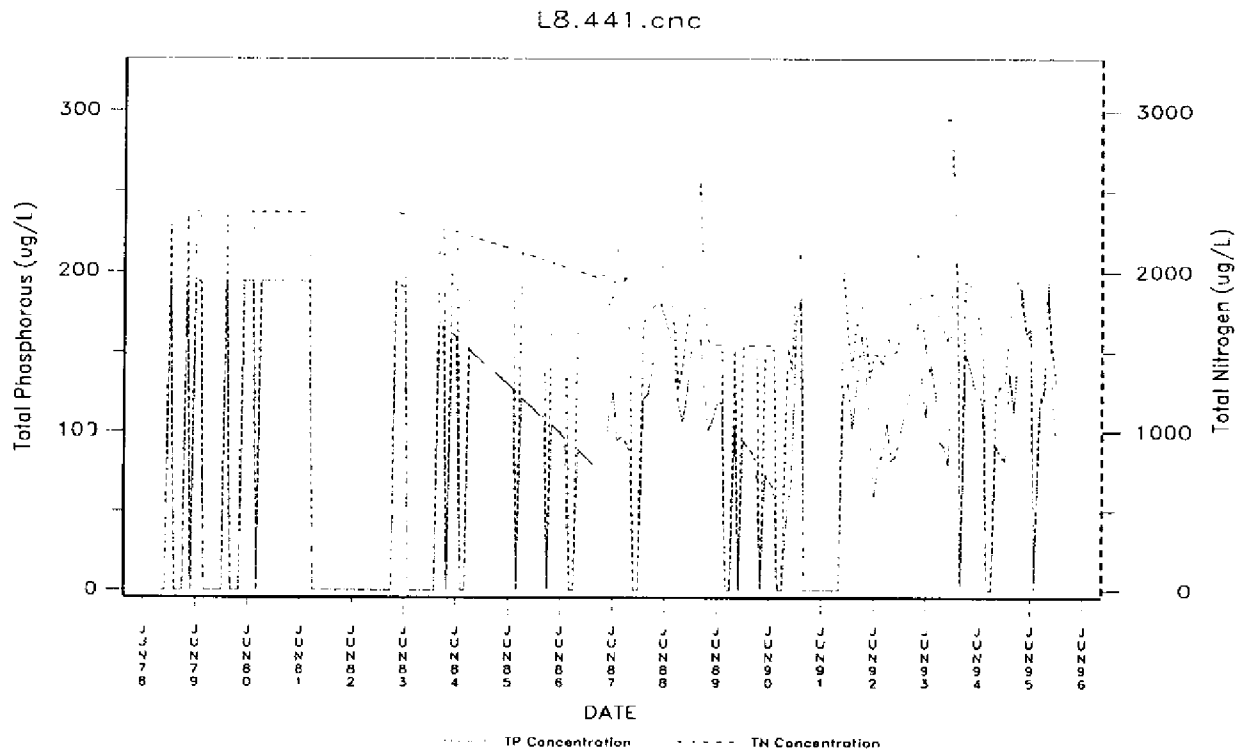


FIGURE 7-59. Historical Monthly Total Phosphorus and Total Nitrogen Concentrations at L8.441.

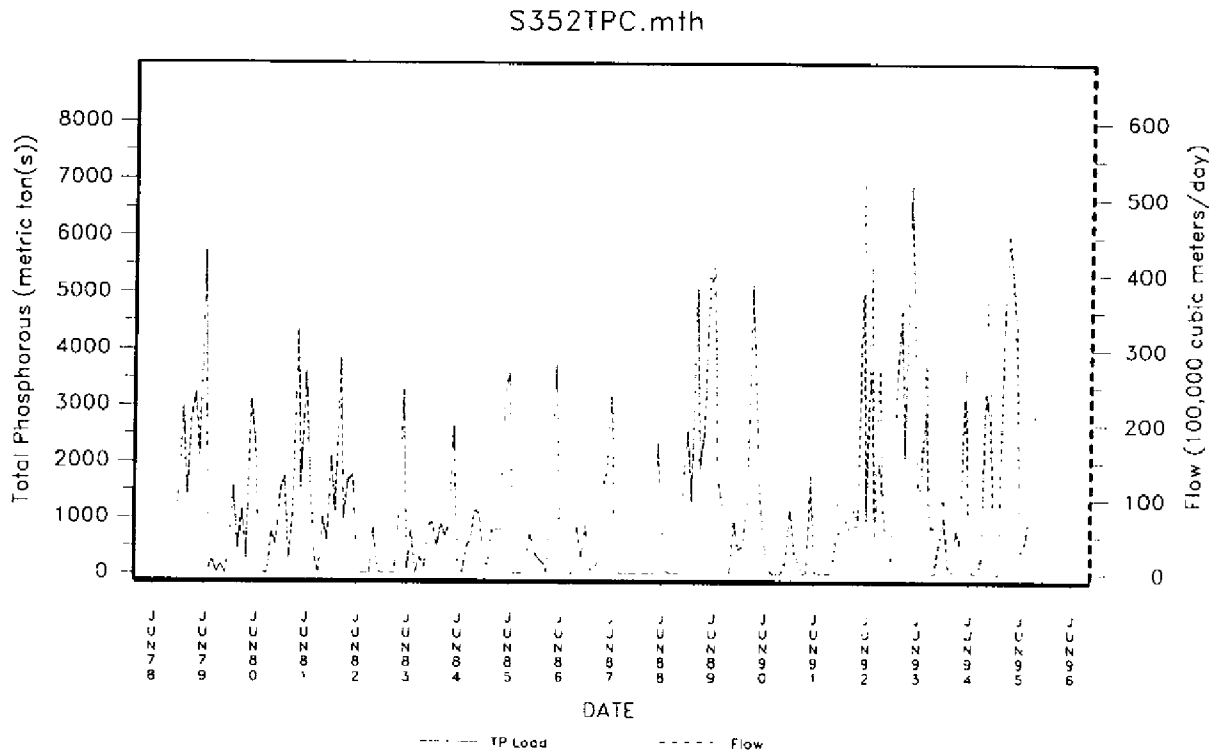


FIGURE 7-60. Historical Monthly Total Phosphorus Load and Water Flow at S352.

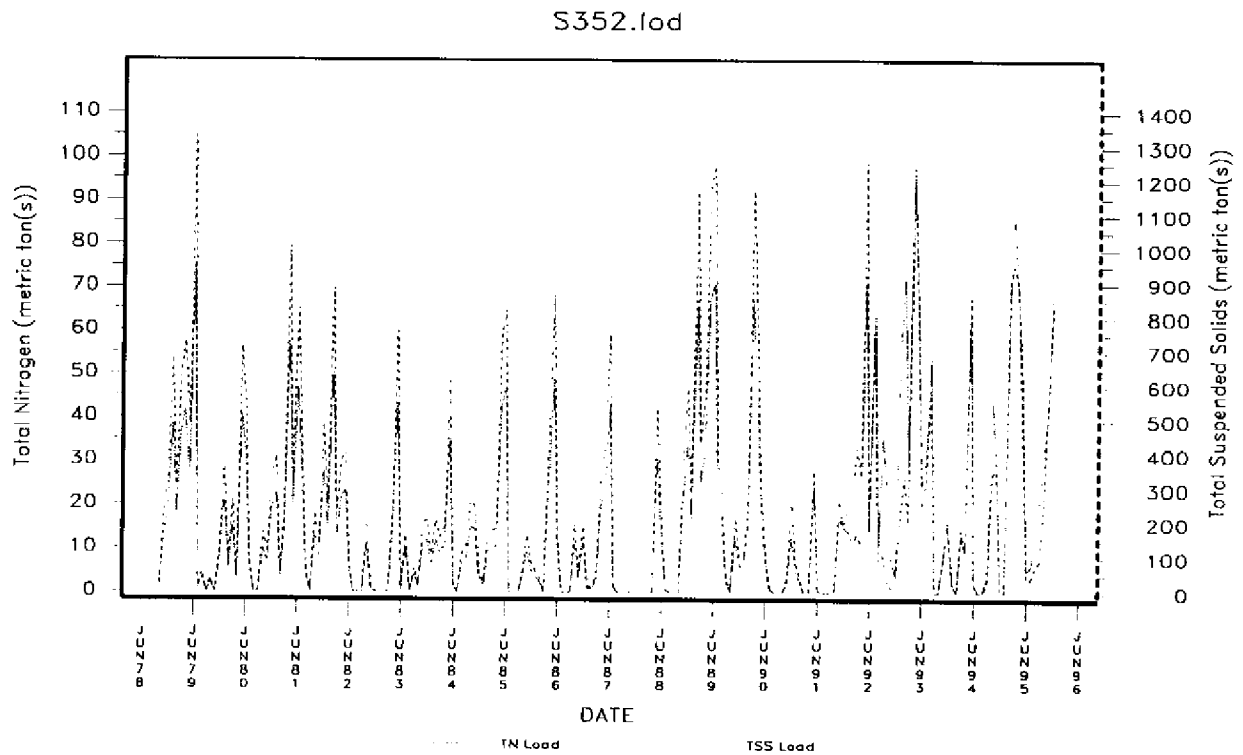


FIGURE 7-61. Historical Monthly Total Nitrogen and Total Suspended Solids at S352.

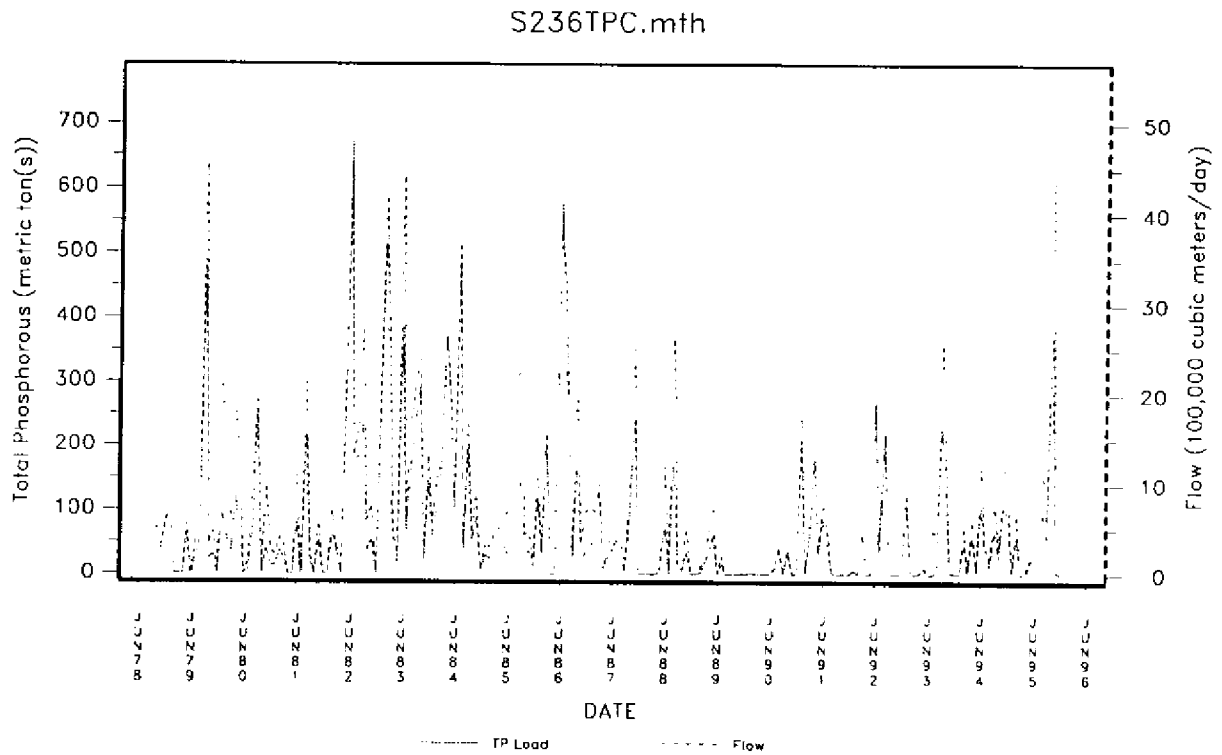


FIGURE 7-66. Historical Monthly Total Phosphorus Load and Water Flow at S236.

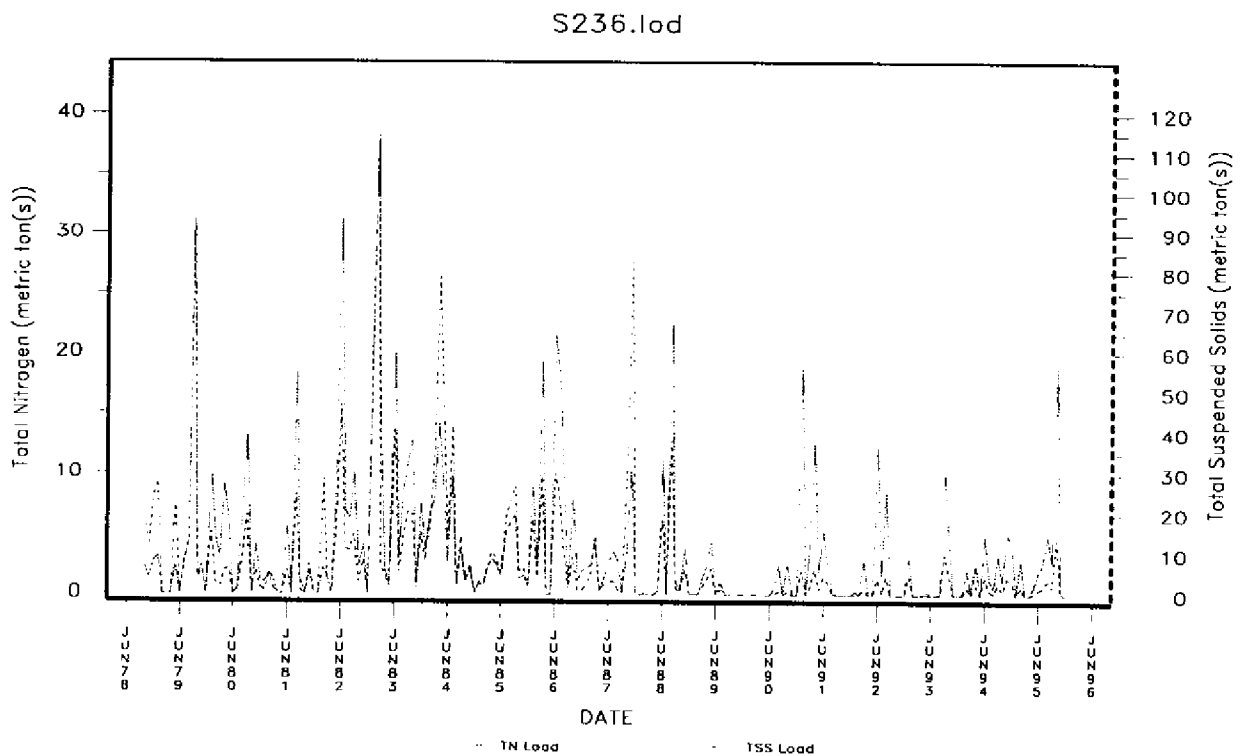


FIGURE 7-67. Historical Monthly Total Nitrogen and Total Suspended Solids at S236.

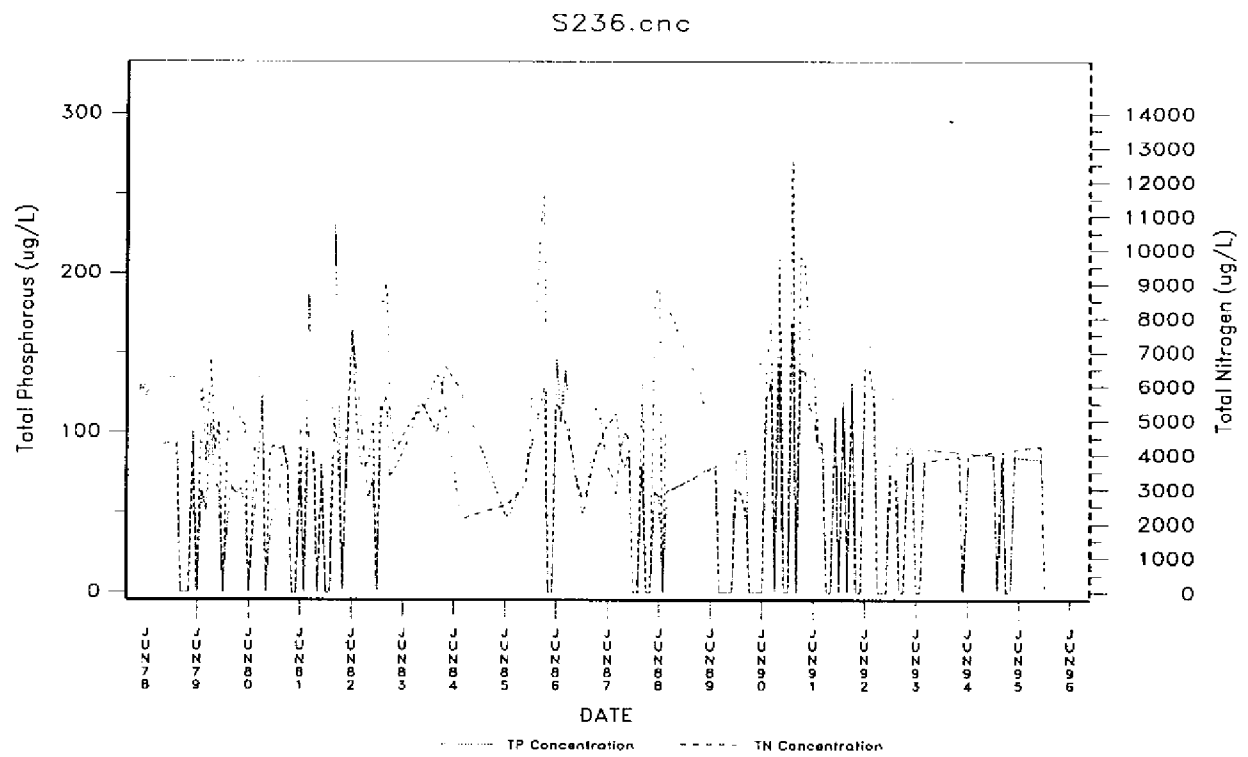


FIGURE 7-68. Historical Monthly Total Phosphorus and Total Nitrogen Concentrations at S236.

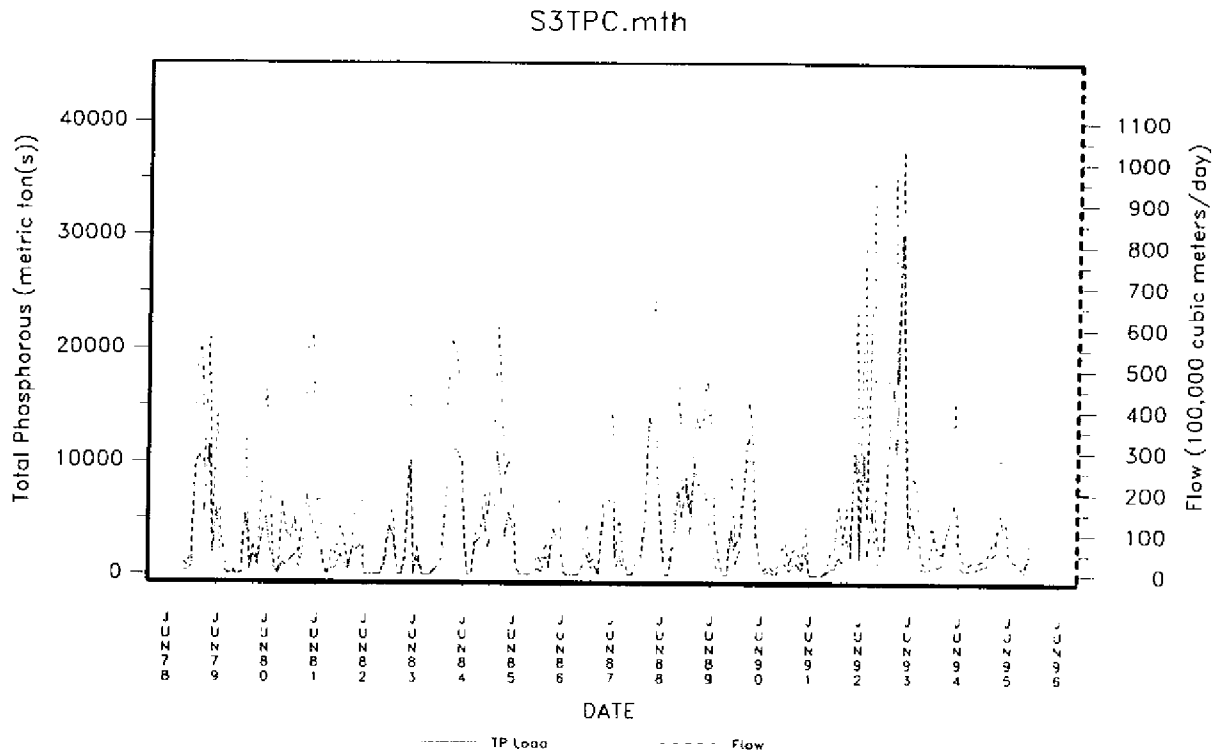


FIGURE 7-69. Historical Monthly Total Phosphorus Load and Water Flow at S3.

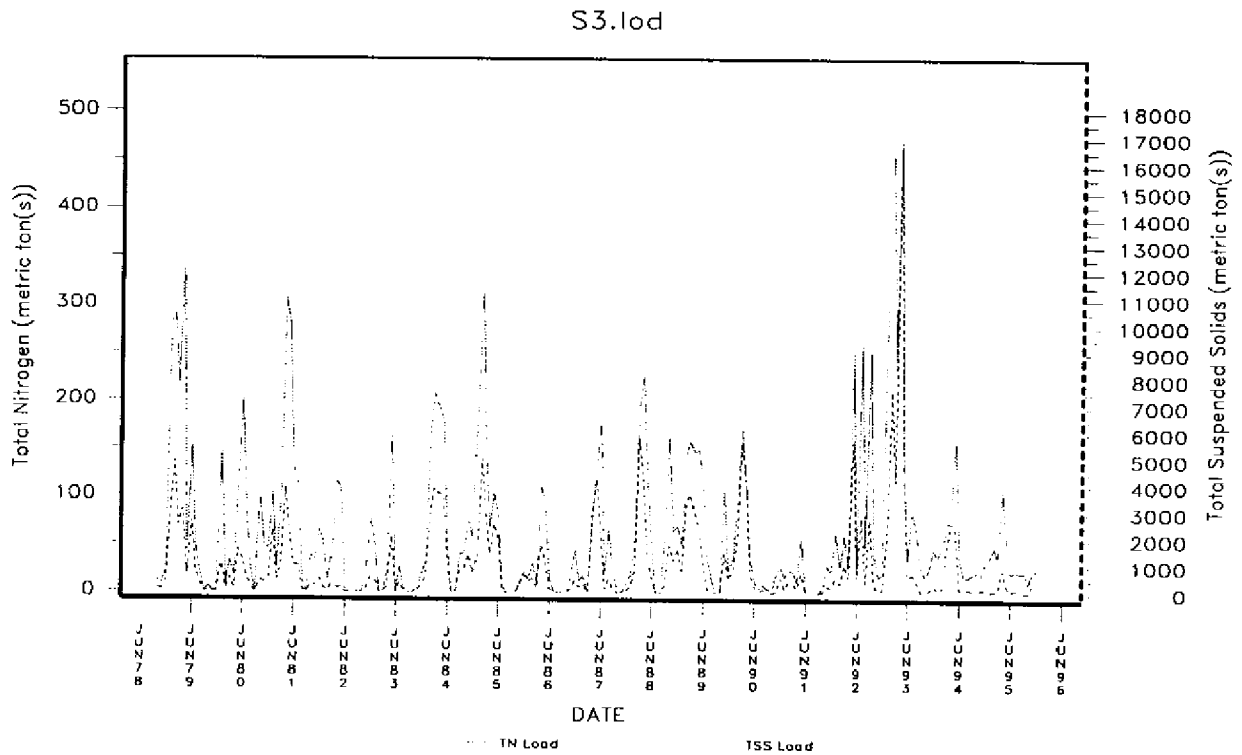


FIGURE 7-70. Historical Monthly Total Nitrogen and Total Suspended Solids at S3.

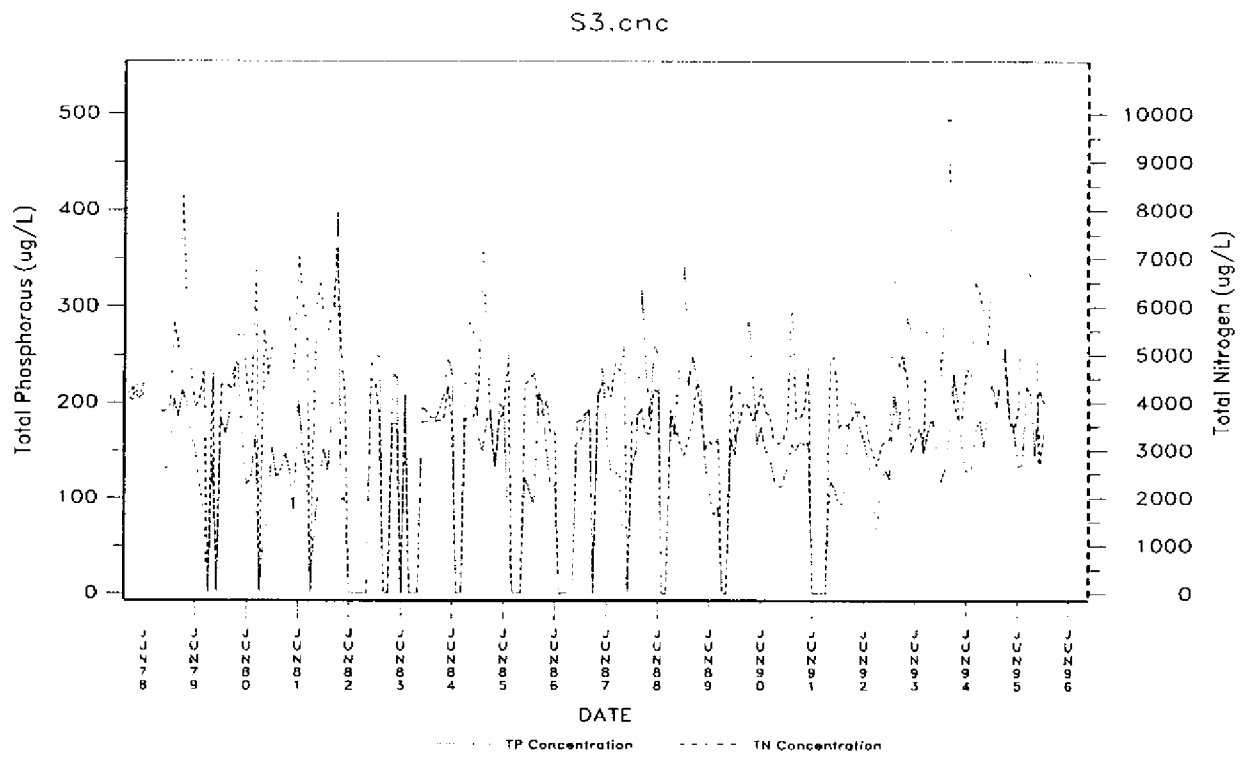


FIGURE 7-71. Historical Monthly Total Phosphorus and Total Nitrogen Concentrations at S3.

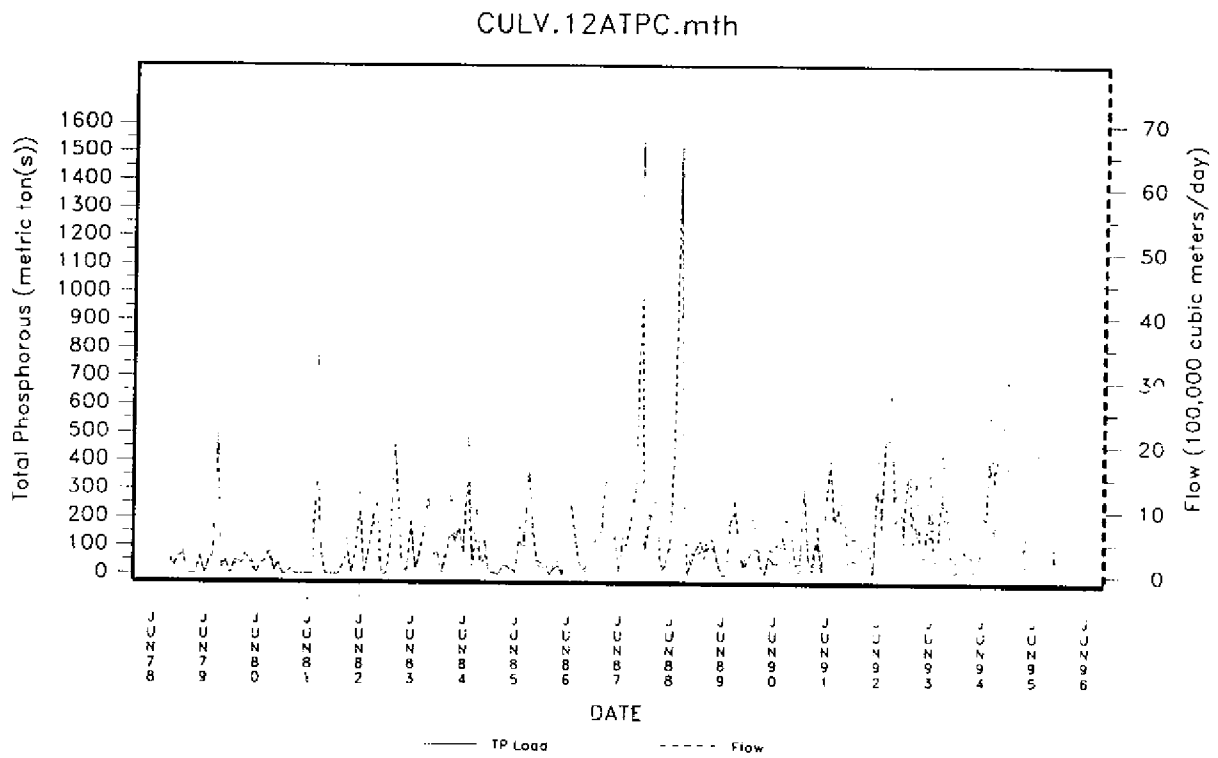


FIGURE 7-72. Historical Monthly Total Phosphorus Load and Water Flow at Culvert 12A.

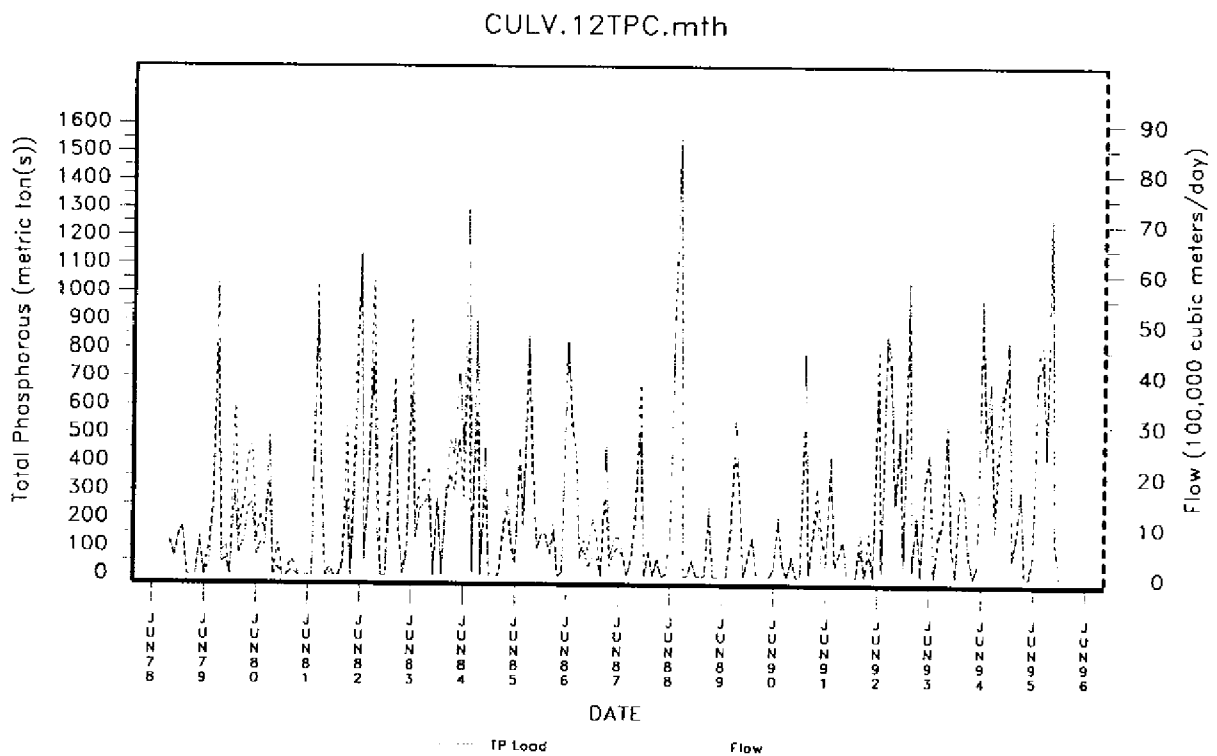


FIGURE 7-73. Historical Monthly Total Phosphorus Load and Water Flow at Culvert 12.

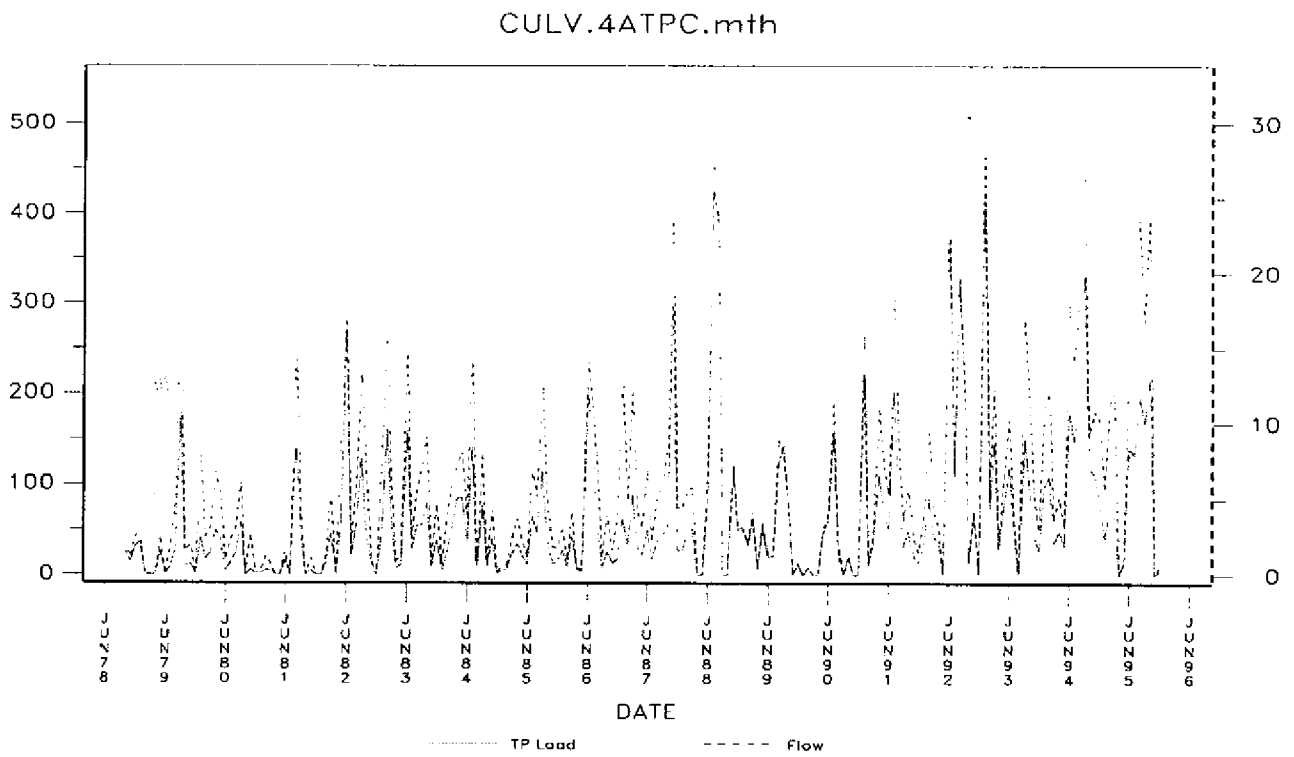


FIGURE 7-74. Historical Monthly Total Phosphorus Load and Water Flow at Culvert 4A.

Everglades Agricultural Area

The Everglades Regulatory Program for the Everglades Agricultural Area (EAA), described in Rule 40E-63,F.A.C., mandates reduction of total phosphorus discharges from the EAA to the Everglades. The Rule requires that for the period May 1 through April 30 of each year beginning in 1996, the annual TP load from the EAA is to be reduced by 25% relative to the base period of 1979-1988. The 25% TP load reduction target is to be achieved by implementing on-farm best management practices (BMPs).

Although the deadline for meeting the 25% load reduction target is not until April 30, 1996, the EAA basin discharge loads are monitored to track the progress made towards the goal. The annual percent TP load reduction achieved in the EAA is shown in Figure 7-75. To achieve a 25% load reduction, the basin load should be less than 75% of the base period load adjusted by annual rainfall. For the most recent period (1994-95), the EAA basin achieved approximately 31% TP load reduction, as certified by the Governing Board on April 30, 1996. To track progress toward the 25% load reduction target over the short-term, a moving 12-month average TP% load reduction is plotted for each month in Figure 7-76.

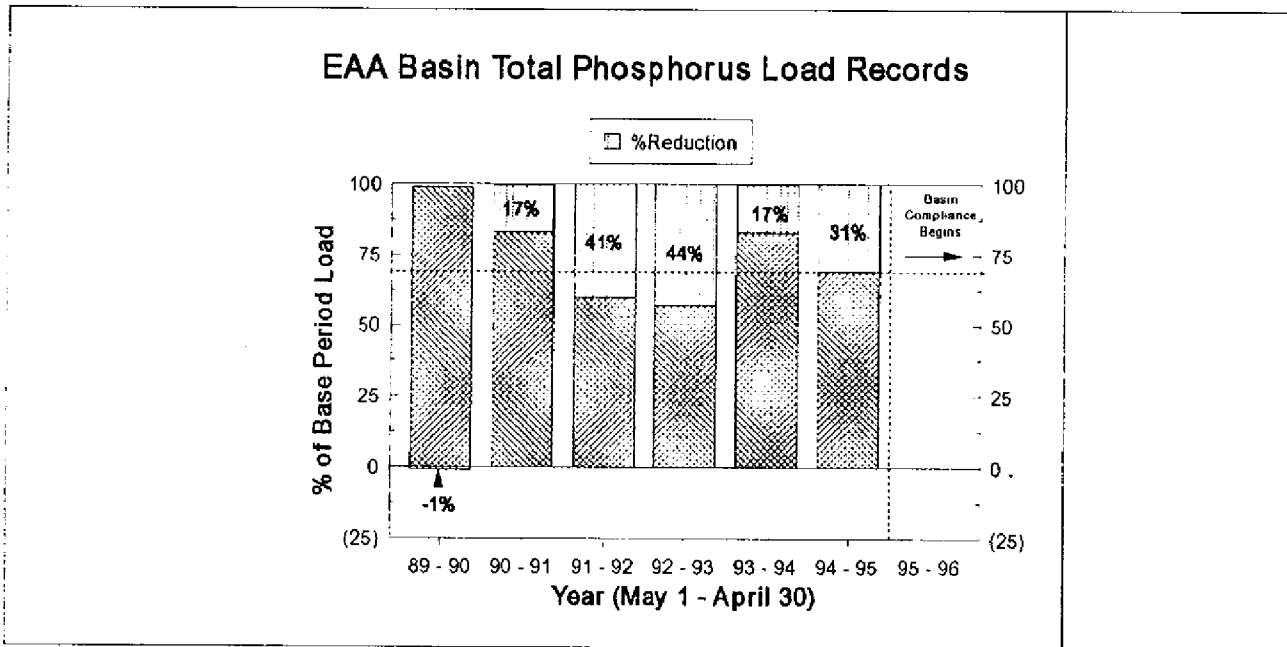


FIGURE 7-75. Total Phosphorus% Load Reduction for the EAA Basin.

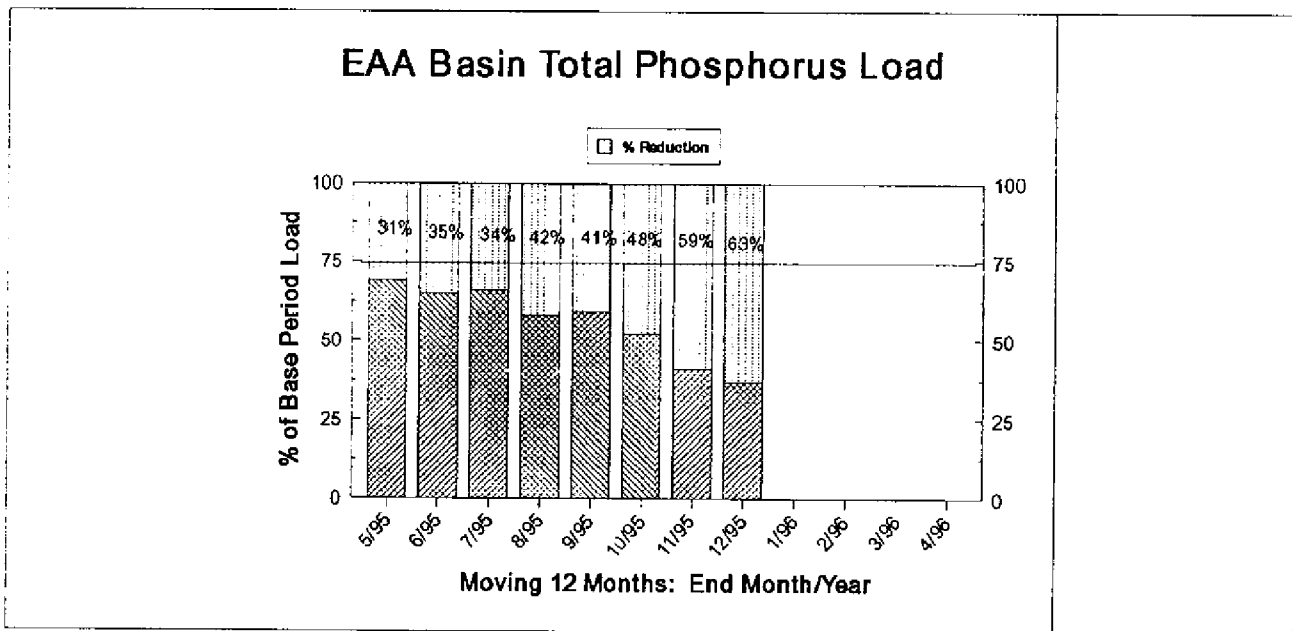


FIGURE 7-76. 12-Month Average Total Phosphorus% Load Reduction for the EAA Basin.

WATER CONSERVATION AREAS

Water flows from the Everglades Agricultural Area (EAA) into the Water Conservation Areas (WCAs). From WCA-3A water flows into Everglades National Park. Water is also released from the WCAs into canals flowing eastward to coastal urban areas. Largely due to chemical and biological water treatment by the WCA marshes, the quality of water flowing out at the southern end of the WCAs is typically better than the quality of water flowing in the northern end.

Historical flow and loads of TP, TN and TSS are depicted in the following time-series plots at monitored structures located on the levees of each WCA. Although the WCAs are designed to have sheet flow over the entire interior area, more water tends to flow around the perimeters of each area. As a result of this characteristic, the WCA graphs shown here as inflow and outflow may not necessarily represent the water quality of the interior portions of the WCAs nor do they necessarily represent water that has always moved across the entire interior of each marsh.

WCA 1, the Loxahatchee Wildlife Refuge

Inflows from the EAA to WCA-1 are recorded at S5A, S5AE, and S6, and data for these structures are presented in Figures 7-77 through 7-85. Flows through these structures are adjusted to comply with a regulation schedule. Flow volumes and material loading levels recorded at these structures fell within the bounds of data recorded for the period of record and showed no consistent pattern of response to the 1995 wet season. On its southern boundary, WCA-1 is connected to WCA-2A by S10A, S10C, S10D and other structures. Water flow and TP loads at these three stations are depicted in Figures 7-86, 7-87 and 7-88. TP loads for these three stations were either lower or about the same as seen in previous years in spite of very high volumes of water recorded in 1995.

Phosphorus levels for the interior of WCA-1 are presented as the geometric mean of TP concentration for 14 interior sites in Figure 7-89. The interim and long-term concentrations of TP are calculated from equations prescribed in the Settlement Agreement and are corrected for water or stage levels in WCA 1. Declining TP concentrations were associated with increased rainfall in the later part of 1994 and 1995. The uncorrected, geometric mean of TP data for each month show little definitive change during the 1994 and 1995 period.

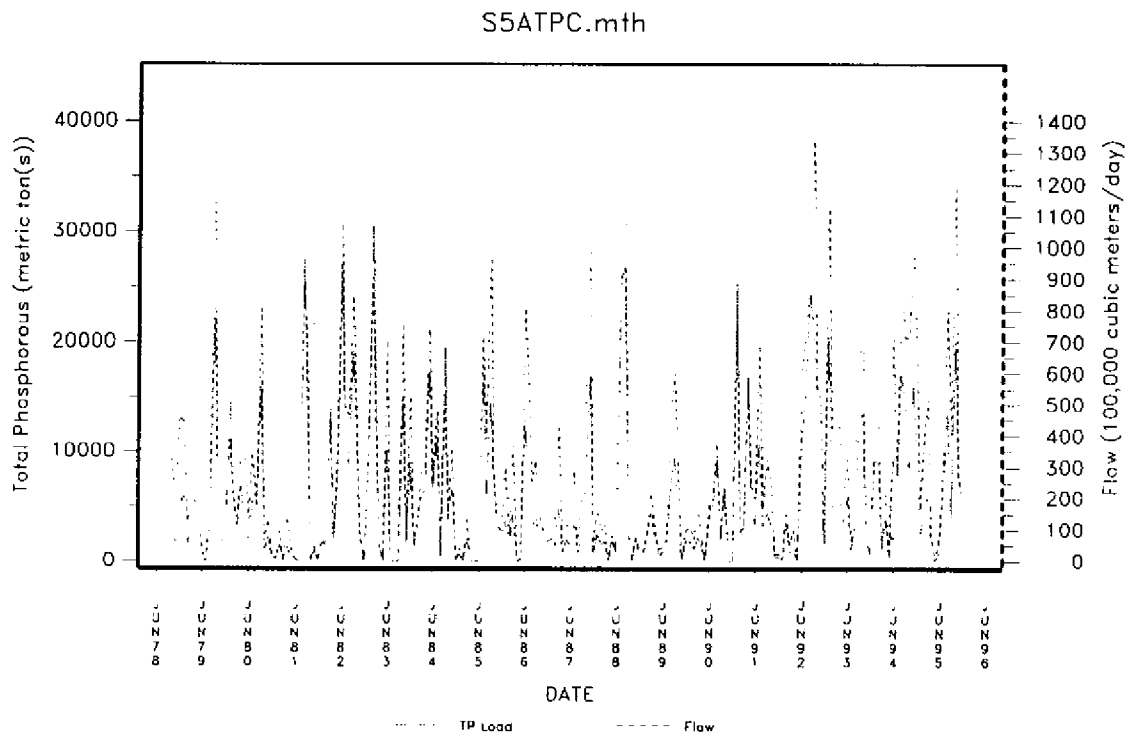


FIGURE 7-77. Historical Monthly Total Phosphorous Load and Water Flow at S5A.

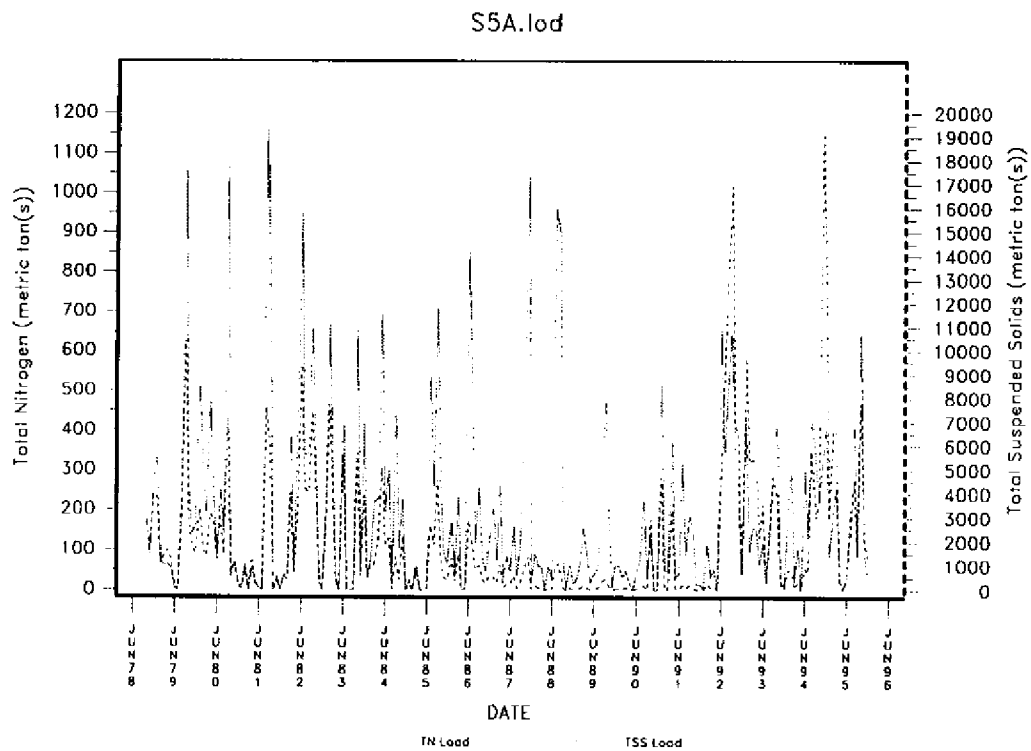


FIGURE 7-78. Historical Monthly Total Nitrogen and Total Suspended Solids at S5A.

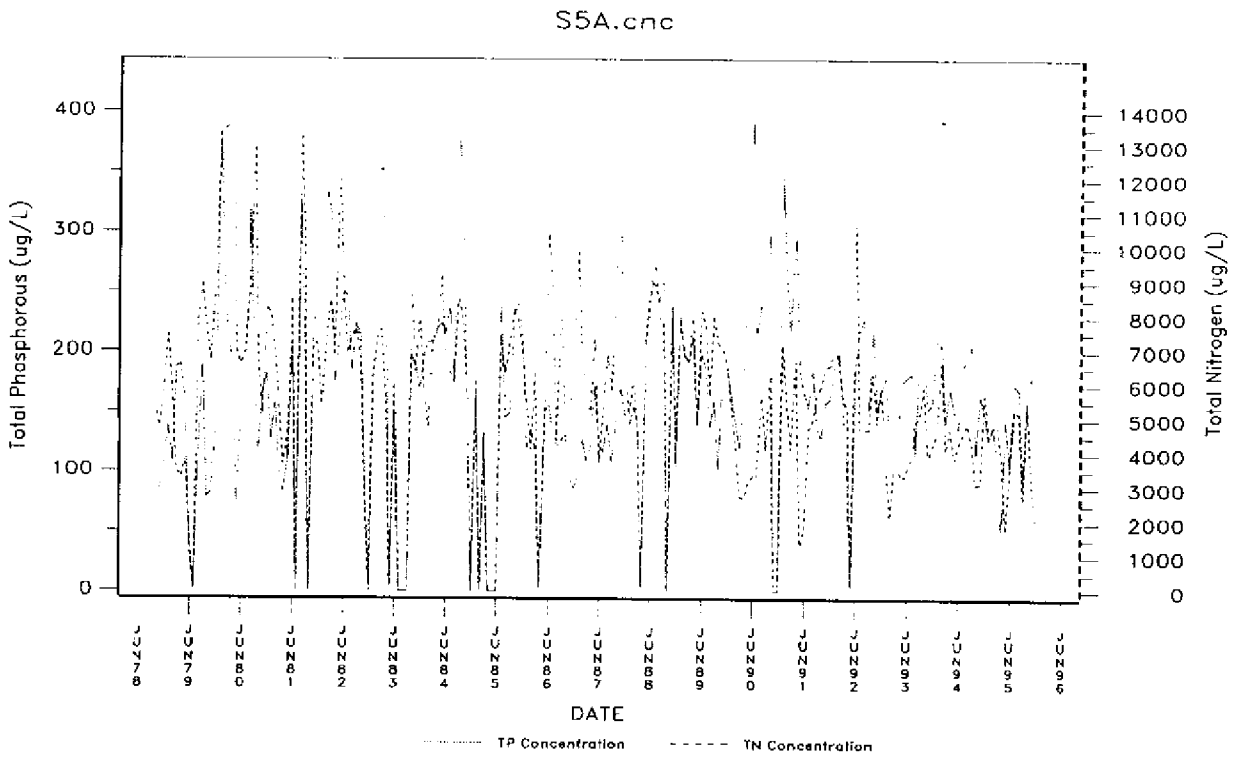


FIGURE 7-79. Historical Monthly Total Phosphorus and Total Nitrogen Concentrations at S5A.

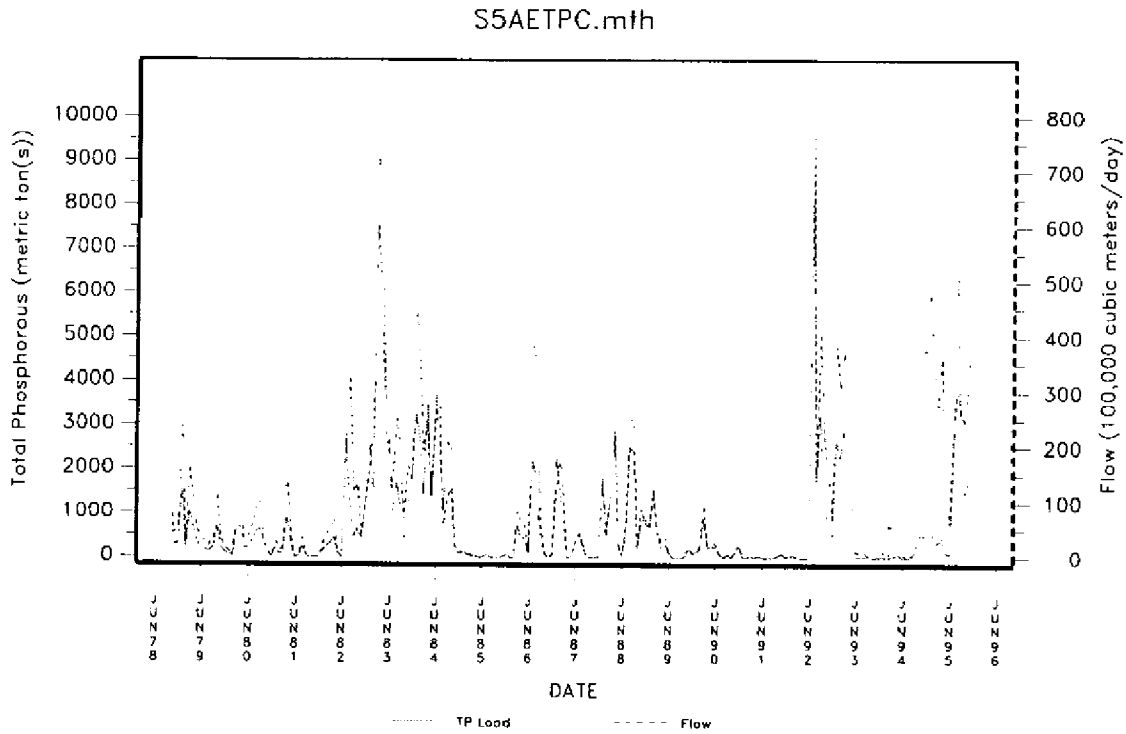


FIGURE 7-80. Historical Monthly Total Phosphorus Load and Water Flow at S5AE.

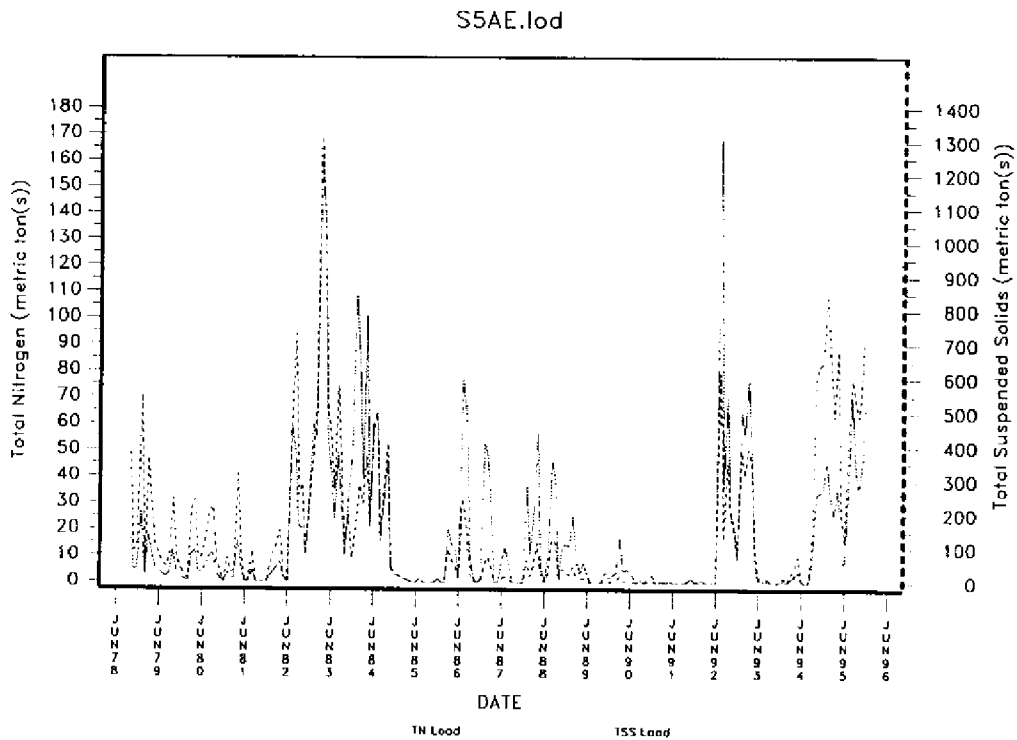


FIGURE 7-81. Historical Monthly Total Nitrogen and Total Suspended Solids at S5AE.

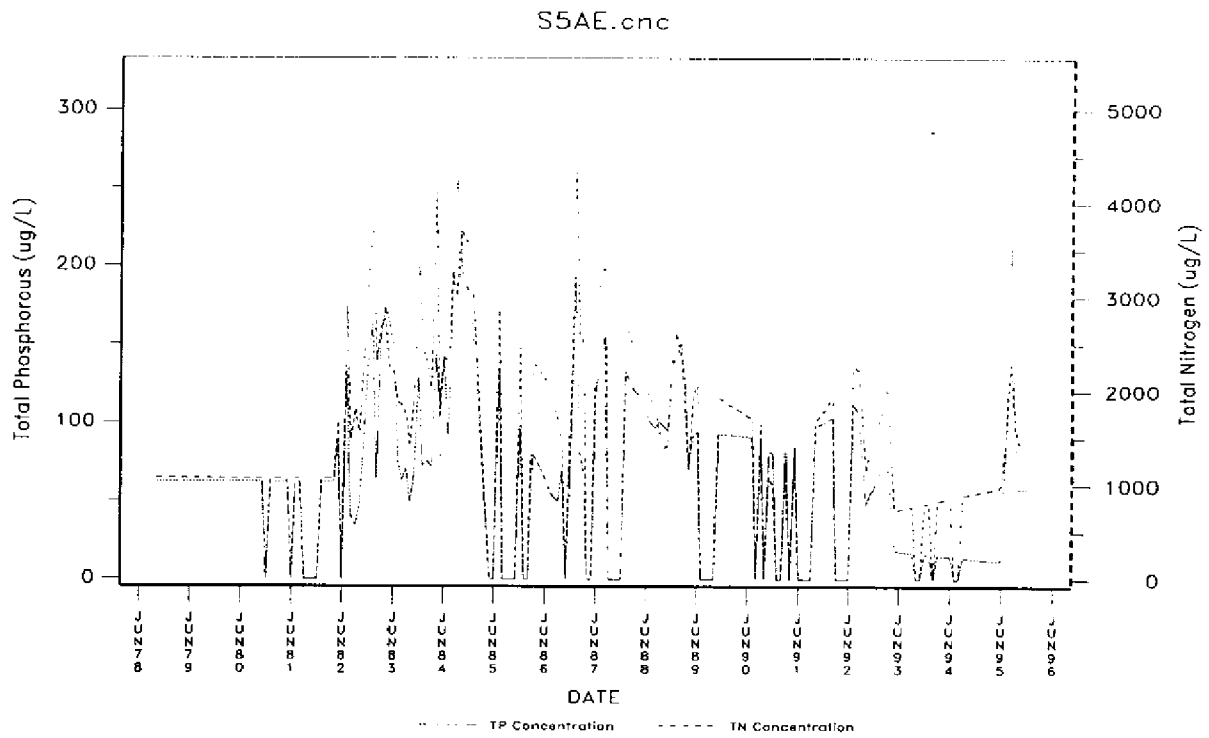


FIGURE 7-82. Historical Monthly Total Phosphorus and Total Nitrogen Concentrations at S5AE.

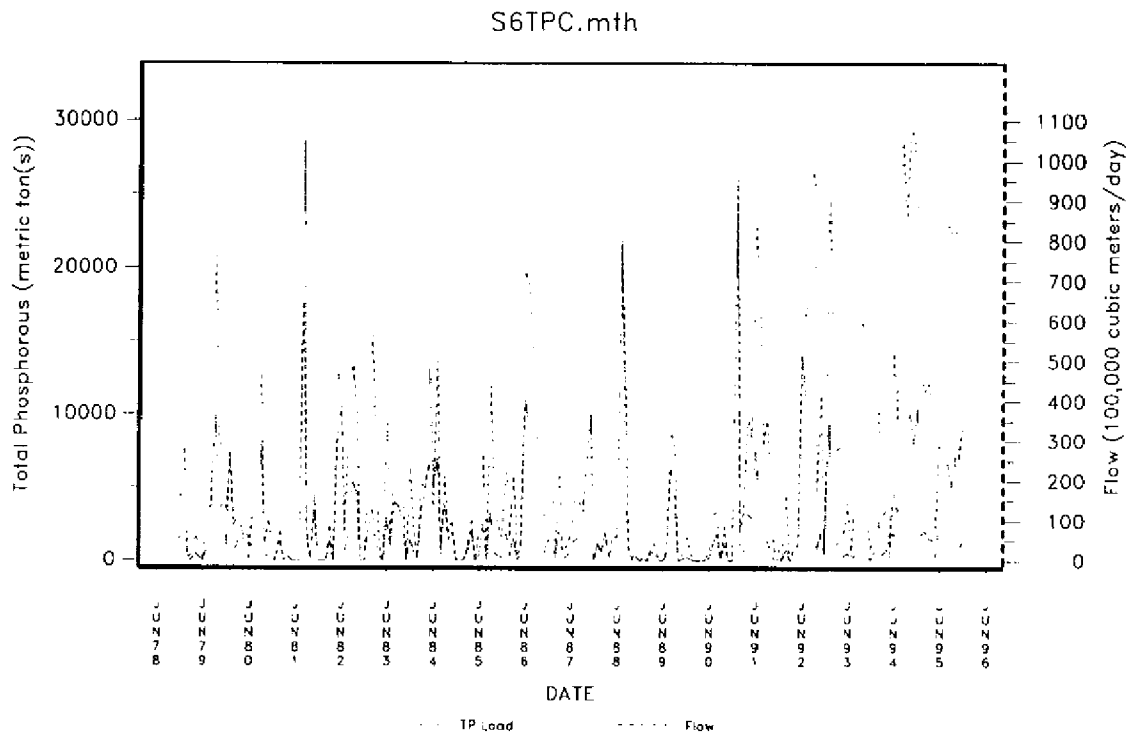


FIGURE 7-83. Historical Monthly Total Phosphorus Load and Water Flow at S6.

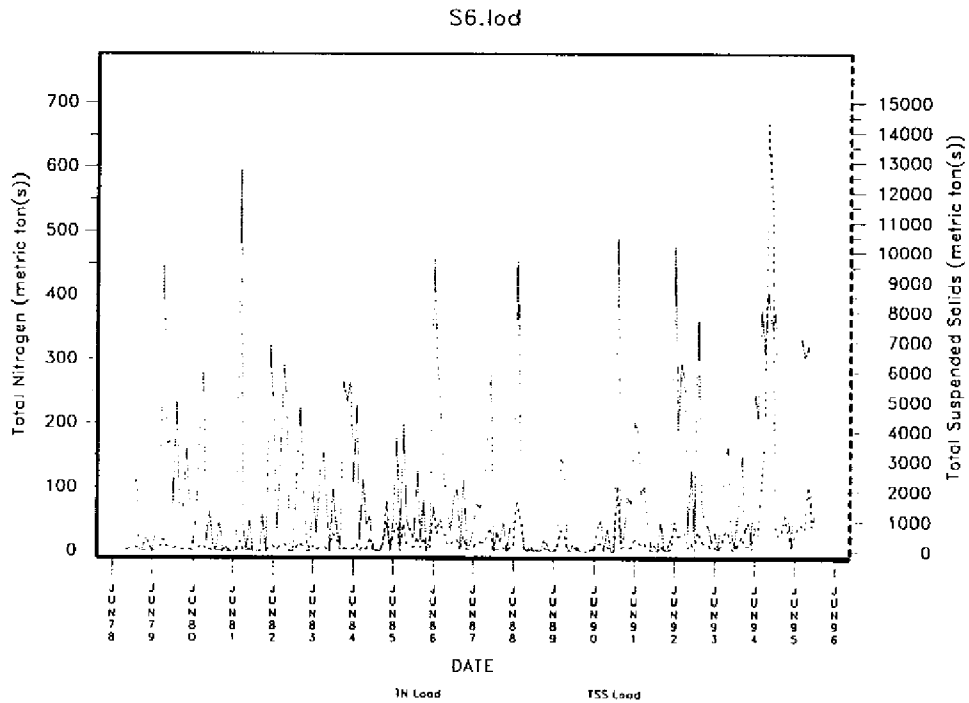


FIGURE 7-84. Historical Monthly Total Nitrogen and Total Suspended Solids at S6.

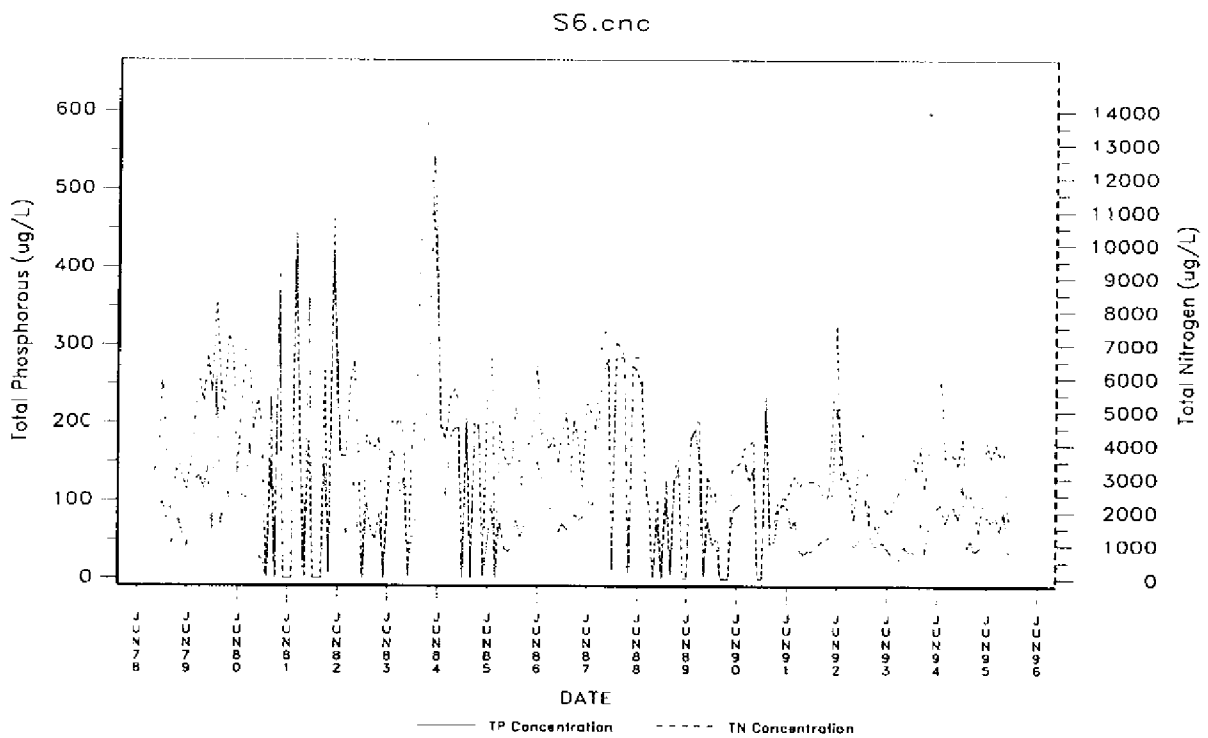


FIGURE 7-85. Historical Monthly Total Phosphorus and Total Nitrogen Concentrations at S6.

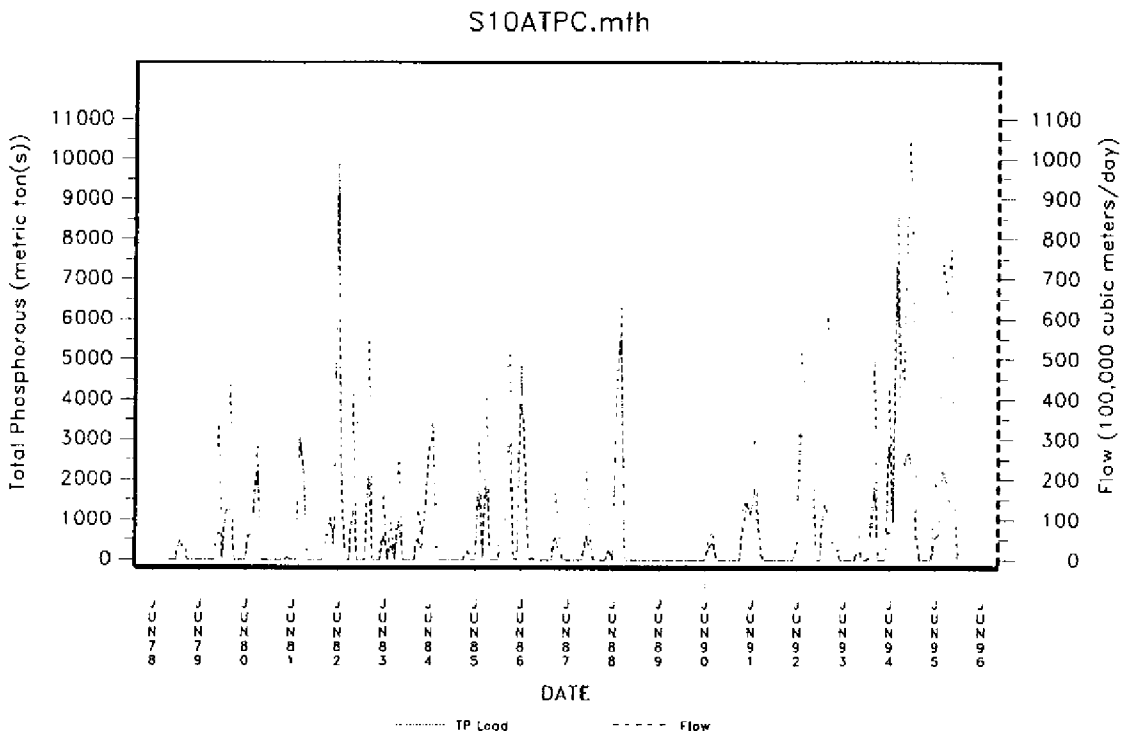


FIGURE 7-86. Historical Monthly Total Phosphorus Load and Water Flow at S10A.

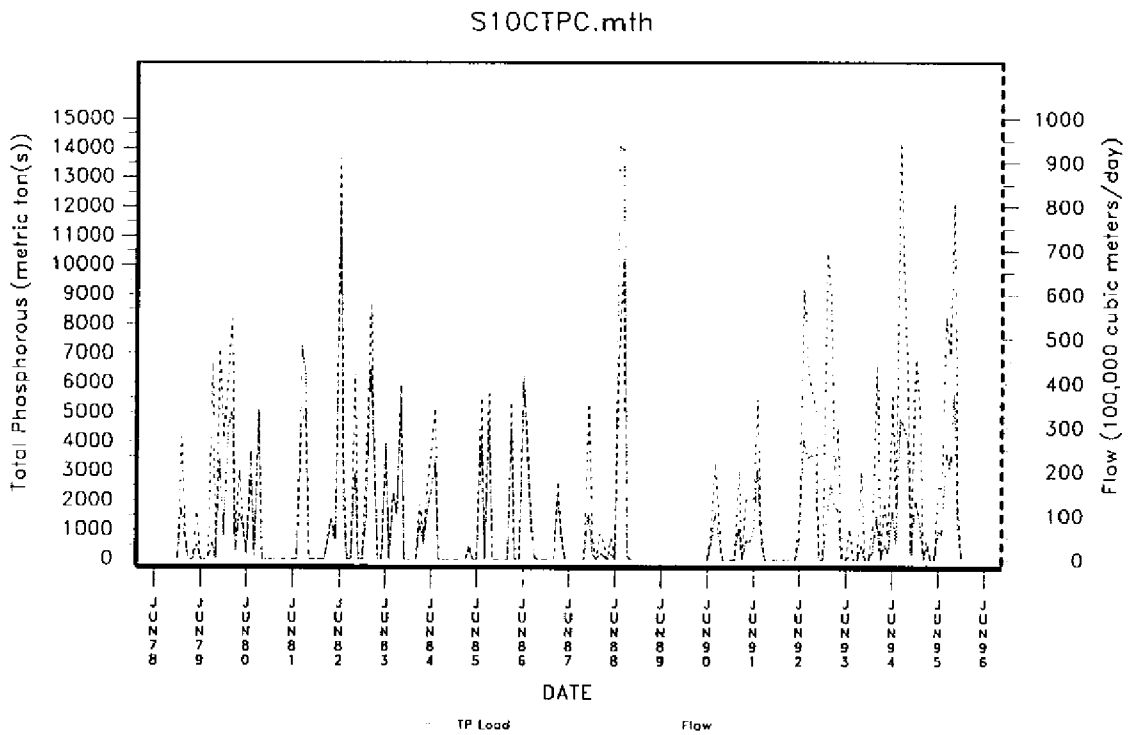


FIGURE 7-87. Historical Monthly Total Phosphorus Load and Water Flow at S10C.

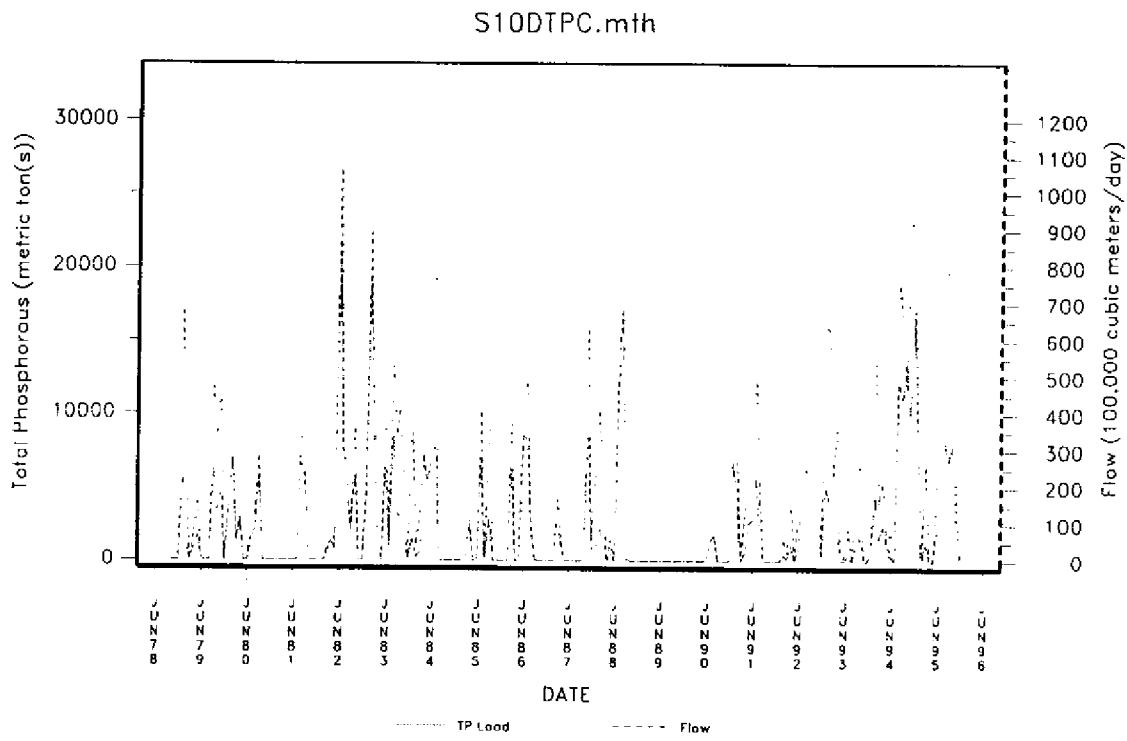


FIGURE 7-88. Historical Monthly Total Phosphorus Load and Water Flow at S10D.

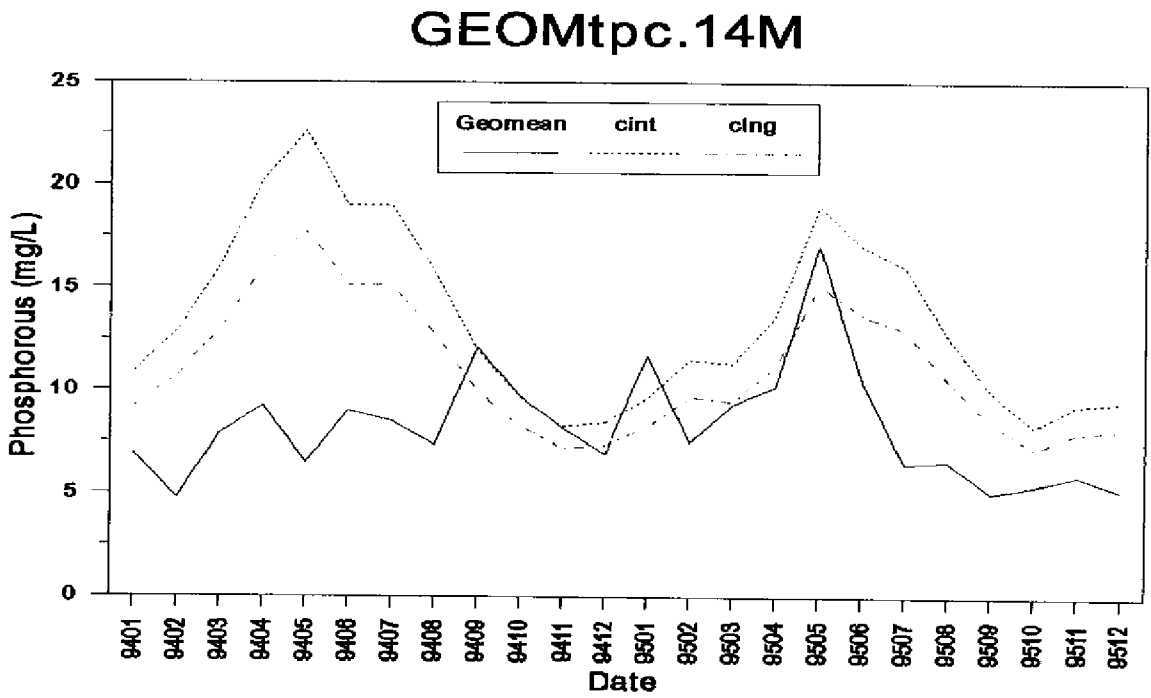


FIGURE 7-89. Geometric Means of Total Phosphorus Concentrations for WCA 1.

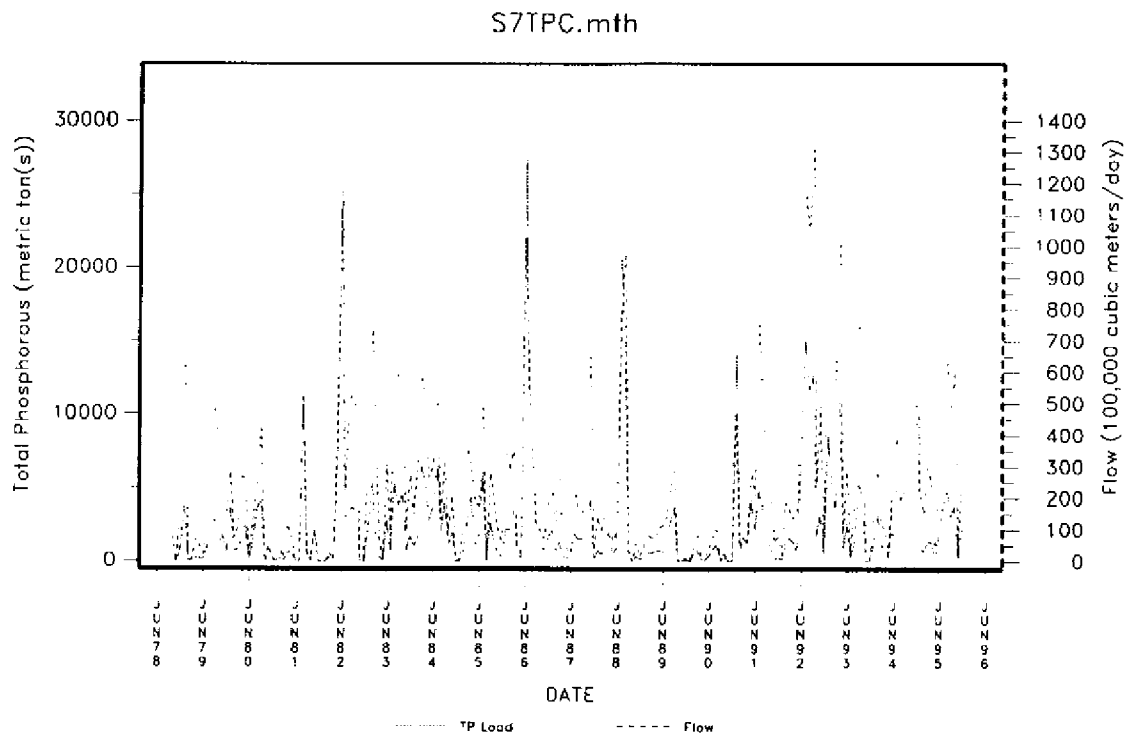


FIGURE 7-90. Historical Monthly Total Phosphorus Load and Water Flow at S7.

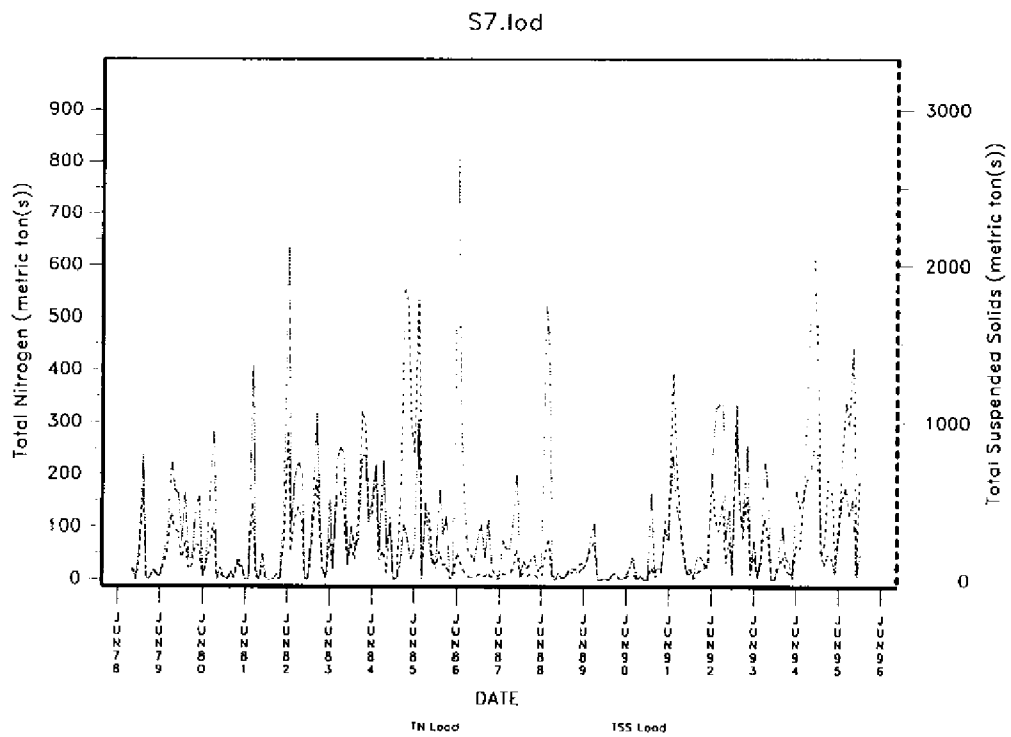


FIGURE 7-91. Historical Monthly Total Nitrogen and Total Suspended Solids at S7.

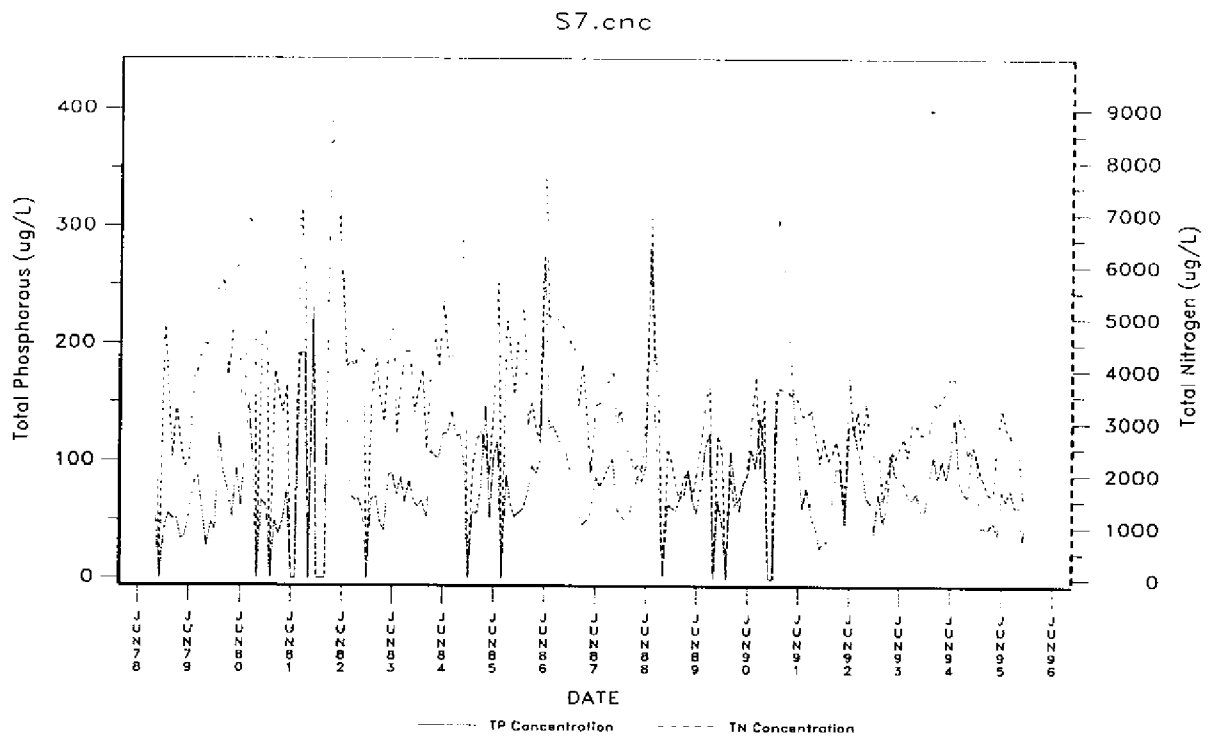


FIGURE 7-92. Historical Monthly Total Phosphorus and Total Nitrogen Concentrations at S7.

WCA 2

Discharge from the EAA into WCA-2A comes through S6 and S7. Water quality at S7 is plotted in Figures 7-90, 7-91 and 7-92. Extensive Best Management Practices (BMP) have been implemented in the last few years. The loads through S7 were somewhat lower compared to historical loads discharged from the EAA due to lower material concentrations and moderate flow levels for 1995. These changes may be associated with the implementation of BMPs.

The water quality of WCA-2A outflow to the east through S38 is depicted in Figures 7-93, 7-94 and 7-95. A notably large flux of TN and TP, which moved through S38 at the end of 1994 and the beginning of 1995, was associated with relatively large volumes of water moving through the structure and a brief increase in TP concentration. These loads were the highest recorded at S38 since the 1980s. Flow volume for the 1994/1995 period was within normal range for these locations, although total volume was slightly greater than was recorded in recent years.

The flows and TP loads from S11A, S11B, and S11C (located between WCA-2A and WCA-3A) are shown in Figures 7-96, 7-97 and 7-98. TP loads recorded at these three stations in 1995 were typical of those seen over the last five years, and somewhat lower than those documented during the 1980s.

WCA 3

Surface waters primarily flow into WCA-3 from the north and west. Data records are kept for monitoring stations S150 and S8 at the northern end where water moves from the EAA into WCA-3A. There are no on the western side of the WCA. Water discharges from WCA-3 to the east and south through S9. At the southern end of WCA-3, S333 directs water to south Dade County. The four structures (S12A, S12B, S12C and S12D, located on the northern boundary of Everglades National Park) convey water from WCA-3 into the Park (see below).

Remarkable reductions in nutrient concentration occur as the water flows across WCA-3 from the inflow to the outflow points. The quality of water flowing in through S8 and S150 from the north is plotted in Figures 7-99 through 7-104. In 1995, flow through S150 was small and had lower material concentrations than in previous years. S8 discharged proportionally higher volumes of water in 1995, but with slightly lower TP concentrations than previous years. The net result was TP loading typical of rates seen in recent years. The concentration of TN at this structure was similar to that seen over the last five years, but the large volume of water in 1995 increased the TN load into WCA-3.

Outflow and TP loading through S333 (Figure 7-105) were relatively low for 1995. The historical TP load and flow data for S9 (Figure 7-106) shows no outstanding feature in 1995.

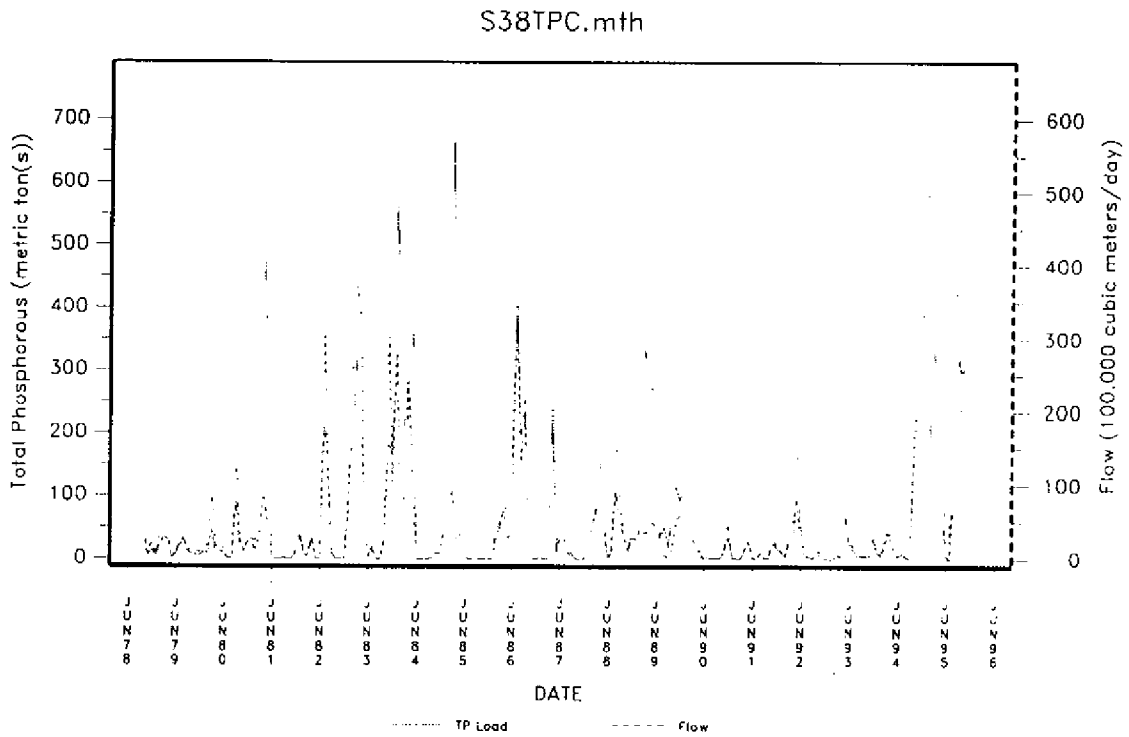


FIGURE 7-93. Historical Monthly Total Phosphorus Load and Water Flow at S38.

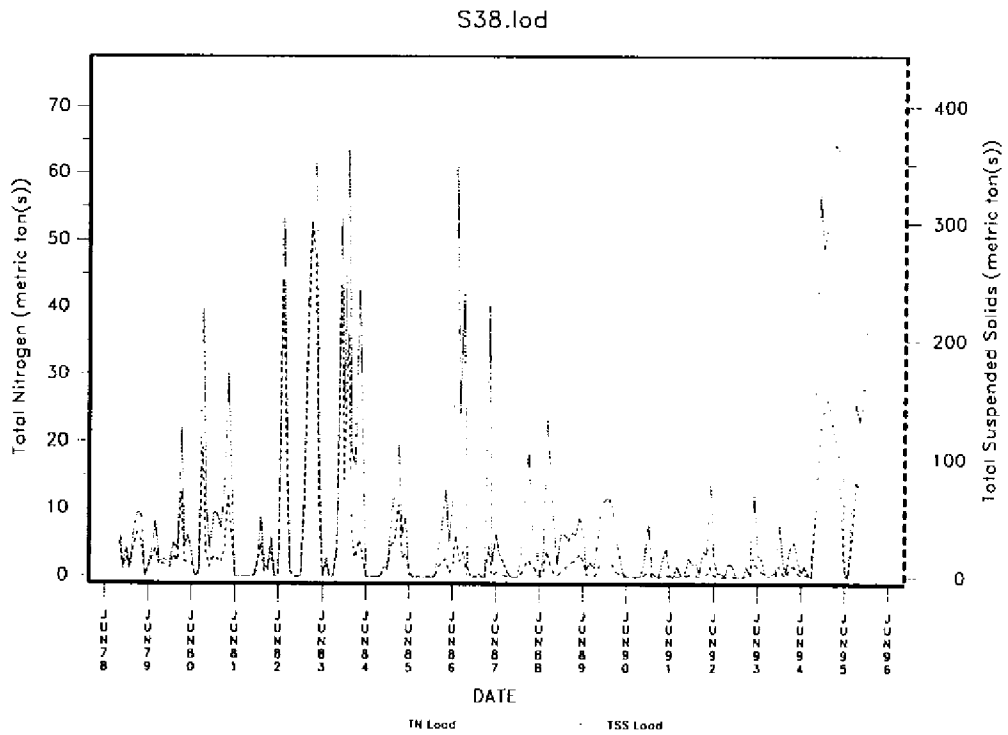


FIGURE 7-94. Historical Monthly Total Nitrogen and Total Suspended Solids at S38.

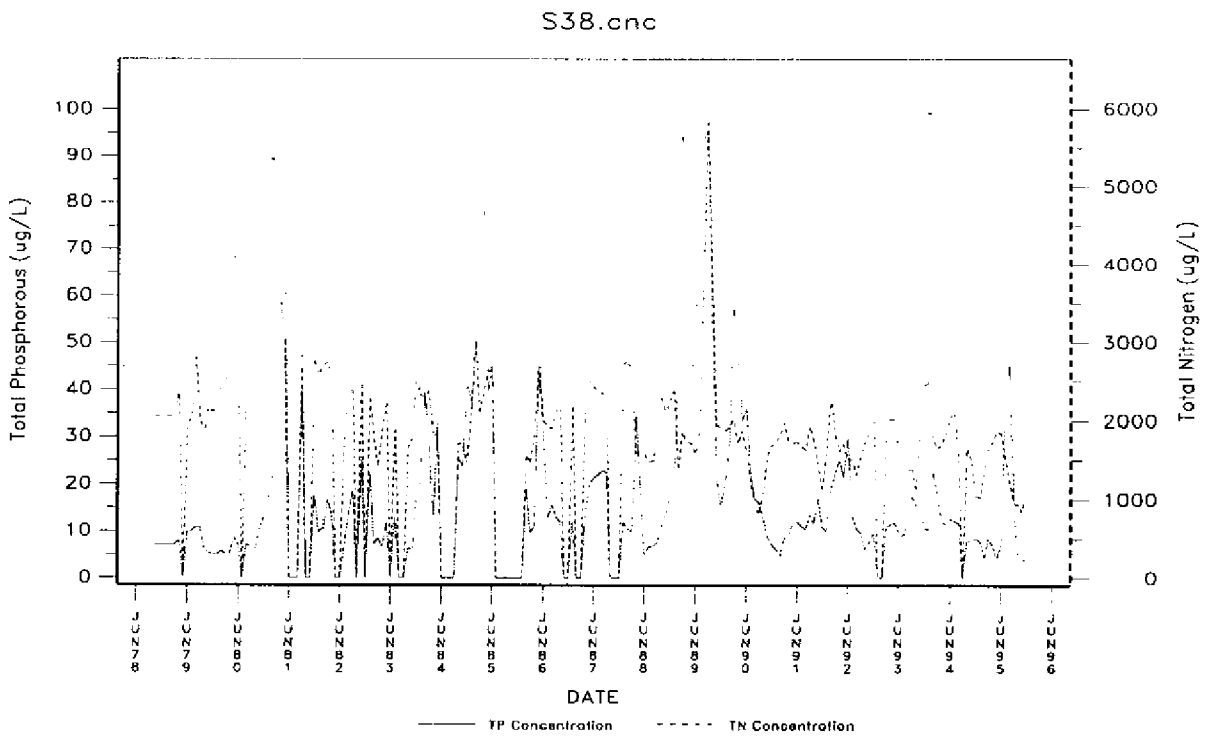


FIGURE 7-95. Historical Monthly Total Phosphorus and Total Nitrogen Concentrations at S38.

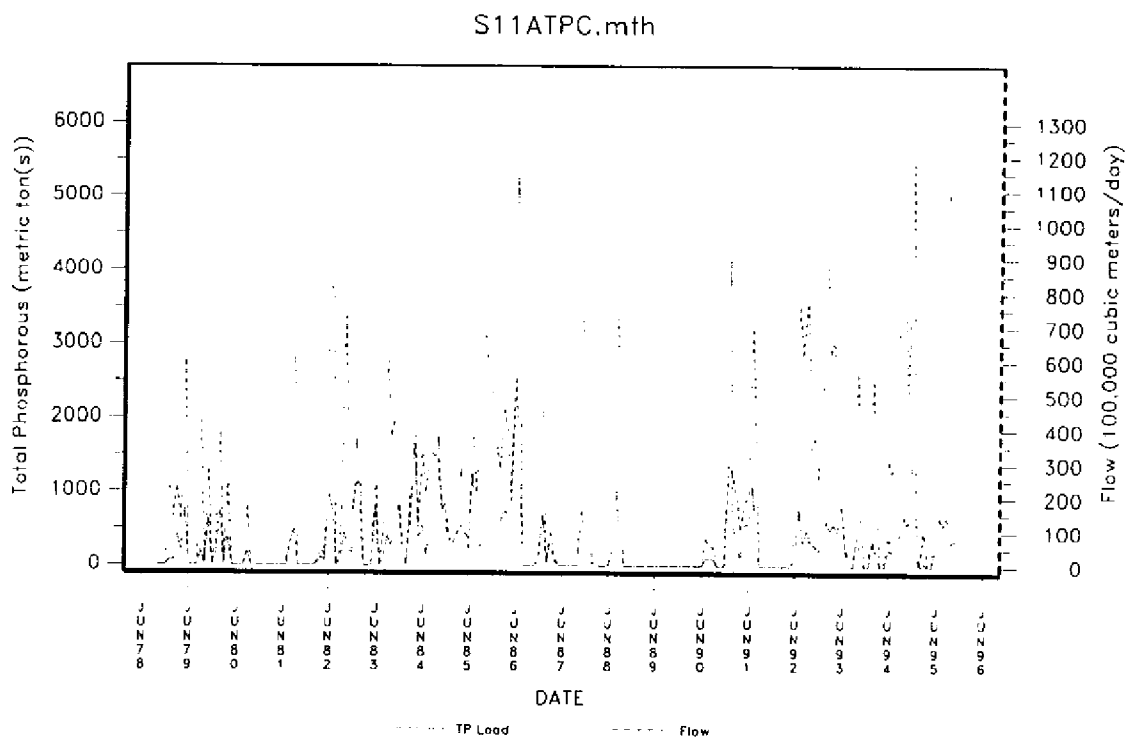


FIGURE 7-96. Historical Monthly Total Phosphorus Load and Water Flow at S11A.

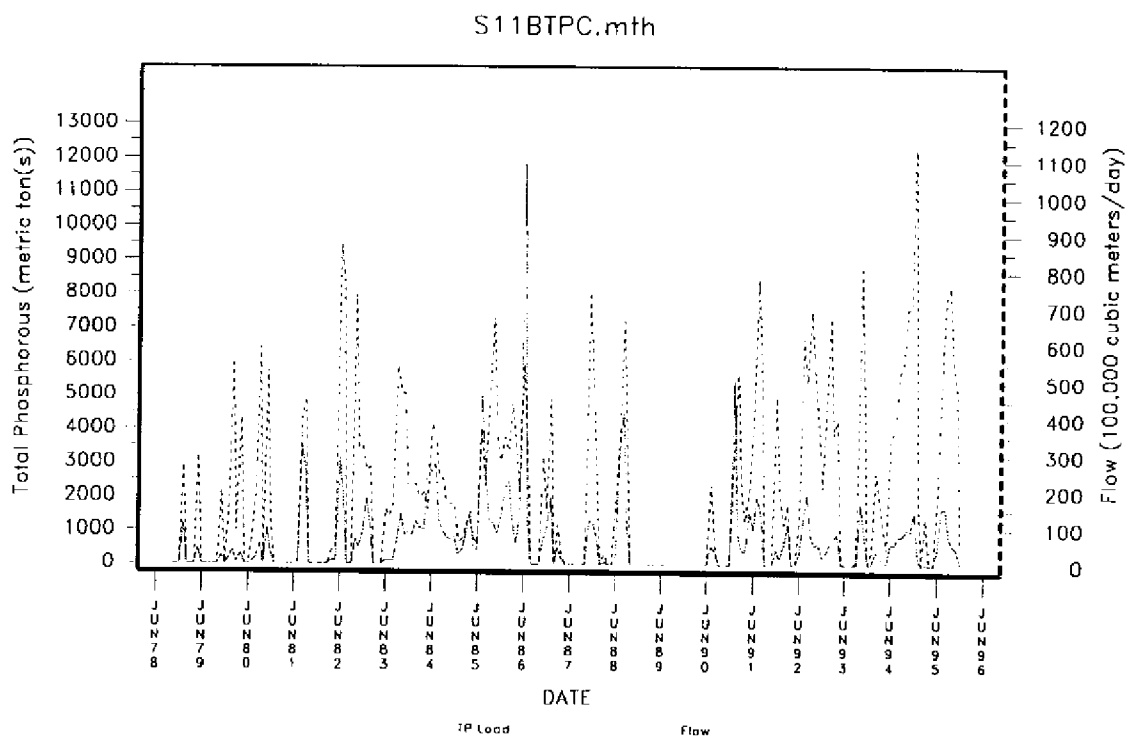


FIGURE 7-97. Historical Monthly Total Phosphorus Load and Water Flow at S11B.

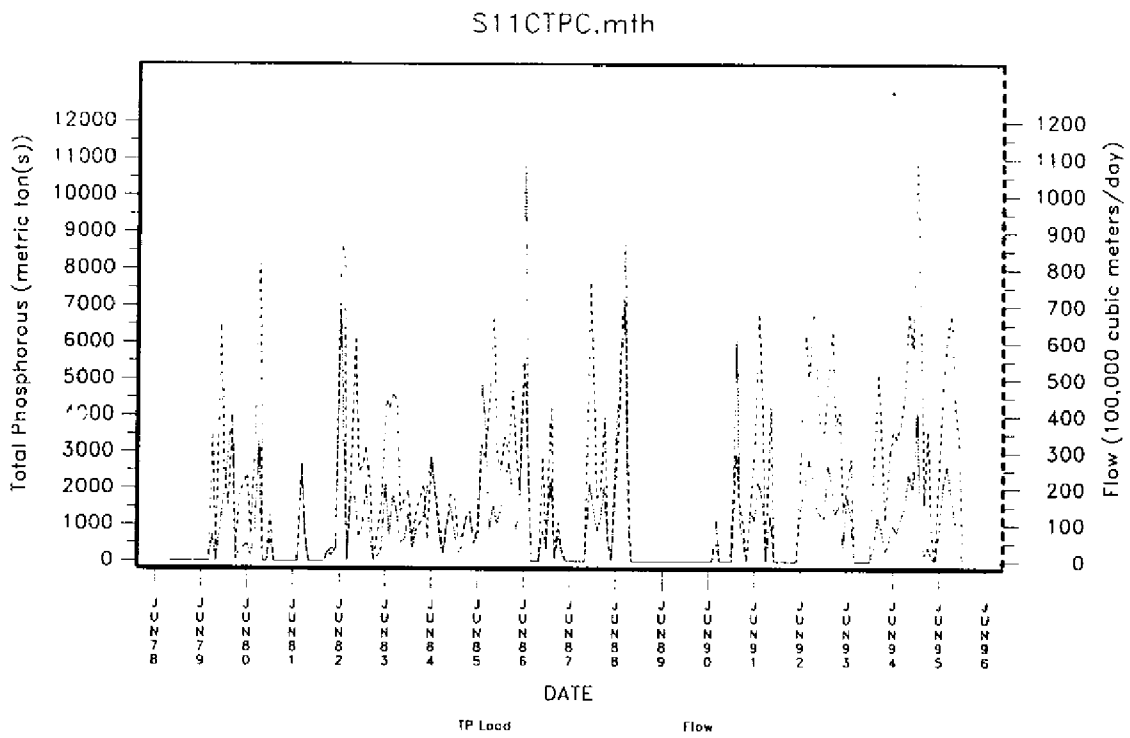


FIGURE 7-98. Historical monthly total phosphorus load and flow at S11C.

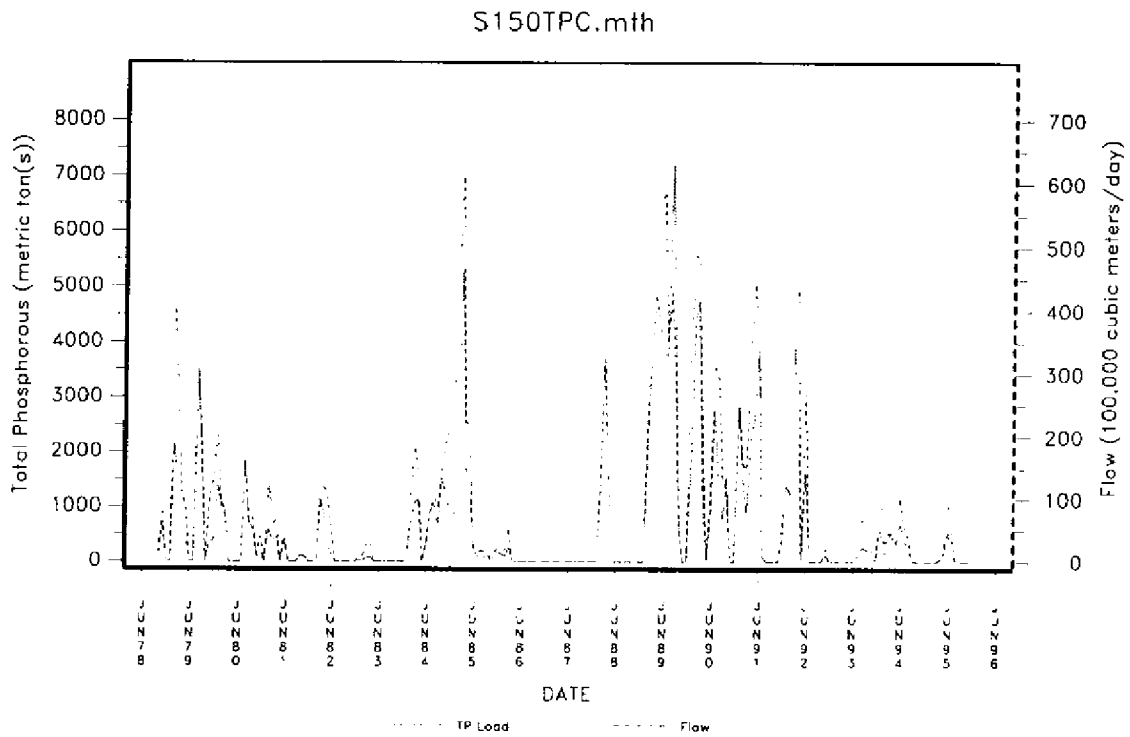


FIGURE 7-99. Historical Monthly Total Phosphorus Load and Water Flow at S150.

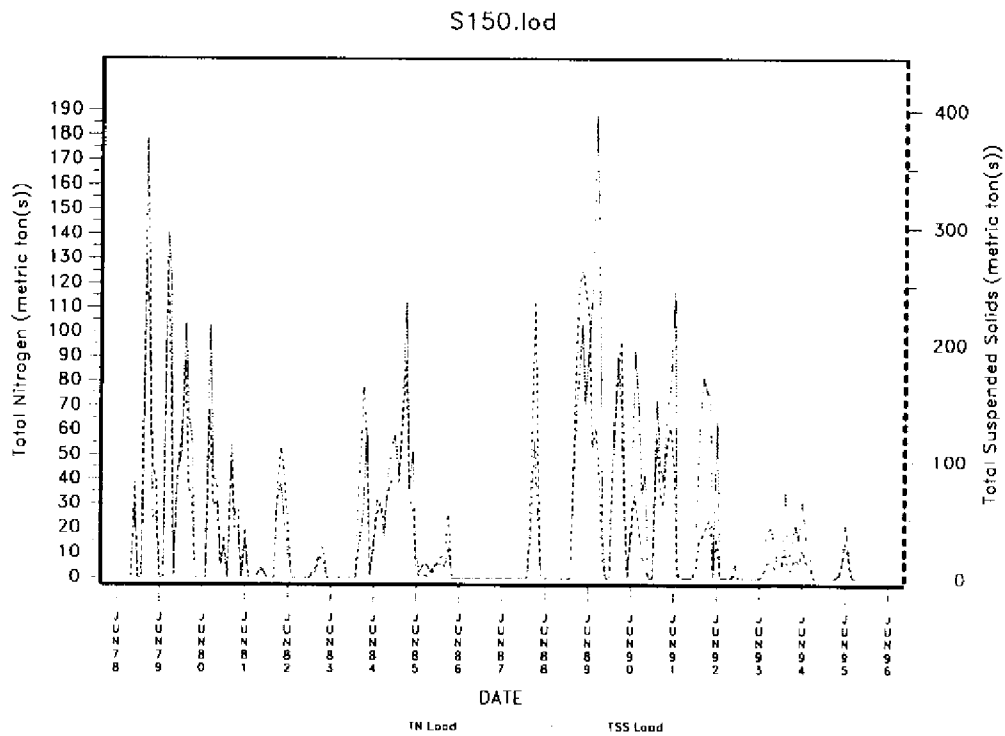


FIGURE 7-100. Historical Monthly Total Nitrogen and Total Suspended Solids at S150.

S150.cnc

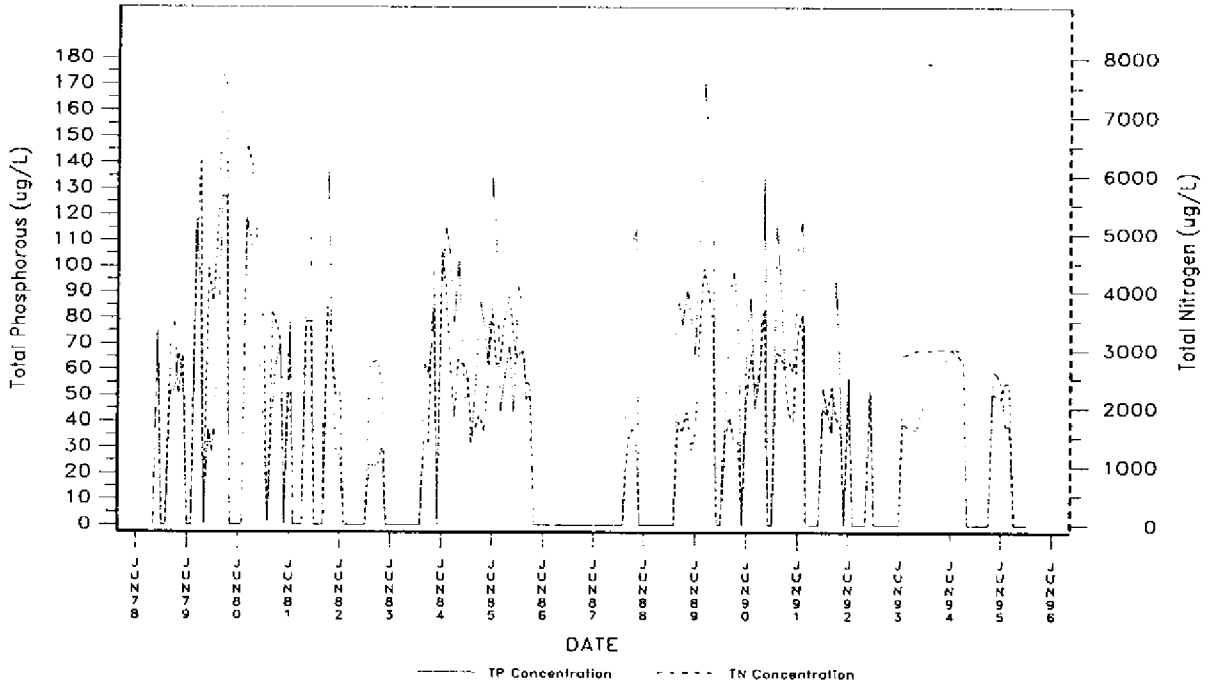


FIGURE 7-101. Historical Monthly Total Phosphorus and Total Nitrogen Concentrations at S150.

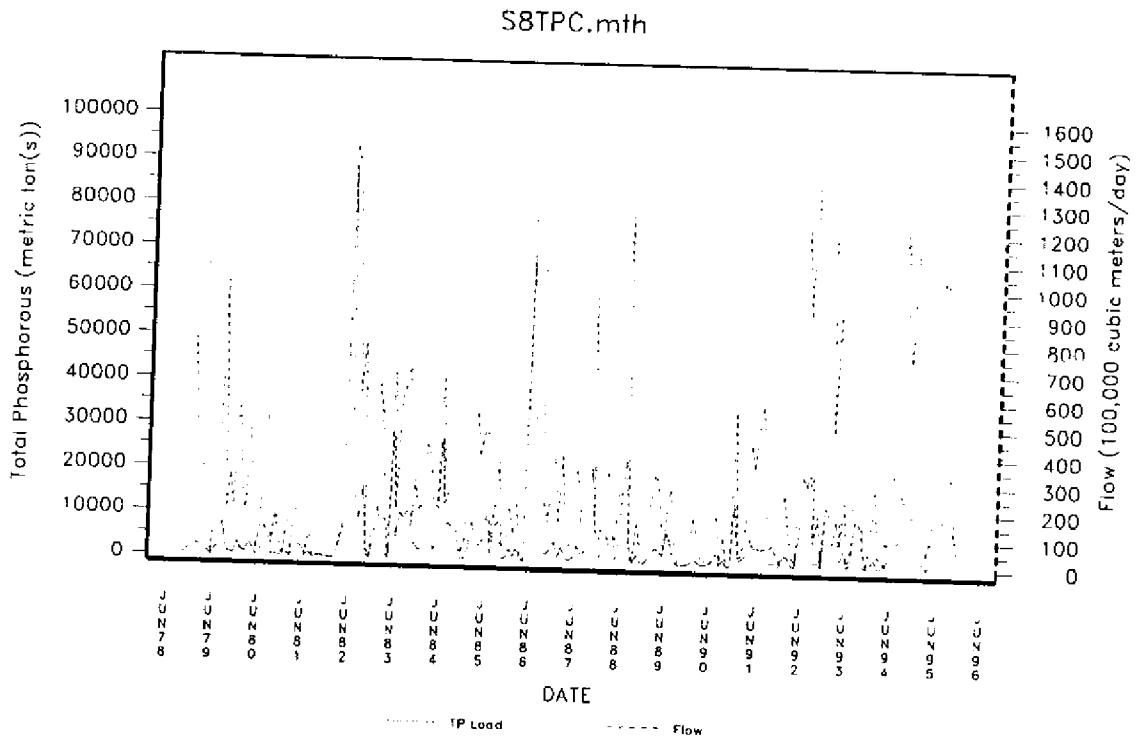


FIGURE 7-102. Historical Monthly Total Phosphorus Load and Water Flow at S8.

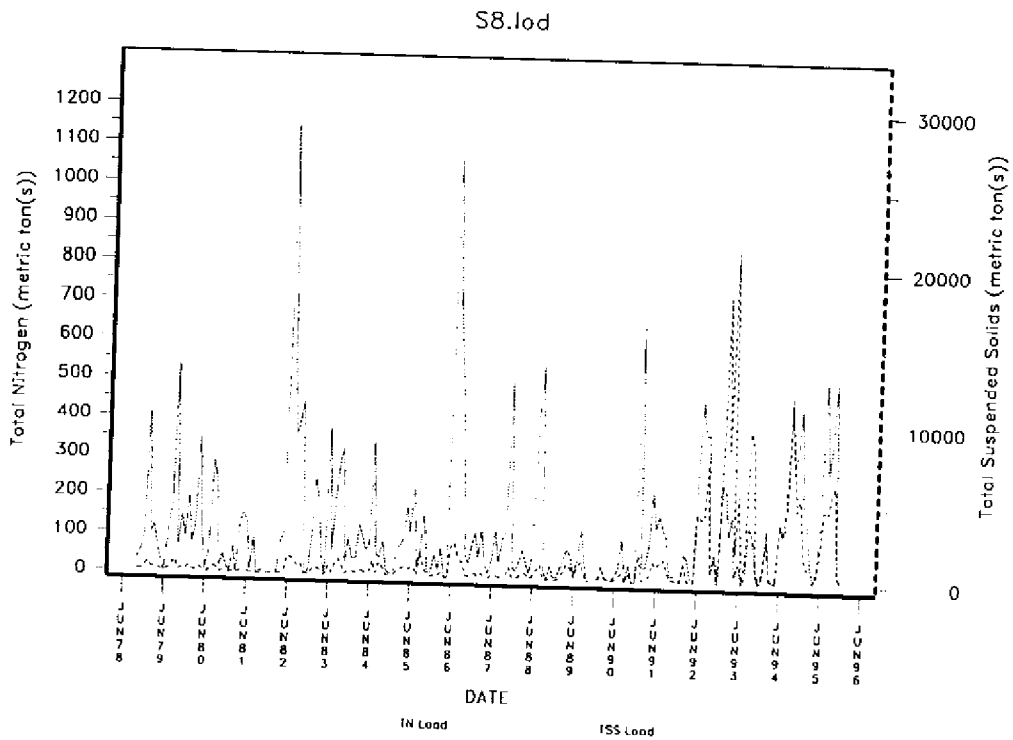


FIGURE 7-103. Historical Monthly Total Nitrogen and Total Suspended Solids at S8.

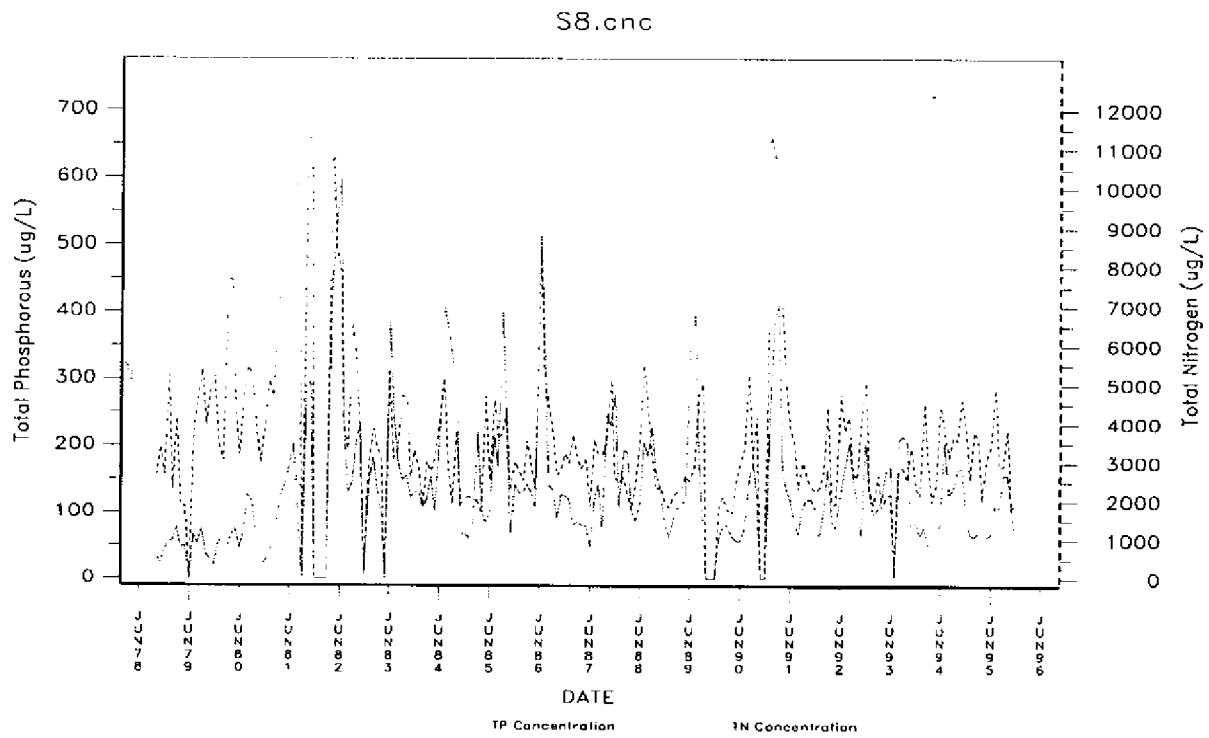


FIGURE 7-104. Historical Monthly Total Phosphorus and Total Nitrogen Concentrations at S8.

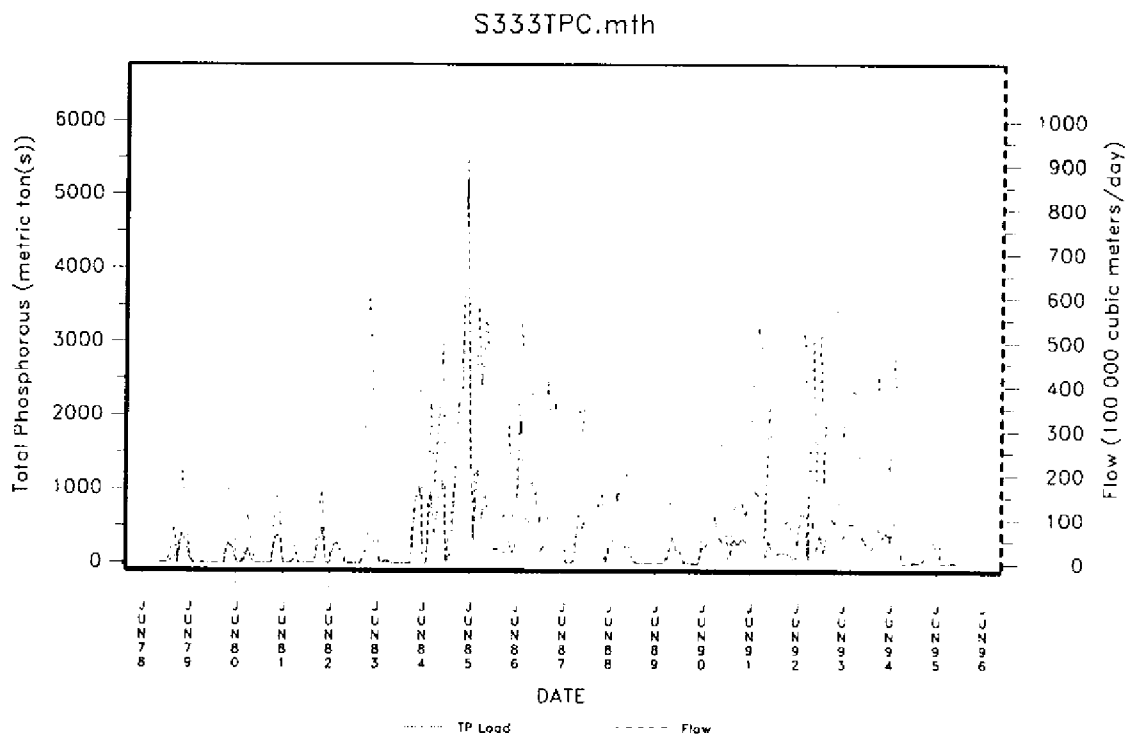


FIGURE 7-105. Historical Monthly Total Phosphorus Load and Water Flow at S333.

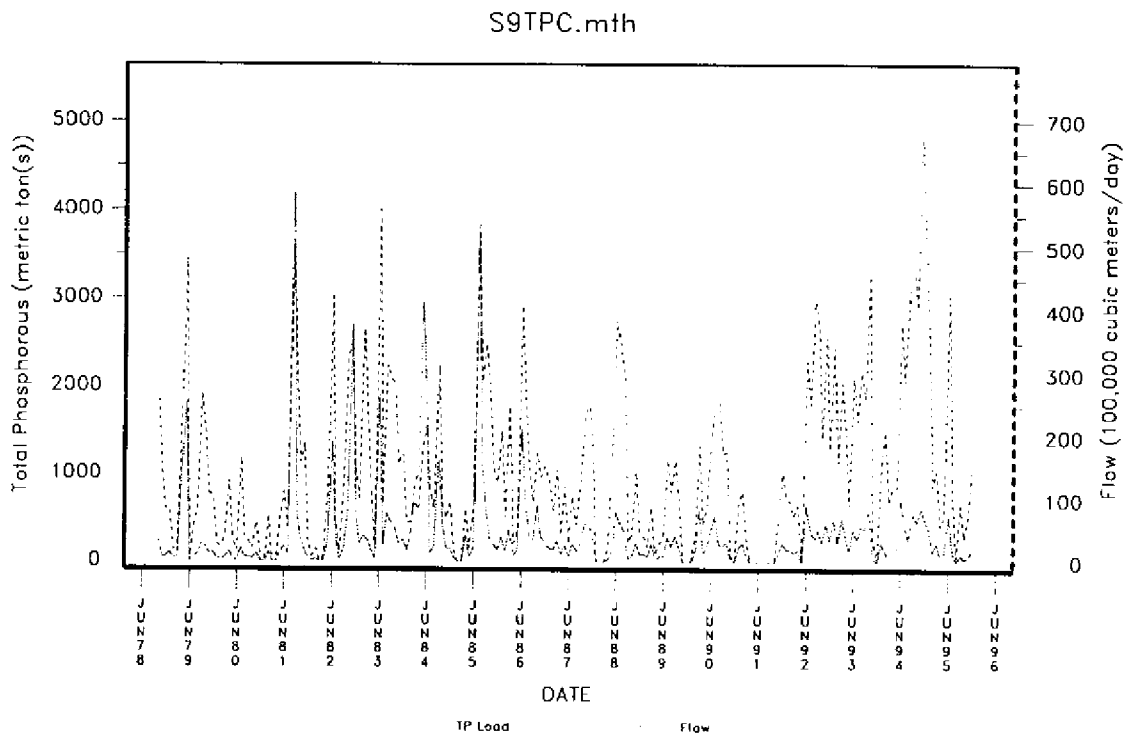


FIGURE 7-106. Historical Monthly Total Phosphorus Load and Water Flow at S9.

Inflow to the Everglades National Park

Water flows to Everglades National Park (ENP) from WCA-3 through the S12 structures. In 1995, the total flow through those structures was the highest recorded for the period of record, as depicted on Figures 7-107, 7-109, 7-111 and 7-113. This large volume of water carried relatively low nutrient concentrations, as depicted in Figures 7-108, 7-110, 7-112, and 7-114. At S12A, S12B, and S12D total phosphorus and nitrogen loads were less than in 1994, while the TP loads at S12C were slightly higher than in 1994. Overall, concentrations of both TP and TN continued a three-year downward trend at the S12 structures.

Agricultural return flow in South Dade County is collected at S332 and S18C. Flow volumes through these structures was similar to those seen over the last five years (Figures 7-115 and 7-116). The TP loads documented at S18c were within the range of values recorded during the last three years.

Reports reviewing the impacts of high water on the southern Everglades are summarized in the final section of Chapter 4, however these reports do not evaluate water quality impacts, which are typically subtle and long term.

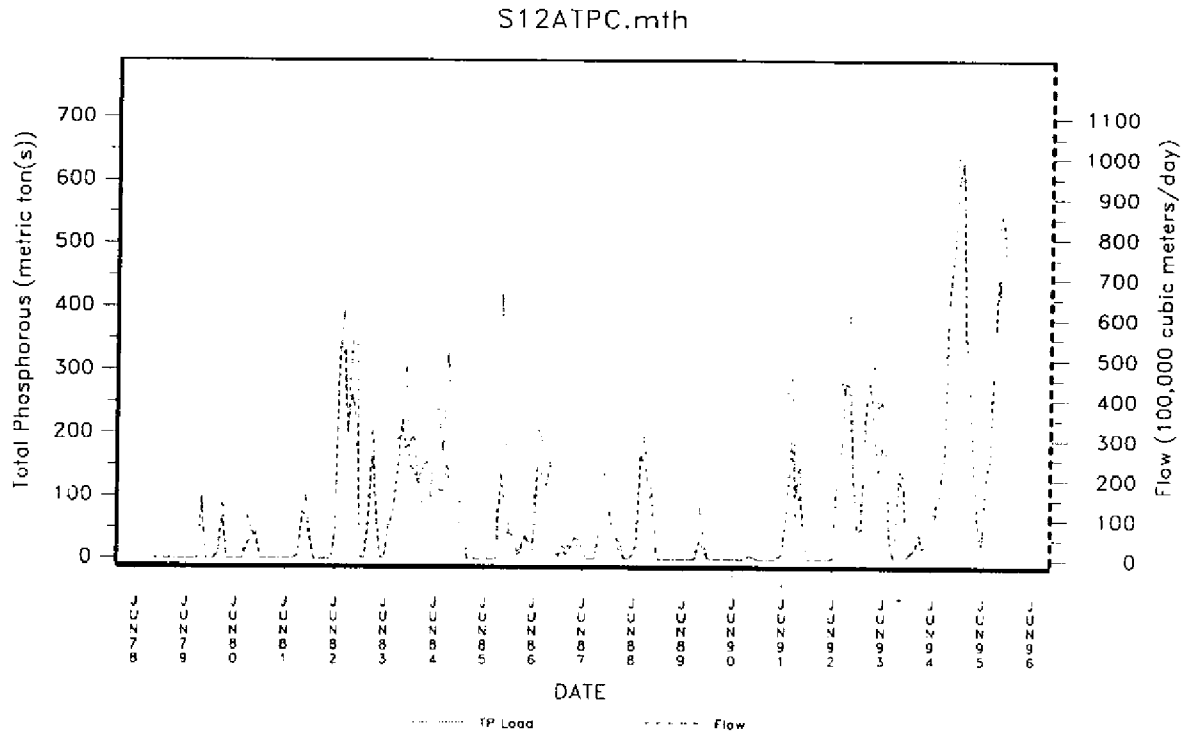


FIGURE 7-107. Historical Monthly Total Phosphorus Load and Water Flow at S12A.

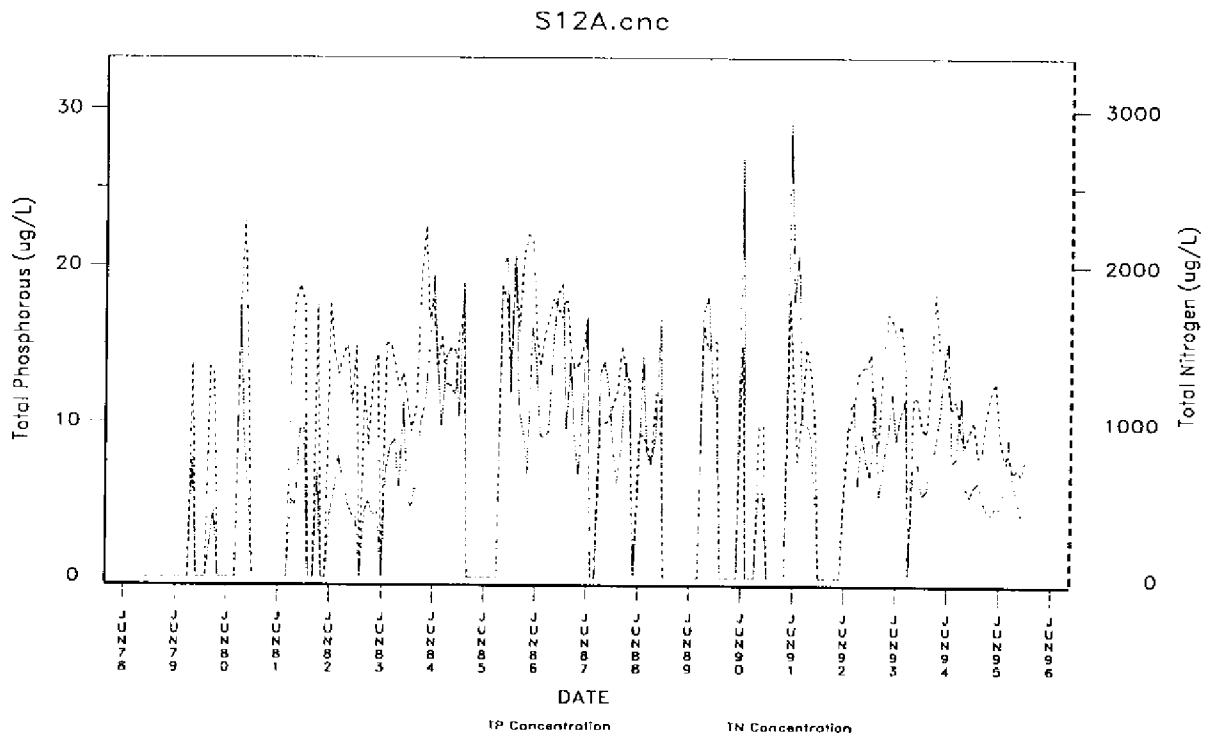


FIGURE 7-108. Historical Monthly Total Phosphorus and Total Nitrogen Concentrations at S12A.

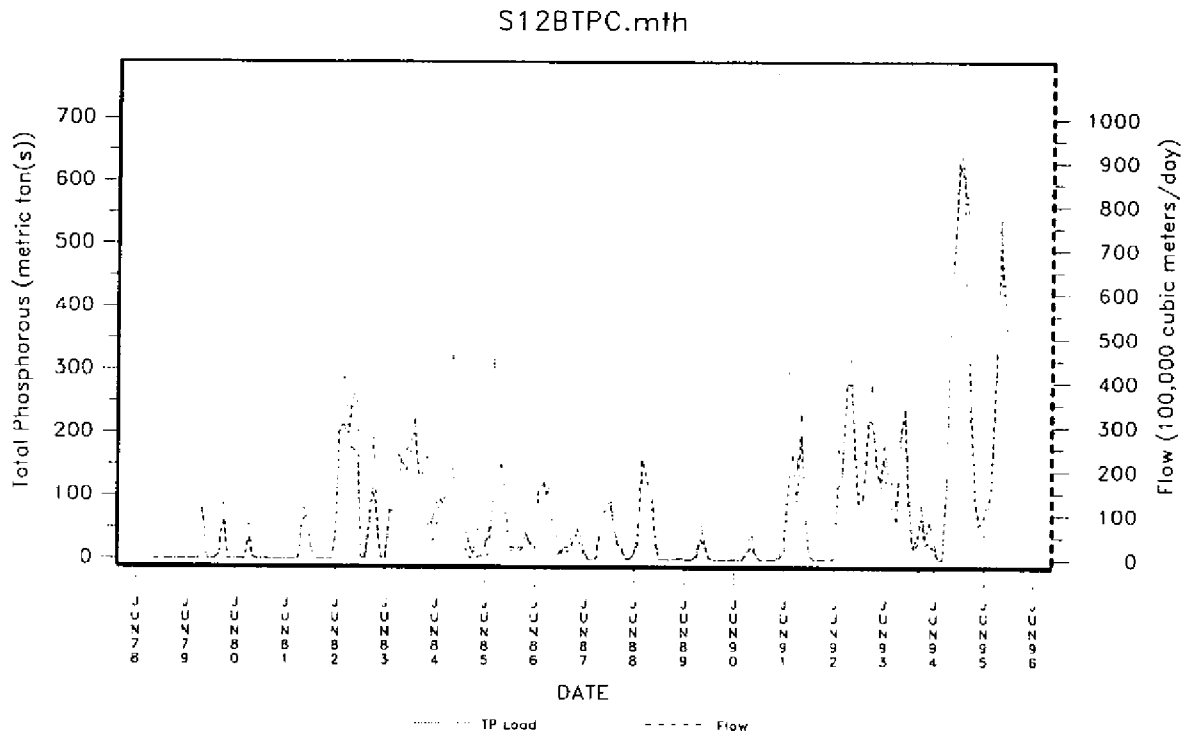


FIGURE 7-109. Historical Monthly Total Phosphorus Load and Water Flow at S12B.

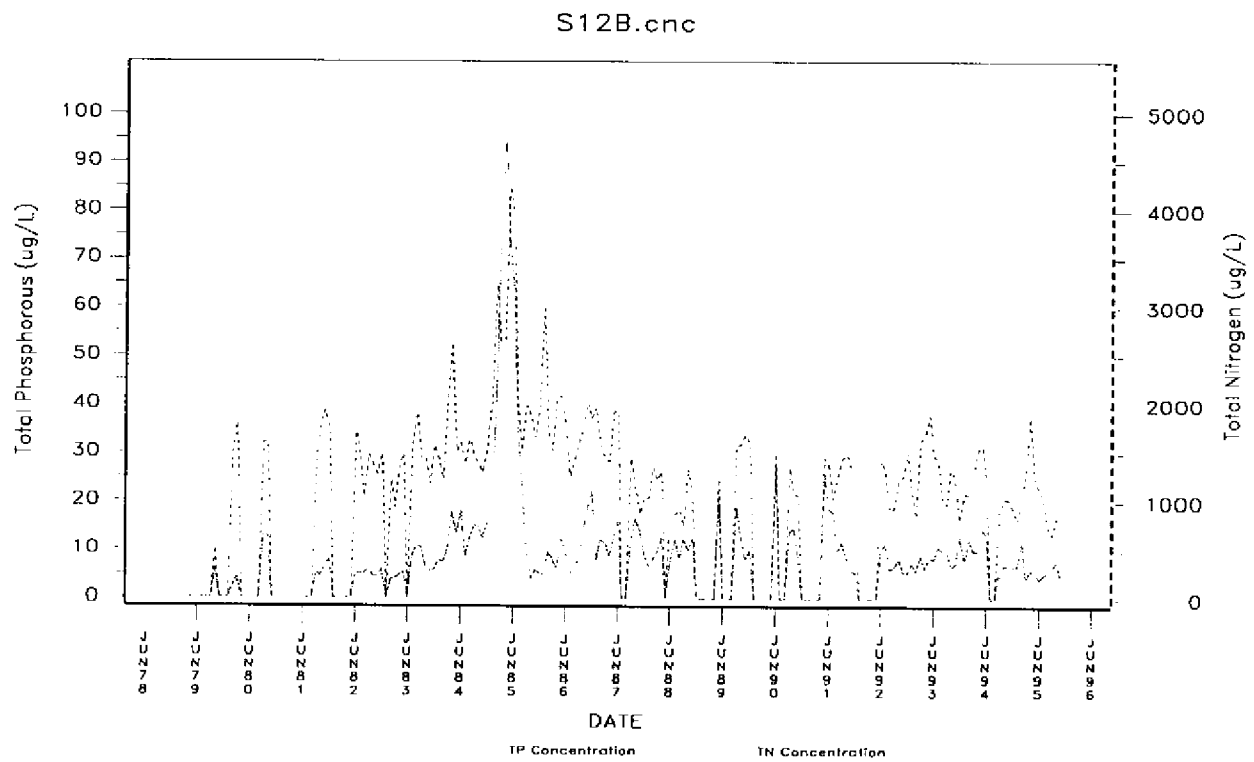


FIGURE 7-110. Historical Monthly Total Phosphorus and Total Nitrogen Concentrations at S12B.

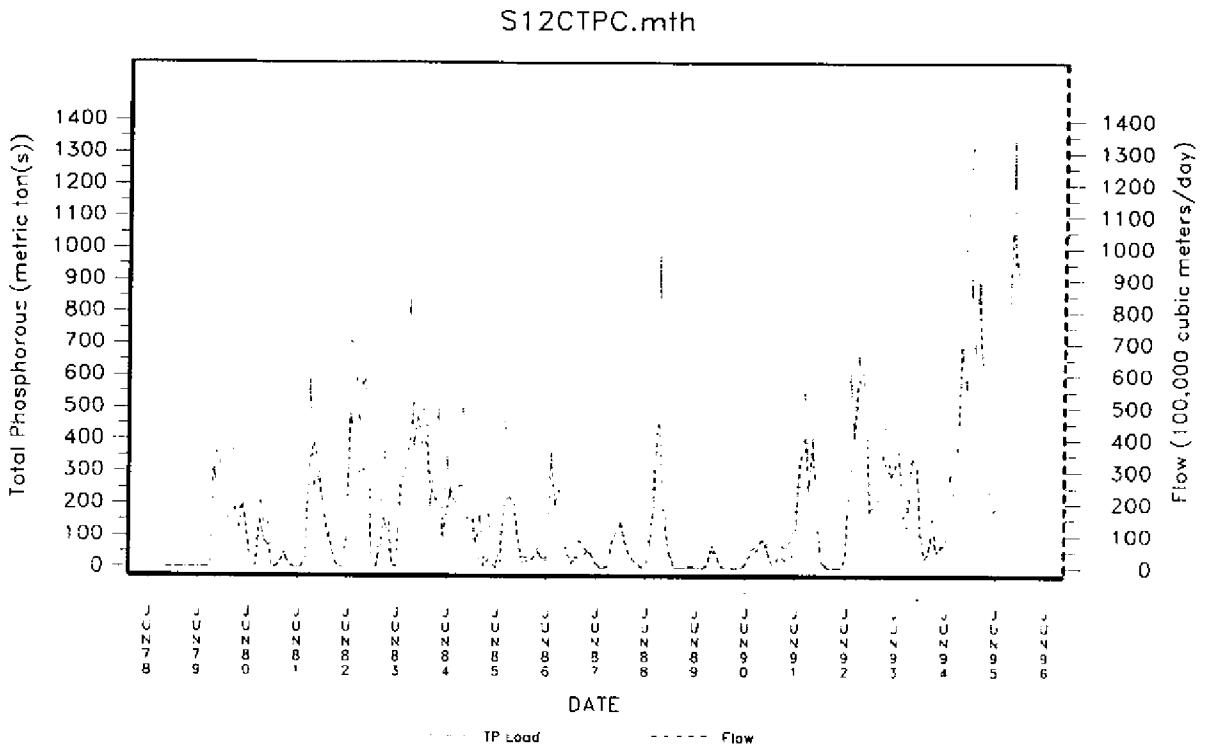


FIGURE 7-111. Historical Monthly Total Phosphorus Load and Water Flow at S12C.

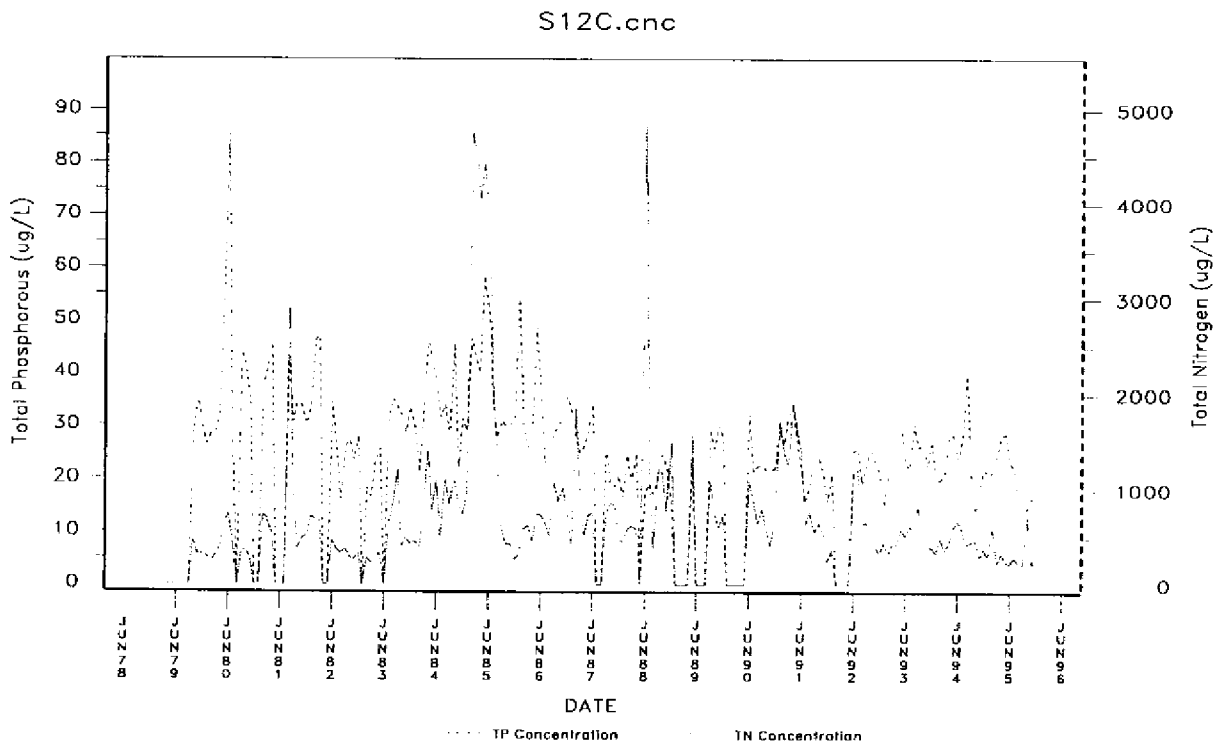


FIGURE 7-112. Historical Monthly Total Phosphorus and Total Nitrogen Concentrations at S12C.

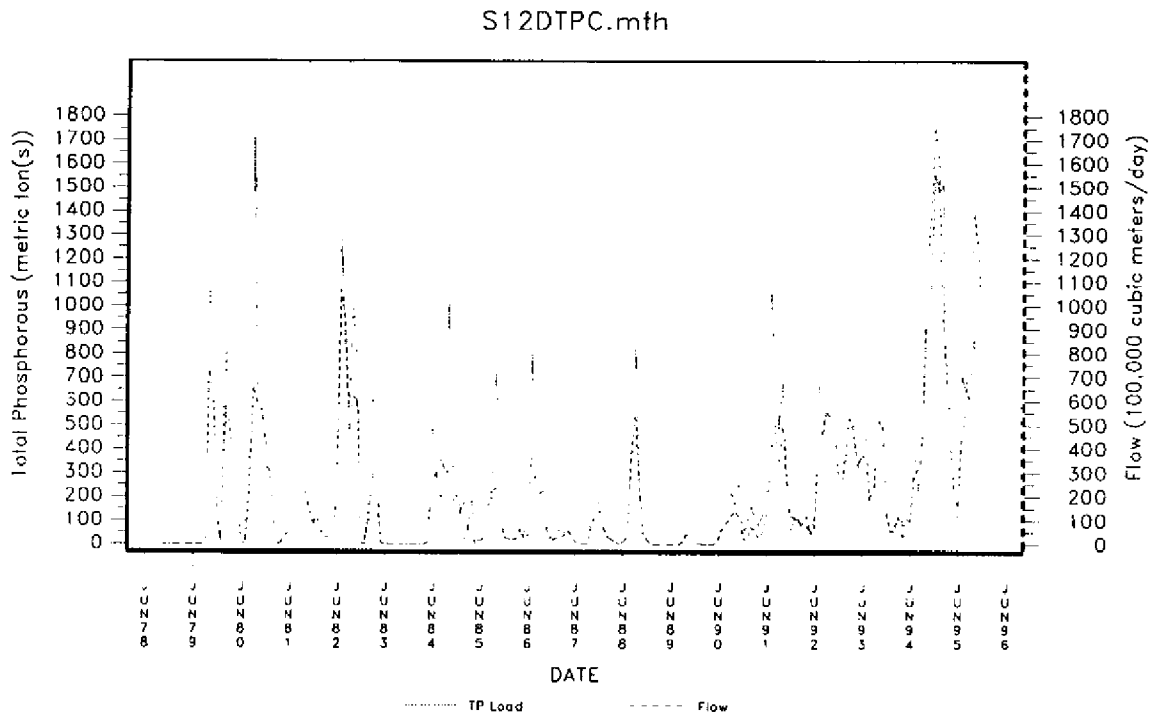


FIGURE 7-113. Historical Monthly Total Phosphorus Load and Water Flow at S12D.

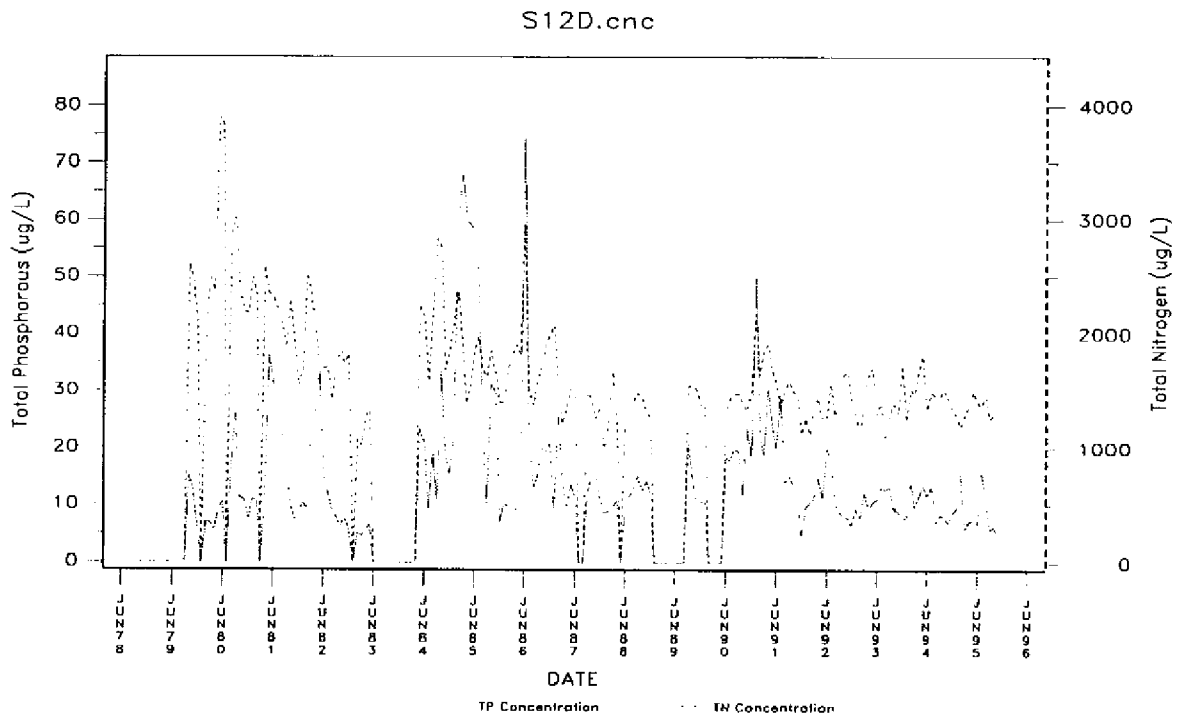


FIGURE 7-114. Historical Monthly Total Phosphorus and Total Nitrogen Concentrations at S12D.

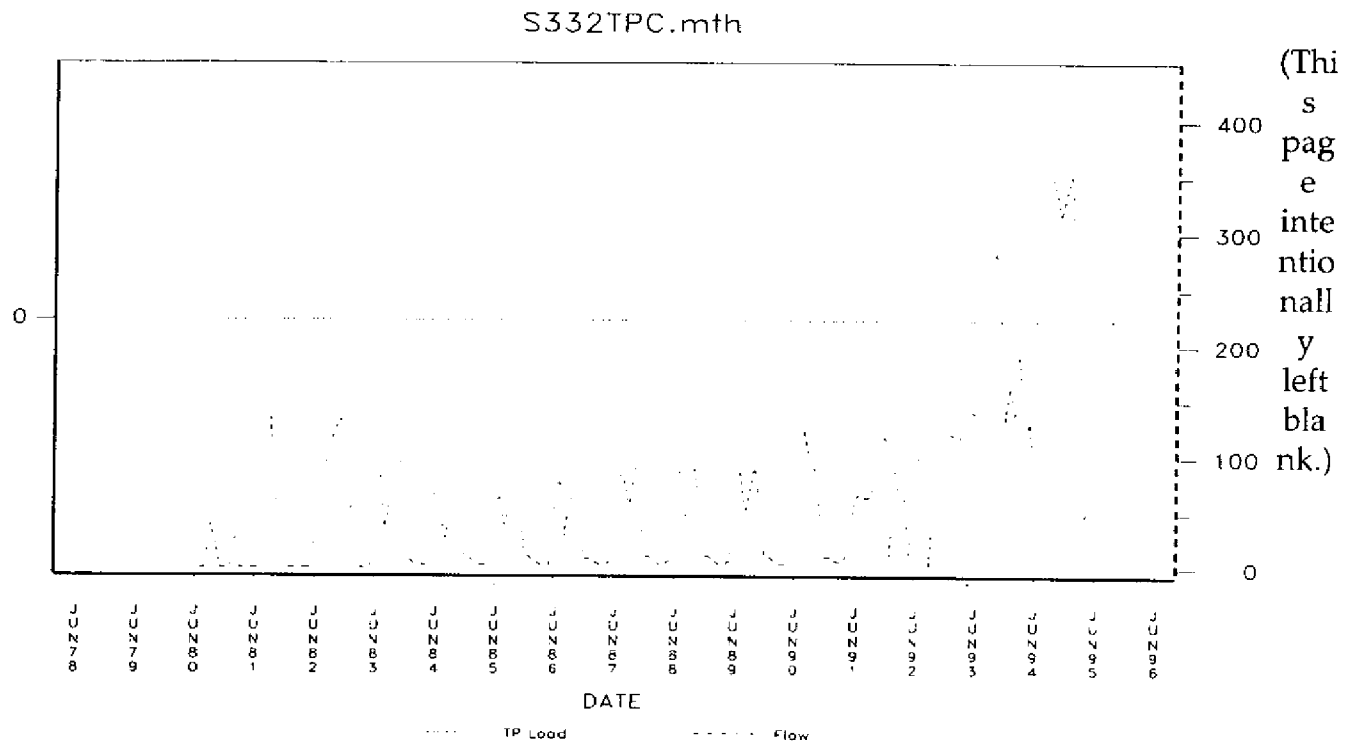


FIGURE 7-115. Historical monthly total phosphorus load and flow at S332.

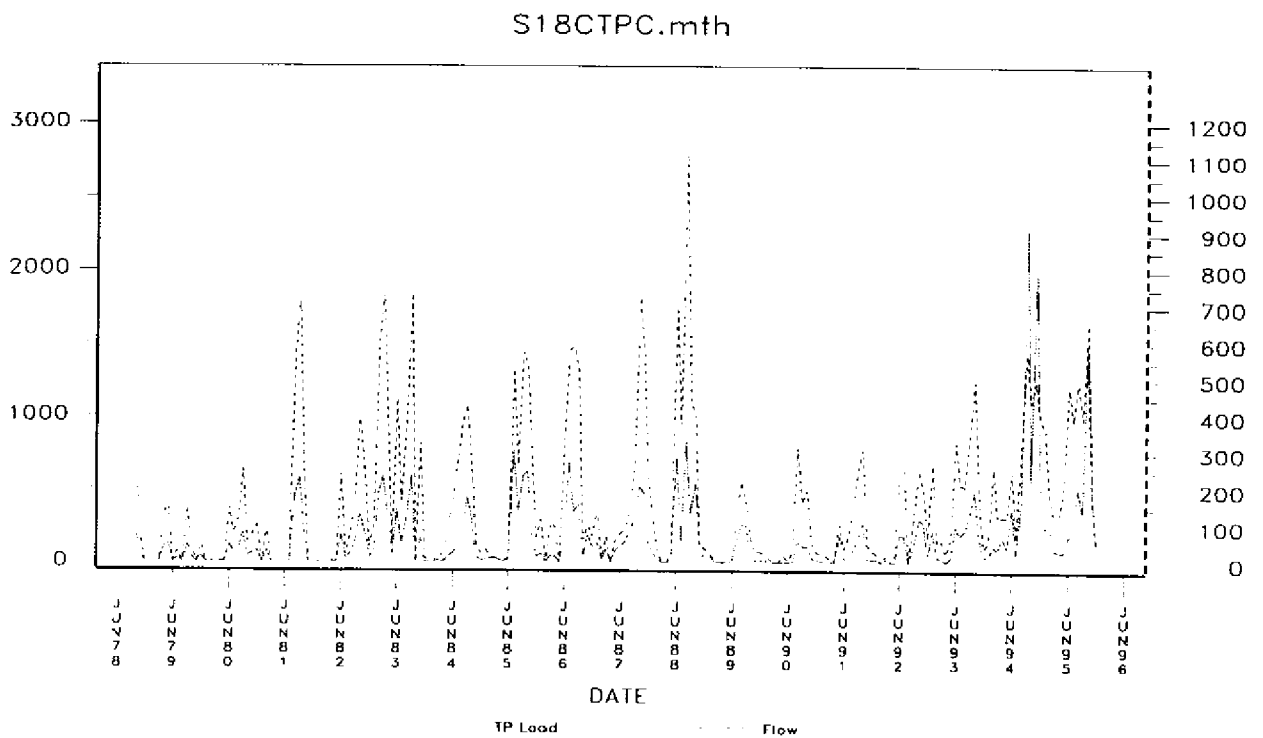


FIGURE 7-116. Historical Monthly Total Phosphorus Load and Water Flow at S18C.

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APPENDIX A

APPENDIX A

TABLE A-1. Monthly Rainfall (Inches) for the UPPER KISSIMMEE Subbasin.

STATIONS	MAY	JUN	JUL	AUG	SEP	OCT	Total Wet Season	NOV	DEC	TOTAL
COLEY	0.52	7.80	12.50	10.61	8.04	3.25	42.72	1.47	0.27	44.46
KISSIMMEE FS	2.85	6.98	10.17	9.98	7.08	4.37	41.43	2.12	0.29	43.84
KISSIMMEE SP	2.40	10.90	8.01	7.80	6.33	6.37	41.81	1.85	0.90	44.56
LAKE ALFRED	-	5.02	6.25	-	-	-	-	1.29	-	-
MC COY	4.24	8.23	5.13	9.20	3.59	4.33	34.72	1.74	0.59	37.05
S-61	4.40	6.84	14.12	13.13	7.78	6.72	52.99	0.70	0.31	54.00
S-65	2.12	9.65	4.27	9.60	5.41	5.57	36.62	2.81	0.26	39.69
S-65A	1.58	6.68	7.03	13.13	3.42	5.48	37.32	1.67	0.23	39.22
ST CLOUD	3.46	6.79	9.76	16.24	6.43	5.75	48.43	1.71	0.30	50.44
1995 Basin Average.	2.70	7.65	8.58	11.21	6.01	5.23	42.01	1.71	0.39	44.16
LONG TERM AVG.	4.29	7.37	6.29	6.90	6.38	3.20	34.43	1.80	2.04	38.27
% of Normal	63%	104%	138%	162%	94%	163%	122%	95%	19%	115%
Approx. Return Frequency (yrs)			5	25		5				

TABLE A-2. Monthly Rainfall (Inches) for the LOWER KISSIMMEE Subbasin.

STATIONS	MAY	JUN	JUL	AUG	SEP	OCT	Total Wet Season	NOV	DEC	TOTAL
ARCHBOLD	2.05	8.35	8.42	8.15	6.92	7.10	40.99	1.20	0.68	42.87
AVON PARK	1.66	9.39	7.04	8.49	6.33	5.69	38.60	3.26	0.12	41.98
COLEY	0.52	7.80	12.50	10.61	8.04	3.25	42.72	1.47	0.27	44.46
CV-5	3.20	5.13	5.84	5.62	7.93	6.87	34.59	0.19	0.25	35.03
OKEECHOBEE FS	3.89	8.92	6.28	6.34	5.78	10.83	42.04	0.46	0.14	42.64
S-127	1.94	7.69	6.19	7.51	12.32	10.97	46.62	0.45	0.39	47.46
S-129	2.64	5.47	3.18	5.73	7.28	8.37	32.67	0.58	0.39	33.64
S-131	0.78	6.54	4.68	8.82	5.31	9.35	35.48	0.74	0.40	36.62
S-133	3.47	10.25	5.22	6.29	8.59	12.70	46.52	0.40	0.27	47.19
S-65	2.12	9.65	4.27	9.60	5.41	5.57	36.62	2.81	0.26	39.69
S-65A	1.58	6.68	7.03	13.13	3.42	5.48	37.32	1.67	0.23	39.22
S-65B	2.63	6.57	7.66	18.19	2.96	5.01	43.02	0.95	0.18	44.15
S-65C	2.10	6.01	7.54	8.26	3.74	4.62	32.27	1.39	0.21	33.87
S-65D	3.26	9.18	5.51	6.54	5.90	9.72	40.11	0.85	0.12	41.08
S-65E	5.06	9.07	3.33	8.11	4.83	11.07	41.47	0.64	0.44	42.55
S-68	2.40	6.65	5.95	6.20	5.81	6.35	33.36	1.12	0.18	34.66
S-70	2.30	5.99	4.34	5.47	2.74	9.70	30.54	1.07	0.31	31.92
S-71	1.85	12.61	8.62	10.50	8.86	14.33	56.77	0.83	0.91	58.51
S-72	2.03	5.89	5.95	6.92	7.73	11.08	39.60	0.82	0.27	40.69
S-75	3.65	9.63	8.99	11.20	10.45	21.86	65.78	1.32	0.96	68.06
S-82	0.94	8.52	6.07	5.14	5.02	6.36	32.05	0.81	0.17	33.03
S-83	1.73	8.01	8.32	10.54	8.31	13.42	50.33	1.68	0.89	52.90
S-84	1.43	11.06	4.68	14.84	11.17	13.32	56.50	1.27	1.01	58.78
1995 Basin Average.	2.31	8.00	6.42	8.79	6.73	9.26	41.56	1.13	0.39	43.09
LONG TERM AVG.	4.28	7.48	7.70	6.98	6.91	3.65	37.00	1.64	1.55	40.19
% of Normal	54%	107%	83%	126%	97%	254%	112%	69%	25%	107%
Approx. Return Frequency (yrs)				5		30				

TABLE A-3. Monthly Rainfall in LAKE OKEECHOBEE.

STATIONS	MAY	JUN	JUL	AUG	SEP	OCT	Total Wet Season	NOV	DEC	TOTAL
ARCHBOLD	2.05	8.35	8.42	8.15	6.92	7.10	40.99	1.20	0.68	42.87
AVON PARK	1.66	9.39	7.04	8.49	6.33	5.69	38.60	3.26	0.12	41.98
CANAL POINT	5.29	4.83	13.38	8.67	-	9.82	41.99	1.59	-	43.58
CLEWISTON	4.17	9.61	8.83	7.59	4.66	10.67	45.53	-	-	45.53
CLEWISTON FS	2.68	8.06	9.08	9.33	4.16	12.53	45.84	0.72	0.48	47.04
CV-5	3.20	5.13	5.84	5.62	7.93	6.87	34.59	0.19	0.25	35.03
FT PIERCE FS	1.72	5.29	8.60	17.05	4.74	15.67	53.07	0.74	0.44	54.25
L005	3.60	4.98	6.73	-	6.84	-	-	-	-	-
L006	3.66	5.12	5.74	-	5.34	-	-	-	-	-
LZ40	2.55	5.12	3.54	-	3.69	-	-	-	-	-
OKEECHOBEE FS	3.89	8.92	6.28	6.34	5.78	10.83	42.04	0.46	0.14	42.64
S-127	1.94	7.69	6.19	7.51	12.32	10.97	46.62	0.45	0.39	47.46
S-129	2.64	5.47	3.18	5.73	7.28	8.37	32.67	0.58	0.39	33.64
S-131	0.78	6.54	4.68	8.82	5.31	9.35	35.48	0.74	0.40	36.62
S-133	3.47	10.25	5.22	6.29	8.59	12.70	46.52	0.40	0.27	47.19
S-135	6.00	6.31	5.53	11.39	7.95	9.21	46.39	0.58	0.33	47.30
S-153	2.72	1.74	-	13.56	2.70	11.10	31.82	0.54	0.40	32.76
S-191	1.09	10.06	4.30	3.67	5.26	8.94	33.32	0.29	0.33	33.94
S-2	4.37	8.87	9.05	7.82	4.72	8.22	43.05	0.97	0.63	44.65
S-3	2.51	7.62	7.41	6.63	3.28	10.53	37.98	0.33	0.65	38.96
S-308	3.83	5.67	8.07	8.58	2.99	11.79	40.93	0.86	0.37	42.16
S-352	4.15	4.12	12.22	7.25	2.78	12.64	43.16	1.53	0.37	45.06
S-4	1.85	8.77	7.60	5.94	4.45	10.39	39.00	0.69	0.71	40.40
S-65D	3.26	9.18	5.51	6.54	5.90	9.72	40.11	0.85	0.12	41.08
S-70	2.30	5.99	4.34	5.47	2.74	9.70	30.54	1.07	0.31	31.92
S-71	1.85	12.61	8.62	10.50	8.86	14.33	56.77	0.83	0.91	58.51
S-72	2.03	5.89	5.95	6.92	7.73	11.08	39.60	0.82	0.27	40.69
S-77	3.23	6.77	14.31	7.34	4.72	10.69	47.06	0.24	0.36	47.66
S-78	2.42	9.11	11.59	7.61	8.59	9.47	48.79	0.46	0.39	49.64
S-79	2.68	12.46	9.49	10.88	7.58	9.10	52.19	1.29	0.58	64.06
1995 Basin Average.	2.92	7.33	7.47	8.14	5.87	10.28	41.99	0.83	0.41	43.58
LONG TERM AVG.	4.82	7.26	6.59	6.22	6.25	3.96	35.10	1.43	1.66	38.19
% of Normal	61%	101%	113%	131%	94%	260%	120%	58%	25%	114%
Approx. return Frequency (yrs)			5	10		50				

TABLE A-4. Monthly Rainfall (Inches) in EAA (EAST) Subbasin.

STATIONS	MAY	JUN	JUL	AUG	SEP	OCT	Total Wet Season	NOV	DEC	TOTAL
BELLE GLADE	2.03	9.71	5.52	7.94	6.30	9.06	40.56	0.60	0.16	41.32
C-18W	0.84	7.91	7.78	14.78	7.00	15.71	54.02	0.55	0.71	55.28
CANAL POINT	5.29	4.83	13.38	8.67	-	9.82	41.99	1.59	-	43.58
CLEWISTON	4.17	9.61	8.83	7.59	4.66	10.67	45.53	-	-	45.53
CLEWISTON FS	2.68	8.06	9.08	9.33	4.16	12.53	45.84	0.72	0.48	47.04
G-136	3.06	10.61	8.95	9.56	4.53	10.63	47.34	0.18	0.57	48.09
G-155	3.17	5.28	3.61	8.99	5.41	10.50	36.96	0.15	0.53	37.64
G-201	3.98	6.11	14.80	9.41	4.06	8.22	46.58	0.19	0.77	47.54
L006	3.66	5.12	5.74	-	5.34	-	-	-	-	-
S-153	2.72	1.74	-	13.56	2.70	11.10	31.82	0.54	0.40	32.76
S-2	4.37	8.87	9.05	7.82	4.72	8.22	43.05	0.97	0.63	44.65
S-3	2.51	7.62	7.41	6.63	3.28	10.53	37.98	0.33	0.65	38.96
S-352	4.15	4.12	12.22	7.25	2.78	12.64	43.16	1.53	0.37	45.06
S-4	1.85	8.77	7.60	5.94	4.45	10.39	39.00	0.69	0.71	40.40
S-5A	2.18	6.79	7.79	12.79	5.94	13.12	48.61	2.08	0.83	51.52
S-5AX	1.36	5.91	-	9.69	3.50	7.95	28.41	1.83	0.61	30.85
S-5AY	1.54	6.44	5.08	5.81	5.00	6.95	30.82	1.46	0.34	32.62
S-6	2.83	7.73	6.80	13.75	6.02	8.90	46.03	0.54	1.32	47.89
S-6Z	1.37	6.67	4.41	9.82	3.75	6.44	32.46	1.05	1.14	34.65
S-7	6.18	10.82	13.21	13.31	7.17	7.90	58.59	0.37	1.14	60.10
S-7Z	2.45	7.93	7.68	8.62	6.12	8.94	41.74	0.31	0.41	42.46
S-8	5.05	8.18	6.53	9.53	5.44	9.71	44.44	0.24	0.62	45.30
S-8Z	3.56	5.58	13.54	11.23	3.98	4.89	42.78	0.25	0.82	43.85
1995 Basin Average.	3.09	7.15	8.57	9.64	4.83	9.76	42.17	0.77	0.66	43.50
LONG TERM AVG.	5.05	8.64	7.35	7.26	7.74	4.24	40.28	1.85	1.72	43.85
% of Normal	61%	83%	117%	133%	62%	230%	105%	42%	38%	99%
Approx. Return Frequency (yrs)			3	5		30				

TABLE A-5. Monthly Rainfall (Inches) in EAA (WEST) Subbasin.

STATIONS	MAY	JUN	JUL	AUG	SEP	OCT	Total Wet Season	NOV	DEC	TOTAL
CLEWISTON	4.17	9.61	8.83	7.59	4.66	10.67	45.53	-	-	45.53
CLEWISTON FS	2.68	8.06	9.08	9.33	4.16	12.53	45.84	0.72	0.48	47.04
G-136	3.06	10.61	8.95	9.56	4.53	10.63	47.34	0.18	0.57	48.09
G-155	3.17	5.28	3.61	8.99	5.41	10.50	36.96	0.15	0.53	37.64
IMMOKALEE	-	-	-	10.22	8.36	10.42	-	1.07	0.72	-
IMMOKALEE LF	2.35	11.70	10.90	11.19	8.81	13.14	58.09	0.55	1.02	60.18
S-4	1.85	8.77	7.60	5.94	4.45	10.39	39.00	0.69	0.71	40.40
S-77	3.23	6.77	14.31	7.34	4.72	10.69	47.06	0.24	0.36	47.66
S-8Z	3.56	5.58	13.54	11.23	3.98	4.89	42.78	0.25	0.82	43.85
1995 Basin Average.	3.01	8.30	9.60	9.04	5.45	10.43	45.33	0.48	0.65	46.30
LONG TERM AVG.	5.05	8.64	7.35	7.26	7.74	4.24	40.28	1.85	1.72	43.85
% of Normal	60%	96%	131%	125%	70%	246%	113%	26%	38%	106%
Approx. Return Frequency (yrs)			5	5		50				

TABLE A-6. Monthly Rainfall (Inches) in the WATER CONSERVATION AREA's (1, 2 and 3) Subbasin.

STATIONS	MAY	JUN	JUL	AUG	SEP	OCT	Total Wet Season	NOV	DEC	TOTAL
ANDYTOWN 5W	1.95	9.00	8.27	12.90	2.41	8.70	43.23	0.91	0.44	44.58
BONAVENTURE	-	-	-	-	-	-	-	1.67	0.54	-
CHEKIKI EVER	1.55	14.29	9.74	5.74	-	7.68	-	1.76	0.36	-
COOPERTOWN	1.40	6.08	-	-	5.29	6.00	-	0.29	0.55	-
CORAL SPR 11W	0.43	12.24	-	-	6.30	9.57	-	1.14	1.14	-
CORAL SPRING	2.11	13.47	8.93	13.89	4.83	6.61	49.84	0.82	1.01	51.67
DELRAY BEACH W	2.86	6.16	-	-	3.59	-	-	1.53	0.52	-
G-155	3.17	5.28	3.61	8.99	5.41	10.50	36.96	0.15	0.53	37.64
G-201	3.98	6.11	14.80	9.41	4.06	8.22	46.58	0.19	0.77	47.54
HEALEAH W	3.93	21.61	4.42	10.26	6.09	14.67	60.98	0.49	1.06	62.53
HILLSBORO CNL	3.72	10.08	4.16	16.97	6.74	7.14	48.81	0.68	1.11	50.60
S-124	1.77	10.91	3.84	13.83	1.84	7.42	39.61	0.57	-	40.18
S-140	6.75	9.13	6.09	11.19	5.36	7.92	46.44	1.02	0.44	47.90
S-30	3.56	12.21	6.58	10.91	4.90	8.46	46.62	3.11	0.46	50.19
S-338	3.20	15.68	4.29	8.43	5.38	9.68	46.66	1.41	0.87	48.94
S-34	4.24	9.51	5.84	11.88	4.03	10.44	45.94	1.75	0.39	48.08
S-38	3.52	15.14	11.27	16.09	6.39	9.33	61.74	1.25	1.10	64.09
S-39	2.54	12.24	8.97	16.50	4.12	5.91	50.28	0.98	2.01	53.27
S-5A	2.18	6.79	7.79	12.79	5.94	13.12	48.61	2.08	0.83	51.52
S-6	2.83	7.73	6.80	13.75	6.02	8.90	46.03	0.54	1.32	47.89
S-7	6.18	10.82	13.21	13.31	7.17	7.90	58.59	0.37	1.14	60.10
S-8	5.05	8.18	6.53	9.53	5.44	9.71	44.44	0.24	0.62	45.30
S-9	2.00	12.46	4.22	11.36	4.70	10.81	45.55	1.55	1.00	48.10
SWEETWATER	2.03	6.67	7.30	9.17	7.73	7.46	40.36	0.36	0.71	41.43
TAMIAMI CANAL	3.61	18.65	6.64	10.30	6.49	9.93	55.62	1.45	0.59	57.66
WEST MIRAMAR	0.44	10.84	5.64	10.86	2.76	-	30.48	1.56	1.18	33.22
1995 Basin Average.	3.00	10.85	7.22	11.73	5.12	8.96	47.30	1.07	0.83	49.16
LONG TERM AVG.	50.2	8.45	6.23	6.38	6.13	3.81	36.02	2.00	1.60	39.62
% of Normal	6%	128%	116%	184%	84%	235%	131%	54%	52%	124%
Approx. Return Frequency (yrs)										

TABLE A-7. Monthly Rainfall (Inches) in the MARTIN - ST. LUCIE COUNTY Subbasin.

STATIONS	MAY	JUN	JUL	AUG	SEP	OCT	Total Wet Season	NOV	DEC	TOTAL
C-18W	0.84	7.91	7.78	14.78	7.00	15.71	54.02	0.55	0.71	55.28
FT PIERCE FS	1.72	5.29	8.60	17.05	4.74	15.67	53.07	0.74	0.44	54.25
OKEECHOBEE FS	3.89	8.92	6.28	6.34	5.78	10.83	42.04	0.46	0.14	42.64
S-135	6.00	6.31	5.53	11.39	7.95	9.21	46.39	0.58	0.33	47.30
S-153	2.72	1.74	-	13.56	2.70	11.10	31.82	0.54	0.40	32.76
S-191	1.09	10.06	4.30	3.67	5.26	8.94	33.32	0.29	0.33	33.94
S-308	3.83	5.67	8.07	8.58	2.99	11.79	40.93	0.86	0.37	42.16
S-46	0.50	7.71	9.32	13.00	4.87	22.15	57.55	1.58	1.68	60.81
S-49	1.39	4.86	7.90	17.69	6.14	15.62	53.60	0.14	0.69	54.43
S-80	2.65	10.11	5.66	22.86	6.75	19.55	67.58	0.73	1.20	69.51
S-97	0.56	4.24	6.64	17.20	4.68	19.06	52.38	0.10	1.00	53.48
S-99	2.58	3.44	4.41	15.91	9.37	11.64	47.35	0.92	0.65	48.92
VERO BEACH	1.30	4.80	5.68	10.54	7.78	6.60	36.70	0.80	0.35	37.85
VERO BEACH W	0.92	3.40	5.07	9.64	5.47	-	-	0.50	-	-
1995 Basin Average	2.14	6.03	6.56	13.02	5.82	13.68	47.44	0.63	0.64	48.72
LONG TERM AVG.	4.46	6.31	6.22	5.73	7.50	6.37	36.59	2.48	1.87	40.94
% of Normal	48%	96%	105%	227%	78%	215%	130%	25%	34%	119%
Approx. Return Frequency (yrs)										

TABLE A-8. Monthly Rainfall (Inches) in the PALM BEACH COUNTY Subbasin.

STATIONS	MAY	JUN	JUL	AUG	SEP	OCT	Total Wet Season	NOV	DEC	TOTAL
C-18W	0.84	7.91	7.78	14.78	7.00	15.71	54.02	0.55	0.71	55.28
DELRAY BEACH W	2.86	6.16	-	-	3.59	-	-	1.53	-	-
G-56	1.64	11.18	8.73	14.70	4.91	12.87	54.03	1.26	2.13	57.42
PBIA	0.91	8.23	5.95	19.07	6.41	11.43	52.00	2.06	1.66	55.72
S-155	0.84	9.67	7.35	16.48	7.12	12.54	54.00	1.45	2.33	57.78
S-39	2.54	12.24	8.97	16.50	4.12	5.91	50.28	0.98	2.01	53.27
S-40	1.76	8.97	10.04	18.72	4.46	20.48	64.43	0.82	2.53	67.78
S-41	4.01	6.04	7.33	17.37	3.09	12.05	49.89	1.16	1.73	52.78
S-44	1.14	6.83	6.77	15.33	4.42	21.91	56.40	1.66	1.34	59.40
S-46	0.50	7.71	9.32	13.00	4.87	22.15	57.55	1.58	1.68	60.81
S-5A	2.18	6.79	7.79	12.79	5.94	13.12	48.61	2.08	0.83	51.52
S-5AY	1.54	6.44	5.08	5.81	5.00	6.95	30.82	1.46	0.34	32.62
WESTPORT	1.65	5.68	8.69	12.09	8.58	13.92	50.61	2.83	2.48	55.92
1995 Basin Average.	1.72	7.99	7.82	14.72	5.35	14.09	51.89	1.49	1.65	55.03
LONG TERM AVG.	5.87	8.10	6.41	8.83	8.52	7.84	43.57	2.94	2.02	48.53
% of Normal	29%	99%	122%	167%	63%	180%	119%	51%	82%	113%
Approx. Return Frequency (yrs)										

TABLE A-9. Monthly Rainfall (Inches) in the BROWARD COUNTY Subbasin.

STATIONS	MAY	JUN	JUL	AUG	SEP	OCT	Total Wet Season	NOV	DEC	TOTAL
BONAVENTURE	-	-	-	-	-	-	-	1.67	0.54	-
CORAL SPRINGS	2.11	13.47	8.93	13.89	4.83	6.61	49.84	0.82	1.01	51.67
FT LAUD FS	1.95	18.87	7.44	12.15	6.74	8.95	56.10	1.46	0.80	58.36
FTL	1.91	14.67	10.20	16.08	14.47	9.52	66.85	1.37	-	68.22
G-56	1.64	11.18	8.73	14.70	4.91	12.87	54.03	1.26	2.13	57.42
HOLLYWOOD	2.08	22.05	-	21.67	9.48	11.27	66.55	3.43	1.28	71.26
S-124	1.77	10.91	3.84	13.83	1.84	7.42	39.61	0.57	-	40.18
S-13	1.88	15.91	8.11	12.29	13.19	11.82	63.20	1.56	0.49	65.25
S-28Z	2.73	15.09	5.61	9.13	6.29	5.23	44.08	1.15	0.53	45.76
S-29	-	28.11	-	15.19	7.31	9.50	60.11	2.02	1.35	63.48
S-29Z	3.15	15.37	6.24	9.24	9.65	10.30	53.95	2.26	0.32	56.53
S-30	3.56	12.21	6.58	10.91	4.90	8.46	46.62	3.11	0.46	50.19
S-33	-	13.50	10.06	16.19	13.75	8.55	62.80	0.99	0.75	63.79
S-34	4.24	9.51	5.84	11.88	4.03	10.44	45.94	1.75	0.39	48.08
S-36	2.50	14.75	12.02	14.79	8.75	12.64	65.45	1.47	1.30	68.22
S-37A	1.36	9.01	10.91	11.36	6.53	12.14	51.31	1.98	1.98	55.27
S-37B	3.05	11.59	11.25	14.27	6.17	14.24	60.57	-	-	60.57
S-38	3.52	15.14	11.27	16.09	6.39	9.33	61.74	1.25	1.10	64.09
S-39	2.54	12.24	8.97	16.50	4.12	5.91	50.28	0.98	2.01	53.27
S-9	2.00	12.46	4.22	11.36	4.70	10.81	45.55	1.55	1.00	48.10
1995 Basin Average.	2.47	14.53	8.25	13.76	7.27	9.79	54.98	1.61	1.03	57.35
LONG TERM AVG.	5.87	8.10	6.41	6.83	8.52	7.84	43.57	2.94	2.02	48.53
% of Normal	42%	179%	129%	201%	85%	125%	126%	55%	51%	118%
Approx. Return Frequency (yrs)		15	5	50		3				

TABLE A-10. Monthly Rainfall (Inches) for the DADE COUNTY Subbasin.

STATIONS	MAY	JUN	JUL	AUG	SEP	OCT	Total Wet Season	NOV	DEC	TOTAL
CHEKIKA EVER	1.55	14.29	9.74	5.74	-	7.68	-	1.76	0.36	-
HIALEAH W	3.93	21.61	4.42	10.26	6.09	14.67	60.98	0.49	1.06	62.53
HOMESTEAD AFB	7.42	15.08	7.08	12.63	11.19	8.33	61.73	0.77	1.16	63.66
HOMESTEAD FS	6.36	12.71	12.44	9.95	11.00	11.55	64.01	0.80	0.83	65.64
MIAMI BEACH	2.51	14.76	3.48	8.38	4.25	6.29	39.67	0.83	-	40.50
MIAMI FS	3.21	26.19	9.97	15.80	12.44	9.36	76.97	2.52	0.94	80.73
MIAMI INTL	2.94	18.74	6.08	13.02	10.82	10.09	61.69	2.52	0.68	64.89
N DADE	2.03	17.90	6.63	15.99	6.26	12.84	61.65	2.86	0.73	65.24
PERRINE	0.84	20.06	5.57	13.14	6.67	13.56	59.84	0.85	0.46	61.15
S-123	3.39	14.80	-	9.22	10.55	20.53	58.49	0.49	1.20	60.18
S-174	2.78	16.69	7.99	7.52	8.34	11.16	54.48	0.98	1.54	57.00
S-177	5.40	13.12	4.59	9.61	7.95	11.08	51.75	0.45	0.46	52.66
S-18C	4.96	11.82	4.27	9.49	7.88	12.47	50.89	0.32	0.62	51.83
S-20F	5.54	18.19	7.41	10.23	14.48	9.61	65.46	1.17	0.52	67.15
S-20G	4.35	15.23	8.21	12.04	12.05	8.89	60.77	0.54	-	61.31
S-21	4.93	13.62	6.52	10.15	10.76	8.87	54.85	1.63	0.63	57.11
S-21A	4.42	14.17	8.31	10.03	8.13	10.26	55.32	1.29	0.85	57.46
S-26	2.54	15.20	6.53	11.96	8.71	10.02	54.96	3.75	0.43	59.14
S-27	5.55	19.95	7.06	18.37	9.69	8.88	69.50	2.17	0.61	72.28
S-28Z	2.73	15.09	5.61	9.13	6.29	5.23	44.08	1.15	0.53	45.76
S-29	-	28.11	-	15.19	7.31	9.50	60.11	2.02	1.35	63.66
S-29Z	3.15	15.37	6.24	9.24	9.65	10.30	53.95	2.26	0.32	56.53
S-30	3.56	12.21	6.58	10.91	4.90	8.46	46.62	3.11	0.46	50.19
S-331	3.62	16.04	6.05	8.85	7.69	11.09	53.34	1.43	0.72	55.49
S-332	3.33	15.72	6.14	8.42	13.37	10.62	57.60	1.22	0.86	59.68
S-338	3.20	15.68	4.29	8.43	5.38	9.68	46.66	1.41	0.87	48.94
TAMIAMI	6.67	19.37	6.03	11.08	7.74	13.72	64.61	0.65	0.84	66.10
TAMIAMI CANAL	3.61	18.65	6.64	10.30	6.49	9.93	55.62	1.45	0.59	57.66
1995 Basin Average.	3.87	16.80	6.69	10.90	8.82	10.61	57.48	1.46	0.75	59.67
LONG TERM AVG.	5.87	8.10	6.41	6.83	8.52	7.84	43.57	2.94	2.02	48.53
% of Normal	66%	207%	104%	160%	104%	135%	132%	50%	37%	123%
Approx. Return Frequency (yrs)										

TABLE A-11. Monthly Rainfall (Inches) for the CALOOSAHATCHEE Subbasin.

STATIONS	MAY	JUN	JUL	AUG	SEP	OCT	Total Wet Season	NOV	DEC	TOTAL
ARCHBOLD	2.05	8.35	8.42	8.15	6.92	7.10	40.99	1.20	0.68	42.87
BONITA SPRINGS	5.09	13.31	14.00	14.48	9.18	17.25	73.31	0.75	0.88	74.94
CORKSCREW HQ	4.97	13.87	9.02	13.71	8.52	12.57	62.66	0.53	1.15	64.34
CV-5	3.20	5.13	5.84	5.62	7.93	6.87	34.59	0.19	0.25	35.03
FT MYERS	1.20	14.65	12.14	13.87	10.27	-	52.13	0.80	1.16	54.09
G-136	3.06	10.61	8.95	9.56	4.53	10.63	47.34	0.18	0.57	48.09
IMMOKALEE	-	-	-	10.22	8.36	10.42	--	0.78	0.72	-
S-77	3.23	6.77	14.31	7.34	4.72	10.69	47.06	0.24	0.36	47.66
S-78	2.42	9.11	11.59	7.61	8.59	9.47	48.79	0.46	0.39	49.64
S-79	2.68	12.46	9.49	10.88	7.58	9.10	52.19	1.29	0.58	54.06
1995 Basin Average.	3.10	10.47	10.42	10.14	7.66	10.46	51.01	0.64	0.67	52.30
LONG TERM AVG.	4.50	9.17	8.38	8.07	8.23	3.98	42.33	1.54	1.66	45.83
% of Normal	69%	114%	124%	126%	93%	263%	121%	42%	40%	114%
Approx. Return Frequency (yrs)										

TABLE A-12. Monthly Rainfall (Inches) for the COLLIER COUNTY Subbasin.

STATIONS	MAY	JUN	JUL	AUG	SEP	OCT	Total Wet Season	NOV	DEC	TOTAL
BONITA SPRINGS	5.09	13.31	14.00	14.48	9.18	17.25	73.31	0.75	0.88	74.94
COOPERTOWN	-	-	-	-	-	-	-	0.29	0.55	-
CORKSCREW HQ	4.97	13.87	9.02	13.71	8.52	12.57	62.66	0.53	1.15	64.34
EVERGLADES NP	10.08	21.47	6.26	14.64	7.61	10.83	70.89	0.20	0.35	71.44
G-155	3.17	5.28	3.61	8.99	5.41	10.50	36.96	0.15	0.53	37.64
IMMOKALEE	-	-	-	10.22	8.36	10.42	-	0.78	0.72	-
IMMOKALEE LF	2.35	11.70	10.90	11.19	8.81	13.14	58.09	1.07	1.02	60.18
MARCO ISLAND	5.48	19.78	14.41	13.67	8.76	13.67	75.77	0.55	0.54	76.86
NAPLES FS	1.80	10.65	7.82	14.79	11.32	14.47	60.85	0.70	0.91	62.46
RACCOON POINT	8.18	12.75	11.05	11.17	5.14	6.41	54.70	0.43	0.41	55.54
S-140	6.75	9.13	6.09	11.19	5.36	7.92	46.44	1.02	0.44	47.90
1995 Basin Average.	5.32	13.10	9.24	12.41	7.85	11.72	59.96	0.59	0.68	61.26
LONG TERM AVG.	4.95	6.10	8.66	7.59	8.64	4.15	40.09	1.65	1.50	43.24
% of Normal	107%	215%	107%	164%	91%	282%	150%	36%	45%	142%
Approx. Return Frequency (yrs)										

TABLE A-13. Monthly Rainfall (Inches) for the SOUTH WEST COAST Subbasin.

STATIONS	MAY	JUN	JUL	AUG	SEP	OCT	Total Wet Season	NOV	DEC	TOTAL
BONITA SPRINGS	5.09	13.31	14.00	14.48	9.18	17.25	73.31	0.75	0.88	74.94
CORKSCREW HQ	4.97	13.87	9.02	13.71	8.52	12.57	62.66	0.53	1.15	64.34
FT MYERS	1.20	14.65	12.14	13.87	10.27	-	52.13	0.80	1.16	54.89
IMMOKALEE	-	-	-	10.22	8.36	10.42	-	0.78	0.72	-
MARCO ISLAND	5.48	19.78	14.41	13.67	8.76	13.67	75.77	0.55	0.54	76.86
NAPLES FS	1.80	10.65	7.82	14.79	11.32	14.47	60.85	0.70	0.91	62.46
S-79	2.68	12.46	9.49	10.88	7.58	9.10	52.19	1.29	0.58	54.06
1995 Basin Average.	3.54	14.12	11.15	13.09	9.14	12.91	62.82	0.77	0.85	64.59
LONG TERM AVG.	4.48	9.38	8.54	8.60	8.20	3.20	42.40	1.76	1.58	45.74
% of Normal	79%	151%	130%	152%	111%	403%	148%	44%	54%	141%
Approx. Return Frequency (yrs)										

APPENDIX B

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APPENDIX C

APPENDIX C

TABLE C-1. Mean Daily Stages (ft) and Flows(cfs) to the Kissimmee River and to Lake Okeechobee

DATE	S-65 (HW@GAT) 11408	S-65 (TW) 00187	S-65 (FLOW) 00186	S-65E (HW) 00240	S-65E (TW) 00243	S-65E (FLOW) 15631
19950501	50.05 ?	46.43	1080.00	20.85	15.60	1160.00
19950502	50.05 ?	46.41	1090.00	20.94	15.60	478.00
19950503	50.02 ?	46.43	1080.00	21.21	15.54	1240.00
19950504	49.99	46.47	747.00	20.94	15.59	1300.00
19950505	50.06 ?	46.52	536.00	21.12	15.61	674.00
19950506	50.08 ?	46.42	545.00	21.16	15.56	476.00
19950507	50.05 ?	46.44	541.00	20.90	15.56	580.00
19950508	50.04 ?	46.42	543.00	21.03	15.55	333.00
19950509	49.99	46.42	539.00	20.98	15.65	814.00
19950510	50.04 ?	46.45	540.00	21.03	15.62	445.00
19950511	50.27 ?	46.50	554.00	21.05	15.68	296.00
19950512	50.32 ?	46.42	563.00	21.17	15.56	352.00
19950513	50.32 ?	46.44	561.00	21.21	15.55	635.00
19950514	50.34 ?	46.44	563.00	21.08	15.48	324.00
19950515	50.40 ?	46.37	920.00	21.16	15.48	548.00
19950516	50.37 ?	46.29	1150.00	21.03	15.38	1450.00
19950517	50.29 ?	46.37	1130.00	20.92	15.44	1400.00
19950518	50.27 ?	46.45	1110.00	20.96	15.46	903.00
19950519	50.23 ?	46.44	1110.00	21.27	15.45	693.00
19950520	50.28 ?	46.48	1110.00	21.35	15.44	1250.00
19950521	50.30 ?	46.46	1120.00	20.99	15.31	1440.00
19950522	50.32 ?	46.41	1130.00	20.96	15.27	629.00
19950523	50.24 ?	46.49	1100.00	21.24	15.23	1050.00
19950524	50.21 ?	46.46	1100.00	21.08	15.24	926.00
19950525	50.19 ?	46.45	1100.00	20.84	15.25	906.00
19950526	50.18 ?	46.48	791.00	21.16	15.24	694.00
19950527	50.17 ?	46.53	543.00	21.20	15.24	466.00
19950528	50.14 ?	46.41	551.00	21.01	15.23	459.00
19950529	50.13 ?	46.42	549.00	21.02	15.20	460.00
19950530	50.13 ?	46.45	547.00	21.15	15.20	129.00
19950531	50.13 ?	46.43	327.00	21.26	15.19	437.00
19950601	50.11 ?	46.41	183.00	21.13	15.14	99.00
19950602	50.13 ?	46.42	183.00	21.11	15.14	.00
19950603	50.14 ?	46.42	183.00	21.23	15.16	546.00
19950604	50.11 ?	46.43	183.00	20.95	15.20	214.00
19950605	50.08 ?	46.44	181.00	20.99	15.37	.00
19950606	50.18 ?	46.43	184.00	21.07	15.19	241.00
19950607	50.19 ?	46.41	185.00	21.09	15.11	76.00
19950608	50.16 ?	46.42	184.00	21.20	15.12	.00
19950609	50.13 ?	46.42	183.00	21.12	15.12	232.00
19950610	50.14 ?	46.39	184.00	21.13	15.09	35.00
19950611	50.13 ?	46.38	184.00	21.08	15.12	70.00
19950612	50.12 ?	46.43	183.00	21.10	15.11	272.00
19950613	50.20 ?	46.42	185.00	20.79	15.07	115.00
19950614	50.15 ?	46.40	184.00	20.92	15.00	.00
19950615	50.13 ?	46.41	183.00	21.15	14.98	.00
19950616	50.07 ?	46.41	182.00	21.09	14.91	.00
19950617	50.09 ?	46.39	183.00	20.97	14.88	.00
19950618	50.07 ?	46.42	182.00	21.08	14.89	19.00
19950619	50.04 ?	46.40	181.00	21.11	14.99	287.00
19950620	M	M	178.00	21.06	15.08	90.00
19950621	M	M	180.00	21.00	15.17	108.00
19950622	M	M	181.00	21.12	15.20	114.00
19950623	M	M	414.00	21.15	15.17	396.00
19950624	M	M	563.00	20.82	15.11	933.00
19950625	M	M	561.00	20.90	15.22	323.00
19950626	M	M	916.00	21.16	15.26	1400.00
19950627	M	M	1510.00	20.95	15.26	1870.00
19950628	M	M	1730.00	21.13	15.23	2040.00
19950629	M	M	1740.00	21.15	15.22	1880.00
19950630	M	M	2050.00	21.03	15.32	1940.00
19950701	M	M	2240.00	21.18	15.35	1860.00
19950702	M	M	2230.00	21.23	15.36	2590.00

TABLE C-1. Mean Daily Stages (ft) and Flows(cfs) to the Kissimmee River and to Lake Okeechobee (continued).

DATE	S-65 (HW@GAT) 11408	S-65 (TW) 00187	S-65 (FLOW) 00186	S-65E (HW) 00240	S-65E (TW) 00243	S-65E (FLOW) 15631
19950703	M	M	2220.00	20.95	15.43	2390.00
19950704	M	M	2190.00	21.17	15.38	2090.00
19950705	M	M	1880.00	21.10	15.41	2110.00
19950706	M	M	1330.00	21.07	15.35	1240.00
19950707	M	M	1080.00	21.01	15.36	814.00
19950708	M	M	1080.00	21.13	15.37	1020.00
19950709	M	M	1070.00	21.01	15.40	1070.00
19950710	M	M	1070.00	21.05	15.43	606.00
19950711	M	M	762.00	21.23	15.44	823.00
19950712	M	M	526.00	20.89	15.40	290.00
19950713	M	M	534.00	21.08	15.44	686.00
19950714	M	M	532.00	20.95	15.39	640.00
19950715	M	M	535.00	21.19	15.39	460.00
19950716	M	M	533.00	21.34	15.42	464.00
19950717	M	M	533.00	21.32	15.43	688.00
19950718	M	M	537.00	21.21	15.59	333.00
19950719	M	M	549.00	21.11	15.55	867.00
19950720	M	M	552.00	20.84	15.50	729.00
19950721	M	M	922.00	20.97	15.49	978.00
19950722	M	M	1120.00	21.03	15.51	1320.00
19950723	M	M	1120.00	20.96	15.53	1120.00
19950724	M	M	1110.00	20.99	15.49	839.00
19950725	M	M	1110.00	21.28	15.50	921.00
19950726	M	M	1820.00	21.27	15.67	1730.00
19950727	M	46.56	2850.00	21.05	15.74	2700.00
19950728	M	46.56	3210.00	21.27	15.77	2900.00
19950729	M	46.56	3200.00	21.15	15.76	3800.00
19950730	M	46.56	3220.00	21.10	15.74	2900.00
19950731	M	46.53	3160.00	21.20	15.74	3940.00
19950801	M	46.47	3720.00	20.87	15.54	2790.00
19950802	M	46.89	3900.00	21.28	16.19	4210.00
19950803	M	46.79	4600.00	21.20	16.10	8340.00
19950804	M	47.04	4830.00	21.14	16.10	8620.00
19950805	M	47.03	4860.00	21.03	16.11	8610.00
19950806	M	46.89	4960.00	21.29	16.12	8960.00
19950807	M	46.76	5060.00	21.02	16.16	7410.00
19950808	M	46.69	5080.00	21.16	16.19	8060.00
19950809	M	46.70	5060.00	20.95	16.17	6930.00
19950810	M	46.73	5040.00	21.11	16.23	7500.00
19950811	M	46.69	5020.00	21.06	16.29	6840.00
19950812	M	46.68	5030.00	21.19	16.27	7210.00
19950813	M	46.68	5020.00	21.05	16.29	6930.00
19950814	M	46.67	5000.00	21.26	16.28	6900.00
19950815	M	46.63	4990.00	21.20	16.25	6960.00
19950816	M	46.61	4940.00	21.14	16.26	6220.00
19950817	M	46.63	4880.00	21.27	16.30	6420.00
19950818	M	46.64	4460.00	20.95	16.25	5740.00
19950819	M	46.58	4070.00	21.17	16.20	5130.00
19950820	M	46.54	4070.00	21.22	16.21	5220.00
19950821	M	46.60	4030.00	21.12	16.19	4570.00
19950822	M	46.61	4040.00	21.24	16.12	4660.00
19950823	M	46.55	4070.00	21.33	16.12	4690.00
19950824	M	46.68	3820.00	21.32	17.08	4830.00
19950825	M	46.83	3800.00	21.17	16.75	5500.00
19950826	M	46.69	3970.00	21.32	16.74	6850.00
19950827	M	46.64	4060.00	21.08	16.75	6880.00
19950828	M	46.62	4100.00	21.10	16.76	7220.00
19950829	M	46.59	4180.00	21.04	16.72	6870.00
19950830	M	46.62	4590.00	21.23	16.79	6530.00
19950831	M	46.81	5400.00	21.17	16.82	7220.00
19950901	M	47.10	5450.00	21.12	16.89	7710.00
19950902	M	47.26	5410.00	21.32	16.95	8540.00
19950903	M	47.30	5410.00	21.19	16.91	8650.00
19950904	M	47.25	5490.00	21.12	16.96	8170.00
19950905	M	47.21	5540.00	21.23	17.06	8030.00

TABLE C-1. Mean Daily Stages (ft) and Flows (cfs) to the Kissimmee River and to Lake Okeechobee (continued).

DATE	S-65 (HW@GAT) 11408	S-65 (TW) 00187	S-65 (FLOW) 00186	S-65E (HW) 00240	S-65E (TW) 00243	S-65E (FLOW) 15631
19950906	M	47.14	5580.00	21.21	17.16	8230.00
19950907	M	47.04	5700.00	21.02	17.21	7660.00
19950908	M	47.02	5690.00	21.01	17.23	7360.00
19950909	M	47.15	5560.00	21.21	17.29	7420.00
19950910	M	47.23	5510.00	21.29	17.34	8480.00
19950911	M	47.32	5440.00	21.08	17.40	8680.00
19950912	M	47.33	5440.00	21.17	17.42	8280.00
19950913	M	47.31	5430.00	21.07	17.45	8740.00
19950914	M	47.23	5500.00	21.02	17.46	8350.00
19950915	M	47.13	5520.00	20.96	17.47	8180.00
19950916	M	47.06	5510.00	20.91	17.42	7770.00
19950917	M	46.98	5500.00	21.07	17.45	7570.00
19950918	M	46.82	5310.00	21.05	17.43	7580.00
19950919	M	46.68	5010.00	20.92	17.44	6920.00
19950920	M	46.68	4360.00	20.92	17.39	6270.00
19950921	M	46.59	3940.00	21.04	17.39	5370.00
19950922	M	46.60	3570.00	21.21	17.38	5400.00
19950923	M	46.58	3360.00	21.06	17.38	4040.00
19950924	M	46.55	3360.00	21.24	17.34	4400.00
19950925	M	46.61	3010.00	21.02	17.29	3910.00
19950926	M	46.55	2680.00	21.00	17.29	3480.00
19950927	M	46.50	2460.00	21.29	17.23	3400.00
19950928	M	46.48	2270.00	21.20	17.24	3050.00
19950929	M	46.49	2040.00	20.92	17.16	2700.00
19950930	M	46.45	1850.00	20.96	17.11	2100.00
19951001	M	M	1570.00	21.01	17.10	2080.00
19951002	M	M	1460.00	21.12	17.08	1710.00
19951003	M	M	1470.00	21.09	17.19	1850.00
19951004	M	M	1430.00	21.10	17.41	1680.00
19951005	M	M	1450.00	21.26	17.28	1880.00
19951006	M	M	1470.00	21.31	17.20	2290.00
19951007	M	M	1490.00	20.93	17.20	2420.00
19951008	M	M	1510.00	21.20	17.24	2450.00
19951009	M	M	1500.00	21.17	17.35	4080.00
19951010	M	M	1540.00	21.06	17.33	3060.00
19951011	M	M	1900.00	21.24	17.36	4020.00
19951012	M	M	2110.00	21.05	17.33	4140.00
19951013	M	M	2460.00	20.98	17.34	3970.00
19951014	M	M	2650.00	21.22	17.46	4210.00
19951015	M	M	2660.00	21.23	17.48	4750.00
19951016	M	M	3270.00	21.04	17.37	4580.00
19951017	M	M	3980.00	21.32	17.66	5480.00
19951018	M	M	4410.00	21.33	18.01	7670.00
19951019	M	M	4600.00	21.13	18.14	7790.00
19951020	M	M	4630.00	20.99	18.27	7900.00
19951021	M	M	4630.00	21.01	18.30	7630.00
19951022	M	M	4560.00	20.96	18.32	7270.00
19951023	M	M	4480.00	20.96	18.42	6710.00
19951024	M	M	4470.00	21.02	18.42	6750.00
19951025	M	M	4440.00	20.82	18.45	5900.00
19951026	M	M	4120.00	21.10	18.48	6010.00
19951027	M	M	3740.00	20.82	18.54	5380.00
19951028	M	M	3510.00	20.82	18.48	5180.00
19951029	M	M	3550.00	20.94	18.22	3920.00
19951030	M	M	2880.00	21.21	18.33	4160.00
19951031	M	M	2710.00	20.90	18.33	4080.00
19951101	M	M	2240.00	20.88	18.30	3340.00
19951102	M	M	1750.00	20.91	18.27	2760.00
19951103	M	M	1580.00	20.86	18.22	2330.00
19951104	M	M	1610.00	20.78	18.05	2060.00
19951105	M	M	1610.00	20.94	18.02	1840.00
19951106	M	M	1600.00	20.99	18.05	1840.00
19951107	M	M	1590.00	21.10	18.09	1860.00
19951108	M	M	1610.00	20.93	17.97	1730.00
19951109	M	M	1610.00	21.06	17.70	2160.00
19951110	M	M	1590.00	21.02	17.91	2240.00

TABLE C-1. Mean Daily Stages (ft) and Flows(cfs) to the Kissimmee River and to Lake Okeechobee (continued).

DATE	S-65	S-65	S-65	S-65E	S-65E	S-65E
	(HW@GAT) 11408	(TW) 00187	(FLOW) 00186	(HW) 00240	(TW) 00243	(FLOW) 15631
19951111	M	M	1590.00	20.89	17.91	1780.00
19951112	M	M	1610.00	21.22	17.63	1940.00
19951113	M	M	1590.00	20.99	17.68	1810.00
19951114	M	M	1590.00	20.97	17.55	1620.00
19951115	M	M	1570.00	21.10	17.51	1650.00
19951116	M	M	1350.00	21.11	17.48	1560.00
19951117	M	M	981.00	20.94	17.42	1270.00
19951118	M	M	826.00	20.91	17.41	1040.00
19951119	M	M	652.00	20.94	17.33	730.00
19951120	M	M	306.00	20.94	17.33	421.00
19951121	M	M	172.00	20.98	17.26	184.00
19951122	M	M	174.00	21.02	17.10	105.00
19951123	M	M	173.00	21.23	17.18	283.00
19951124	M	M	174.00	21.12	17.15	382.00
19951125	M	M	176.00	20.97	16.94	154.00
19951126	M	M	175.00	21.21	16.96	200.00
19951127	M	M	172.00	21.08	17.03	249.00
19951128	M	M	173.00	21.02	17.01	191.00
19951129	M	46.44	174.00	21.00	16.97	138.00
19951130	49.87	46.41	177.00	21.16	16.83	351.00
19951201	49.82	46.42	667.00	21.18	16.86	446.00
19951202	49.78	46.40	1050.00	21.16	16.81	878.00
19951203	49.72	46.41	724.00	20.98	16.77	1080.00
19951204	49.71	46.43	783.00	20.93	16.69	634.00
19951205	49.62	46.45	1630.00	21.26	16.66	980.00
19951206	49.45	46.49	2540.00	21.08	16.65	1920.00
19951207	49.28	46.50	2850.00	20.99	16.64	2400.00
19951208	49.14	46.46	2800.00	21.19	16.58	2560.00
19951209	49.00	46.46	2720.00	20.98	16.62	2940.00
19951210	49.03	46.47	2740.00	20.94	16.33	2410.00
19951211	48.88	46.43	2670.00	21.17	16.28	2550.00
19951212	48.67	46.41	2570.00	21.01	16.41	2440.00
19951213	48.55	46.47	2460.00	21.16	16.43	2620.00
19951214	48.41	46.46	2380.00	20.88	16.44	2320.00
19951215	48.29	46.44	2320.00	21.00	16.43	2070.00
19951216	48.17	46.47	2230.00	21.08	16.39	2100.00
19951217	48.05	46.43	2170.00	21.12	16.40	2100.00
19951218	47.94	46.46	1890.00	21.09	16.42	2040.00
19951219	47.91	46.54	1470.00	21.04	16.48	1600.00
19951220	48.10	46.59	1170.00	20.90	16.23	110.00
19951221	47.95	46.47	1040.00	20.97	16.19	514.00
19951222	47.89	46.40	873.00	21.43	16.13	964.00
19951223	47.93	46.31	726.00	20.65	15.95	939.00
19951224	47.92	46.29	728.00	21.08	15.95	339.00
19951225	47.79	46.20	718.00	20.89	15.97	556.00
19951226	47.76	46.16	719.00	21.06	16.03	298.00
19951227	47.63	46.12	701.00	21.21	16.05	496.00
19951228	47.62	46.08	709.00	21.23	16.01	774.00
19951229	47.56	45.99	916.00	21.16	15.98	728.00
19951230	47.44	45.95	1040.00	21.26	16.06	1130.00
19951231	47.37	45.94	1020.00	20.82	16.08	788.00

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APPENDIX D

APPENDIX D

TABLE D-1. Controlled Inflows (cfs) to Lake Okechobee from Tributaries to the North.

STATIONS DBKEY	S-131 (FLOW) 15643	S-71 (FLOW) 15633	S-129 (FLOW) 15642	S-72 (FLOW) 15634	S-127 (FLOW) 15641	S-84 (FLOW) 15636	S-154 (FLOW) 15629	S-133 (FLOW) 15637	S-191 (FLOW) 15639	S135 (FLOW) 15638
DATE										
19950501	.00	170.46	.00	42.69	.00	260.35	.00	.00	72.28	.00
19950502	.00 E	3.23 E	.00 E	40.16 E	.00 E	437.27 E	.00 E	.00 E	.00	17.16
19950503	.00	240.12	.00	.00 E	.00	435.70 E	.00	.00	.00	.00
19950504	.00	180.61	.00	.00 E	.00	431.17	.00	.00	.00	.00
19950505	.00	300.82	.00	.00	.00	428.66	.00	.00	.00	.00
19950506	.00 E	177.26	.00	.00	.00	429.70	.00	.00	.00	.00
19950507	.00	.00	.00	15.83	.00	427.56	.00	.00	.00	.00
19950508	.00	252.51	.00	.00	.00	426.15	.00	.00	.00	.00
19950509	.00	222.03	.00	.00	.00	305.21	.00	.00	.00	.00
19950510	.00	69.16	.00	.00	.00	375.72	.00	.00	.00	.00
19950511	.00	102.58	.00	.00	.00	229.77	.00	.00	55.95	.00
19950512	.00	298.69	.00	.00	.00	187.81	.00	.00	.00	.00
19950513	.00	183.72	.00	.00	.00	207.73	.00	.00	.00	.00
19950514	.00	.00	.00	33.99	.00	201.41	.00	.00	.00	.00
19950515	.00	.00 E	.00 E	17.90 E	.00 E	213.88 E	.00 E	.00 E	.00	.00
19950516	.00	88.79	.00	.00	.00	.00	.00	.00	66.26	.00
19950517	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
19950518	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
19950519	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
19950520	.00 E	.00	.00 E	.00	.00	.00	.00	.00	.00	.00
19950521	.00	79.04	.00	.00	107.93	.00	.00	275.44 E	69.01	.00
19950522	.00	56.89	.00	.00	.00	.00	.00	.00	.00	186.00
19950523	49.43	83.15	.00	.00	.00	.00	.00	.00	78.39	.00
19950524	.00	13.31	.00	.00	.00	.00	.00	.00	66.14	.00
19950525	.00	137.53	.00	.00	.00	.00	.00	.00	.00	.00
19950526	.00	74.24	.00	61.82	.00	.00	.00	.00	.00	.00
19950527	.00	87.91	.00	24.06	.00	.00	.00	.00	.00	.00
19950528	.00 E	156.91 E	.00 E	.00	.00 E	.00	.00 E	.00	.00	.00
19950529	.00	81.47	.00	.00	.00	.00	.00	.00	.00	.00
19950530	.00	62.86	.00	.00	.00	.00	.00	.00	60.06	.00
19950531	.00 E	.00 E	.00 E	.00	.00	.00	.00	.00	.00	.00
19950601	.00 E	.00 E	.00 E	.00 E	.00 E	.00 E	.00 E	.00 E	.00	.00
19950602	38.67	.00	.00	.00	75.80	.00	.00	163.20	.00	153.60
19950603	.00	11.96	.00	.00	.00	.00	.00	.00	.00	.00
19950604	.00	183.21	.00	.00	.00	.00	.00	.00	274.93	.00
19950605	35.32	184.42	.00	.00	.00	.00	.00	.00	65.92	174.64
19950606	.00	115.26	.00	.00	.00	.00	.00	.00	.00	112.48
19950607	.00	188.18	.00	.00	.00	.00	.00	.00	69.29	.00
19950608	.00 E	23.57 E	.00 E	.00	.00 E	.00	.00 E	.00	.00	139.38 E
19950609	.00 E	24.56	.00 E	.00	.00 E	.00	.00	.00	.00	84.89
19950610	.00	34.84	.00	.00	.00	.00	.00	.00	.00	.00
19950611	.00	37.48	.00	.00	.00	.00	.00	.00	.00	.00
19950612	.00	51.46	.00	.00	85.93	.00	.00	.00	.00	.00

TABLE D-1. Controlled Inflows (cfs) to Lake Okeechobee from Tributaries to the North,(continued).

STATIONS	S-131 (FLOW)	S-71 (FLOW)	S-129 (FLOW)	S-72 (FLOW)	S-127 (FLOW)	S-84 (FLOW)	S-154 (FLOW)	S-133 (FLOW)	S-191 (FLOW)	S135 (FLOW)
DBKEY	15643	15633	15642	15634	15641	15636	15629	15637	15639	15638
DATE										
19950613	.00	49.92	.00	.00	.00	.00	.00	.00	.00	.00
19950614	.00	46.76	.00	.00	.00	.00	.00	.00	.00	.00
19950615	.00 E	56.28 E	.00 E	.00 E	.00 E	.00 E	.00 E	.00 E	.00 E	.00
19950616	.00	45.73	.00	.00	.00	.00	.00	127.45	.00	.00
19950617	.00	64.27	.00	.00	.00	.00	.00	.00	.00	.00
19950618	.00	24.85	.00	.00	.00	.00	.00	.00	.00	.00
19950619	38.30	25.17	.00	.00	66.61	68.59	.00	.00	.00	155.42
19950620	.00	79.75	.00	.00	.00	87.36	.00	.00	.00	123.53
19950621	.00	31.40	.00	.00	.00	.00	.00	.00	.00	.00
19950622	.00	91.28	.00	.00	.00	.00	.00	.00	76.93	.00
19950623	43.47	301.14	48.10	13.69	80.54	.00	.00	145.71	.00	100.64
19950624	.00	292.14	.00	50.45 E	.00	.00	.00	.00	72.67	85.11
19950625	40.07	251.39	52.52	39.40	118.77	216.95	.00	345.48	295.47	347.91
19950626	.00	592.42	61.04	110.62	153.20	.00	13.92	305.56	897.72	49.46
19950627	42.12	528.48	.00	73.10 E	110.03	174.79	58.81	212.42	562.30	159.52
19950628	.00 E	525.43	64.29	.00	78.56	345.82	.00	146.06	437.07	104.97
19950629	38.24	426.06 E	.00 E	37.65 E	.00 E	152.18 E	29.99 E	.00 E	294.37	95.90
19950630	.00 E	732.70	34.96 E	53.79 E	107.88 E	302.12 E	3.26 E	213.80 E	236.63	87.82
19950701	.00 E	450.42 E	.00 E	52.79 E	.00 E	286.84 E	.00 E	.00 E	154.38	.00
19950702	.00	458.79 E	.00 E	38.95	.00 E	208.87 E	.00 E	.00 E	165.47	.00
19950703	.00 E	885.31 E	54.25 E	.57 E	143.40 E	289.49 E	.00 E	262.58	67.76	.00
19950704	.00	611.23	.00	24.43	.00	219.02	.00	.00	70.50	.00
19950705	93.53 E	262.21	.00 E	43.68 E	04.93 E	280.24 E	.00 E	188.45 E	151.24	.00
19950706	.00 E	291.08	.00 E	52.43 E	.00 E	.00 E	.00 E	.00 E	68.49	.00
19950707	.00	69.62	.00	10.18	63.58	156.88	.00	102.16	66.20	.00
19950708	.00	.00	.00	.00	.00	231.98	.00	.00	69.82	.00
19950709	.00 E	.00	.00 E	.00	.00	56.26	.00	.00	139.48	.00
19950710	.00 E	.00 E	.00 E	.00 E	.00 E	262.81 E	.00 E	.00 E	76.70	.00 E
19950711	.00	73.91	.00	.00	94.44	.00	.00	.00	78.02	.00
19950712	.00 E	202.84 E	71.61 E	.00 E	.00 E	235.05 E	.00 E	152.52 E	151.24	.00 E
19950713	.00	414.97	.00	.00	.00	138.90	.00	.00	348.19	.00
19950714	24.42 E	238.92 E	.00 E	.00	80.21 E	61.56 E	.00 E	114.51 E	449.64	.00
19950715	.00 E	.00	.00 E	5.20	.00 E	179.10 E	.00 E	.00 E	420.98 E	.00 E
19950716	.00	64.56	.00	.00	.00	99.68	.00	.00	266.67	.00
19950717	.00 E	170.22 E	.00 E	.00	.00 E	225.02 E	.00 E	.00 E	275.22	.00 E
19950718	.00 E	238.38 E	.00 E	.00	71.00 E	128.98 E	.00 E	.00 E	177.58	157.15 E
19950719	.00	228.69	.00	.00	.00	109.58	.00	.00 E	106.62	.00
19950720	.00 E	218.95	.00 E	11.28	.00 E	221.52 E	.00 E	.00 E	134.86	.00 E
19950721	.00	384.04	71.12	69.25	66.22	53.02	.00	156.61	168.38	124.20
19950722	.00	349.86	.00	.00	.00	198.00	.00	.00	101.02	.00
19950723	.00	111.01	.00	.00	.00	155.40	.00	.00	135.93	.00
19950724	.00	20.44	.00	.00	.00	61.08	.00	.00	72.62	.00
19950725	38.67 E	79.87	.00 E	.00	73.39 E	188.90 E	.00	.00 E	264.12	.00 E
19950726	.00	321.04	68.55	14.91	.00	331.85	.00	156.99	516.10	153.29
19950727	31.77 E	707.96 E	.00 E	63.35 E	58.44 E	739.31 E	.00 E	.00 E	717.33	148.62 E

TABLE D-1. Controlled Inflows (cfs) to Lake Okeechobee from Tributaries to the North,(continued).

STATIONS	S-131 (FLOW)	S-71 (FLOW)	S-129 (FLOW)	S-72 (FLOW)	S-127 (FLOW)	S-84 (FLOW)	S-154 (FLOW)	S-133 (FLOW)	S-191 (FLOW)	S135 (FLOW)
DBXB	15643	15633	15642	15634	15641	15636	15629	15637	15639	15638
DATE										
19950728	31.03	1080.30	.00	231.56	.00	540.33	.00	107.51	797.63	149.11
19950729	.00 E	599.75 E	.00 E	206.01	.00 E	640.02 E	.00 E	.00 E	896.04	.00
19950730	50.85	526.19	63.96	172.96	.00	623.82	.00	.00	761.99	328.89
19950731	36.90	939.02	44.39	210.32	147.68	587.52	.00	209.32 E	602.57	338.78
19950801	25.49	874.59	27.94 E	173.64	17.58 E	1471.37	.00	9.83	663.06	253.76
19950802	.00 E	1123.67 E	.00 E	231.09 E	53.22 E	1469.95 E	.00 E	154.63 E	1260.10	56.63 E
19950803	.00	1047.33	.00	288.54	8.73	743.04	.00	142.56	2013.84	228.33
19950804	53.54	757.83	64.85	237.08	84.92	685.70	56.96	219.15	2176.34	376.02
19950805	.00	470.85	.00	249.61	107.23	836.55	80.65	159.27	1881.88	301.50
19950806	.00	466.56 E	.00 E	254.36 E	.00 E	806.60 E	53.98 E	.00 E	1274.93	134.00
19950807	40.31	406.98	.00	116.46	108.56	1036.43	12.32	77.76	973.80	.00
19950808	.00 E	440.53 E	.00 E	117.28 E	.00 E	819.40 E	44.40 E	.00 E	596.76	138.22
19950809	.00	754.36	61.85	127.30	80.92	1062.34	.00	148.82	499.95	.00
19950810	.00	745.44	.00	210.53 E	118.90	1156.46	39.28	.00	404.74	75.94
19950811	27.06	952.07 E	50.84 E	215.23 E	100.31 E	1156.51 E	.00 E	149.62 E	409.72	5.99
19950812	.00	896.20	.00	182.03	147.58	1203.27	.00	.00	877.37	94.31
19950813	57.40	1108.10	68.10	157.40	108.94	1308.18	.00	.00	714.89	.00
19950814	.00	811.29 E	.00 E	201.93 E	58.51 E	1237.43 E	.00 E	166.12 E	587.40	.00
19950815	68.53 E	891.27	64.62 E	107.52 E	.00 E	663.79 E	.00 E	.00 E	548.80	.00
19950816	.00	621.59	.00	109.07	107.91	572.21	.00	.00	399.96	118.15
19950817	58.65	828.42	.00	175.90	.00	828.75	.00	.00	409.36	.00
19950818	.00 E	549.64	48.55 E	169.62 E	76.68 E	485.21 E	.00 E	127.48	341.30	.00
19950819	55.01	754.05	.00	116.62	.00	383.96	.00	.00	357.68	.00
19950820	.00	563.60	.00	118.18	.00	380.95	.00	.00	370.02	.00
19950821	90.03	654.89	60.28	119.74	71.61	272.13	.00	.00	418.78	.00
19950822	32.52 E	555.77 E	.00 E	120.85 E	.00 E	246.57 E	.00 E	.00 E	670.10	.00 E
19950823	.00 E	719.30	.00 E	121.46	55.14 E	308.21 E	.00 E	.00 E	296.86 E	.00 E
19950824	126.75 E	647.63	112.84 E	145.63 E	116.27	694.51	.00	297.74 E	776.05 E	430.59
19950825	71.74	1587.32	51.47 E	329.44 E	68.54	1746.55	72.79	187.84	1289.93 E	585.32
19950826	34.88	1993.57	45.54	514.04 E	59.76	2165.10	63.46	142.30	1376.13 E	587.36
19950827	59.01	1568.74	65.56	494.89	93.44	1978.86	38.61	.00	1051.01 E	528.31
19950828	50.99	1169.80	57.45 E	365.93 E	.00 E	1904.15 E	39.73 E	.00 E	739.78 E	322.42 E
19950829	35.31 E	1130.85	.00 E	357.65	118.34 E	1964.72 E	12.95	187.32 E	643.93 E	213.84 E
19950830	.00 E	791.09	76.67 E	252.21	.00 E	1322.26 E	.00 E	.00 E	402.55 E	96.51 E
19950831	67.15 E	730.75	.00 E	250.97 E	99.39 E	1089.16 E	.00 E	129.59 E	506.91 E	9.06 E
19950901	71.43 E	894.07 E	68.14 E	469.77 E	58.92 E	1266.81 E	41.85 E	96.96 E	360.19 E	134.23 E
19950902	51.39	1042.96	.00	382.20	99.05	1235.65	.00	114.50	660.60 E	160.96
19950903	110.88	847.43	100.29	377.50	125.40	1226.81	3.49	164.51	707.77 E	50.24
19950904	68.96	797.16	36.86	356.17	129.60	1139.54	83.96	263.78	762.71 E	.00
19950905	108.41	810.62	117.89 E	256.07 E	107.64	1100.70	43.37	203.60 E	318.99 E	143.77
19950906	92.13 E	851.99 E	190.29 E	347.06	448.29	1178.24 E	68.78 E	194.27	842.82 E	104.40 E
19950907	80.40	735.89	117.58	351.82	263.71	1092.35	58.25	137.27	761.25	62.16
19950908	84.04	795.88	145.94	403.90	384.28	1153.05	48.53	92.76	650.76	82.01

TABLE D-1. Controlled Inflows (cfs) to Lake Okeechobee from Tributaries to the North,(continued).

STATIONS	S-131 (FLOW)	S-71 (FLOW)	S-129 (FLOW)	S-72 (FLOW)	S-127 (FLOW)	S-84 (FLOW)	S-154 (FLOW)	S-133 (FLOW)	S-191 (FLOW)	S135 (FLOW)
DBKEY	15643	15633	15642	15634	15641	15636	15629	15637	15639	15638
DATE										
19950909	46.01	841.58	166.27	267.83	397.39	1082.09	114.51	368.75	735.08	204.81
19950910	41.93	718.66	148.94	355.69	448.23	1159.73	138.81	535.42	1841.59	426.27
19950911	43.39	827.51	211.69	512.82	575.84	1261.59	190.68	723.90	3702.69	220.92
19950912	33.88	1141.06	161.44	384.85	515.38	1369.76	150.46	592.87	2178.15	219.88
19950913	32.43	781.11	235.90	377.27	469.25	1269.84	109.66	335.74	1161.62	299.33
19950914	22.12	745.93	109.57	362.39	349.95	768.80	94.51	246.13	835.61	264.27
19950915	22.24	717.41	124.71	341.51	298.53	559.39	95.70	156.91	682.85	101.39
19950916	27.42	546.49	51.60	175.69	226.39	531.18	73.97	.00	531.50	.00
19950917	16.69	772.96	134.31	277.69	175.61	373.66	68.47	258.62	508.28	172.69
19950918	5.68	766.51	.00	207.59	192.70	579.78	82.02	.00	489.09	.00
19950919	17.10	743.79	119.59	132.95	152.52	496.42	63.47	246.62	642.68	162.90
19950920	9.07	478.26	.00	190.26	146.18	496.85	58.35	.00	349.99	.00
19950921	11.37	688.56	108.50	216.10	107.30	524.89	51.90	.00	214.67	.00
19950922	11.45	482.67	.00	125.00	105.70	284.69	69.55	218.53	235.63	147.14
19950923	.00	637.65	.00	194.10	512.59	512.59	47.16	.00	155.65	.00
19950924	11.42	475.50	.00	122.34	85.95	279.27	44.86	.00	153.13	.00
19950925	9.98	567.70	.00	200.65	.00	560.21	46.11	.00	165.29	186.65
19950926	.00	451.66	.00	103.61	122.52	411.28	43.53	200.37	231.98	.00
19950927	8.56	620.84	68.18	197.01	106.72	491.93	33.46	.00	161.10	63.14
19950928	.00	875.80	62.08	231.55	74.36	519.58	2.15	.00	431.29	225.48
19950929	.00	960.20	26.21	264.05	138.73	585.23	48.57	139.61	457.85	146.65
19950930	.00	655.73	.00	193.08	160.00	534.81	.00	.00	442.25	189.38
19951001	22.10	860.10	54.28	267.21	350.67	511.67	44.06	.00	323.98	144.56
19951002	.00	1004.53	.00	321.69	131.68	598.47	.00	167.97	661.63	138.69
19951003	23.43	722.32	65.13	251.40	114.11	631.64	.00	106.98	1284.47	153.40
19951004	.00	779.31	.00	283.76	110.79	464.41	44.53	.00	996.85	87.08
19951005	16.86	993.54	85.55	246.34	146.46	670.05	13.47	198.80	812.08	77.63
19951006	28.29	1564.37	55.05	351.80	131.18	657.64	79.58	250.26	755.73	154.06
19951007	34.27	1209.27	66.28	347.15	236.28	666.92	72.33	260.88	104.38	130.31
19951008	34.07	1142.63	58.11	270.74	209.64	733.10	87.73	525.09	522.82	287.11
19951009	16.82	1584.38	56.82	360.51	163.46	1083.41	106.07	291.55	634.31	143.80
19951010	40.13	1654.04	48.37	368.32	149.03	1211.53	109.29	220.99	86.10	156.86
19951011	45.81	1263.64	57.06	343.10	70.48	1044.41	106.49	88.42	416.70	176.39
19951012	40.11	1150.53	.00	307.76	128.66	1048.23	115.92	245.68	539.18	337.23
19951013	28.94	832.18	75.71	330.51	105.21	958.96	112.28	132.85	454.04	130.28
19951014	48.41	1067.11	.00	312.22	102.59	985.89	116.54	.00	614.00	86.81
19951015	86.72	1204.41	152.54	395.46	223.23	1059.79	174.59	441.00	686.93	305.19
19951016	77.27	1215.63	83.77	396.08	201.18	1258.57	176.14	169.37	500.46	295.89
19951017	177.35	1841.63	303.68	753.18	396.37	1679.65	302.16	506.67	975.07	393.77
19951018	259.79	3375.10	417.91	1343.02	682.08	2512.01	581.49	726.07	1630.56	571.84
19951019	156.17	3278.56	417.36	1260.08	668.88	2415.70	490.22	728.13	1893.75	576.05
19951020	149.77	3265.40	411.75	1314.11	677.80	2249.64	453.97	726.51	1073.95	573.94
19951021	110.69	2527.78	377.72	1004.36	660.60	1980.62	416.87	725.87	162.10	570.52
19951022	81.17	2002.36	257.93	729.06	449.66	1713.56	378.85	717.98	217.83	453.14

TABLE D-1. Controlled Inflows (cfs) to Lake Okeechobee from Tributaries to the North,(continued).

STATIONS	S-131 (FLOW)	S-71 (FLOW)	S-129 (FLOW)	S-72 (FLOW)	S-127 (FLOW)	S-84 (FLOW)	S-154 (FLOW)	S-133 (FLOW)	S-191 (FLOW)	S135 (FLOW)
DBKEY	15643	15633	15642	15634	15641	15636	15629	15637	15639	15638
DATE										
19951023	132.54 E	1783.17 E	219.41	588.65 E	404.37	1467.99 E	340.67 E	288.66 E	136.44 E	230.90 E
19951024	132.71 E	1450.32 E	165.86 E	480.30	332.77	1035.63 E	306.33 E	188.62 E	583.05 E	116.03 E
19951025	111.47	1366.44	160.15	434.92	324.39	874.51	265.92	236.14 E	365.23	141.76 E
19951026	119.12	1098.41	106.01	415.35	314.86	913.68	244.84	40.64	364.22	146.26
19951027	109.86	1070.97	99.90	387.57	265.56	766.83	213.13	177.62	344.60	129.66
19951028	66.90	980.66	81.35	267.22	153.92	571.29	186.49	140.81	252.60	98.90
19951029	103.12	869.61	83.45	306.01	312.48	620.39	151.22	.00	319.65	.00
19951030	84.79	798.18	49.70	292.57	178.32	.00	154.76	238.74	202.07	117.88
19951031	75.07	849.19	64.20	286.24	184.68	221.56	124.96	.00	85.18 E	.00
19951101	65.42	887.78	63.19	132.26	127.22	232.03	117.81	122.07	146.60 E	94.45
19951102	61.25 E	878.31 E	44.88 E	155.84 E	150.09 E	229.19 E	111.76 E	.00 E	80.47	.00 E
19951103	38.05 E	844.93 E	43.50 E	207.18 E	154.91	180.76 E	102.19 E	181.96 E	162.73	101.39 E
19951104	17.63	805.35	.00	173.51	134.98	55.49	77.93	.00	79.54	.00
19951105	.00	641.19	68.86	163.96	123.96	214.11	86.15	.00	77.28	.00
19951106	.00 E	541.92 E	.00 E	172.48 E	113.38	249.44 E	71.18 E	.00 E	79.55	.00
19951107	41.50	393.30	60.61	86.28	112.39	192.79	54.83	.00	813.33	.00 E
19951108	30.34 E	404.74 E	.00 E	90.20 E	108.28	448.67 E	52.25 E	278.17 E	78.93	202.57 E
19951109	26.62 E	323.95 E	56.74 E	93.56 E	92.75	389.16 E	62.70 E	.00 E	74.07 E	117.35 E
19951110	.00	520.64	.00	92.78	.00	383.08	61.16	.00	79.28	.00
19951111	29.23	358.95	.00	92.79	163.37	263.45	38.72	.00	.00	.00
19951112	.00	321.98	72.40	94.26	106.69	274.00	37.19	.00	73.14 E	.00
19951113	.00 E	321.41 E	.00 E	93.32 E	79.98 E	220.38 E	30.09 E	171.09 E	68.49	.00
19951114	.00	289.78	.00	95.51	.00	223.50	.00	.00	.00	.00
19951115	39.38 E	213.85 E	56.76 E	95.74	131.22	167.12 E	55.47 E	.00 E	70.10	116.43 E
19951116	.00	.00	.00 E	95.28	115.10	158.71	.00	84.75 E	.00	52.95
19951117	11.55	27.16	35.03 E	94.66	.00	256.69	49.80	173.41	71.94	.00
19951118	.00	30.06	.00 E	93.92	.00	.00	.00	.00	.00	.00 E
19951119	.00	15.36	.00 E	93.54	103.36	340.18	1.42	.00	69.13	.00 E
19951120	.00	154.34	.00 E	92.37 E	.00	4.56 E	.00 E	.00	.00	.00 E
19951121	.00	155.75	.00 E	69.85	91.32	179.75	.00	205.86 E	64.42	.00 E
19951122	28.16	152.97	45.98 E	19.76	49.04	3.05 E	.00	.00 E	.00	65.41 E
19951123	.00	78.85	.00 E	54.04	.00	199.68	.00	.00	.00	.00
19951124	.00	.00	.00 E	58.40	.00	157.33	.00	.00	13.31	.00 E
19951125	.00	.00	.00 E	105.67	98.00	174.89	.00	.00	56.91	.00 E
19951126	.00	.00	.00 E	98.37	.00	203.97	.00	.00	.00	.00
19951127	.00	93.21	.00 E	7.92	.00	23.16	.00	.00	66.11	.00 E
19951128	.00	240.59 E	.00 E	51.39	.00	209.84	.00	.00	.00	.00
19951129	.00	.00	59.08 E	20.53	110.02	15.66	.00	237.90	.00	62.74
19951130	.00	.00	.00 E	53.90	.00	230.76	.00	.00	59.80	.00
19951201	.00	.00	.00	50.04	63.26	141.41	.00	.00	.00	92.48 E
19951202	.00	46.07	.00	.00	.00	17.63	.00	.00	.00	.00 E
19951203	.00	153.95	.00	.00	.00	.00	.00	.00	.00	.00 E
19951204	.00 E	78.71 E	.00	.00 E	.00	192.49 E	.00 E	.00 E	.00	.00 E
19951205	.00	78.47	.00	.00	82.40	.00	.00	161.85	121.96	.00 E

TABLE D-1. Controlled Inflows (cfs) to Lake Okeechobee from Tributaries to the North,(continued).

STATIONS	S-131 (FLOW)	S-71 (FLOW)	S-129 (FLOW)	S-72 (FLOW)	S-127 (FLOW)	S-84 (FLOW)	S-154 (FLOW)	S-133 (FLOW)	S-191 (FLOW)	S135 (FLOW)
DBKEY	15643	15633	15642	15634	15641	15636	15629	15637	15639	15638
DATE										
19951206	59.73	41.18	.00	.00	.00	.00	.00	.00	.00 E	.00
19951207	.00	.00	.00	.00	.00	169.74	.00	.00	.00	118.20 E
19951208	29.61	.00	56.77	.00	77.91	.00	.00	135.21	.00	.00
19951209	.00	.00	.00	44.95	.00	187.00	.00	.00	.00	.00
19951210	.00	.00	.00	54.53	.00	8.43	.00	.00	.00	.00
19951211	.00 E	.00 E	.00	7.45 E	.00	220.48 E	.00 E	.00 E	65.25	157.60
19951212	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00 E
19951213	.00	.00	.00	15.14	97.63	.00	.00	.00	.00	.00
19951214	.00	.00	.00	55.83	.00	188.94 E	.00 E	.00 E	.00	.00 E
19951215	54.95	82.25	46.97	6.13	59.35	.00	.00	161.82	51.52	.00
19951216	.00	111.21	.00	.00	.00	141.56	.00	.00	.00	.00
19951217	.00	107.67	.00	.00	.00	58.40	.00	.00	.00	.00
19951218	44.63	.00	.00	.00	.00	.00	.00	.00	.00	.00
19951219	.00	.00	.00	.00	95.30	183.45	.00	.00	.00	.00
19951220	.00	.00	.00	51.56	.00	.00	.00	.00	.00	.00
19951221	.00	.00	.00	42.24	.00	162.64	.00	.00	.00	.00
19951222	.00	112.79	.00	.00	.00	.00	.00	.00	58.45	.00
19951223	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
19951224	54.53	.00	.00	51.79	108.33	136.88	.00	.00	.00	.00
19951225	.00	.00	.00	57.87	.00	.00	.00	.00	.00	.00
19951226	.00	195.45	.00	38.19	.00	105.65 E	.00 E	.00 E	.00	.00 E
19951227	.00	75.51	.00	.00	.00	80.60	.00	.00	.00	.00
19951228	.00	.00	.00	.00	84.79	.00	.00	184.79	.00	.00
19951229	32.76	.00 6.55	74.5	.00	.00 E	.00	.00	81.24	.00 E	.00
19951230	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
19951231	.00	.00	.00	.00	.00	.00 E	.00	.00	.00	.00

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APPENDIX E

APPENDIX E

TABLE E-1. Mean Daily Stages (ft) and Controlled Outflows (cfs) from Lake Okeechobee to the Caloosahatchee and St. Lucie Waterways, and Natural Uncontrolled Inflows (cfs) from Fisheating Creek to the Lake.

DATE	S-77 (HW) 00852	S-77 (FLOW) 15635	S-308 (HW) 00276	S-308 (TW) 00278	S-308 (FLOW) 15626	FISHEATING CREEK (FLOW) 15627
	19950501	11.18	.00	15.79	14.11	172.00
19950502	10.94	58.00	15.84	14.04	345.00	21.00
19950503	10.86	440.00	15.78	14.04	388.00	19.00
19950504	11.03	348.00	15.76	14.23	409.00	18.00
19950505	11.30	.00	15.81	14.56	56.00	23.00
19950506	11.37	.00	15.80	14.43	.00	35.00
19950507	11.24	.00	15.73	14.63	.00	37.00
19950508	11.28	.00	15.72	14.54	.00	32.00
19950509	11.05	100.00	15.68	14.47	.00	29.00
19950510	11.11	559.00	15.71	14.29	.00	30.00
19950511	11.28	325.00	15.80	14.03	278.00	33.00
19950512	11.11	.00	15.80	14.29	317.00	31.00
19950513	10.84	216.00	15.74	14.37	225.00	27.00
19950514	10.77	478.00	15.71	14.33	171.00	22.00
19950515	10.96	549.00	15.72	14.18	215.00	18.00
19950516	11.03	529.00	15.68	14.09	294.00	15.00
19950517	10.99	719.00	15.63	14.14	314.00	12.00
19950518	10.96	807.00	15.65	14.10	320.00	9.60
19950519	10.93	631.00	15.66	14.06	325.00	7.60
19950520	11.00	789.00	15.65	14.22	215.00	6.20
19950521	11.10	803.00	15.60	14.43	.00	5.70
19950522	10.99	726.00	15.56	14.17	.00	4.80
19950523	11.01	455.00	15.47	14.40	.00	4.80
19950524	10.86	925.00	15.41	14.26	.00	5.20
19950525	10.88	1130.00	15.44	14.30	.00	4.60
19950526	10.98	1150.00	15.43	14.45	.00	3.90
19950527	11.05	101.00	15.40	14.25	.00	3.20
19950528	11.08	532.00	15.39	14.06	.00	2.40
19950529	11.17	127.00	15.36	14.19	.00	1.70
19950530	11.02	419.00	15.36	13.95	85.00	1.20
19950531	11.03	655.00	15.34	13.87	255.00	.92
19950601	11.01	615.00	15.26	14.03	341.00	.77
19950602	11.08	414.00	15.20	14.22	339.00	.79
19950603	11.01	413.00	15.20	14.50	214.00	1.40
19950604	11.18	116.00	15.19	14.61	31.00	1.60
19950605	11.22	.00	15.39	14.19	.00	6.50
19950606	11.22	.00	15.45	14.13	.00	22.00
19950607	10.94	722.00	15.40	14.25	.00	32.00
19950608	11.17	1030.00	15.35	14.30	.00	30.00
19950609	11.14	207.00	15.31	14.34	.00	25.00
19950610	10.99	225.00	15.28	14.33	.00	21.00
19950611	11.03	308.00	15.26	14.39	.00	17.00
19950612	11.18	211.00	15.35	14.32	.00	14.00
19950613	11.26	.00	15.42	14.31	.00	21.00
19950614	11.25	.00	15.26	14.43	.00	45.00
19950615	11.13	.00	15.13	14.46	.00	42.00
19950616	11.09	.00	15.07	14.12	38.00	35.00
19950617	11.14	.00	15.10	14.21	161.00	30.00
19950618	11.15	.00	15.16	14.50	36.00	26.00
19950619	11.27	.00	15.24	14.24	.00	32.00
19950620	11.27	.00	15.22	14.30	.00	37.00
19950621	11.14	.00	15.20	13.98	.00	38.00
19950622	11.38	.00	15.30	14.10	.00	55.00
19950623	11.09	.00	15.34	14.33	.00	115.00
19950624	11.14	.00	15.30	14.32	.00	358.00
19950625	10.99	.00	15.39	14.37	.00	846.00
19950626	11.12	.00	15.46	14.52	.00	1950.00
19950627	10.96	.00	15.50	14.03	.00	2030.00
19950628	11.19	.00	15.48	14.24	.00	1690.00
19950629	11.16	.00	15.50	14.04	.00	1370.00
19950630	11.16	.00	15.54	14.19	.00	1120.00

TABLE E-1. Mean Daily Stages (ft) and Controlled Outflows (cfs) from Lake Okeechobee to the Caloosahatchee and St. Lucie Waterways, and Natural Uncontrolled Inflows (cfs) from Fisheating Creek to the Lake (continued).

DATE	S-77 (HW) 00852	S-77 (FLOW) 15635	S-308 (HW) 00276	S-308 (TW) 00278	S-308 (FLOW) 15626	FISHEATING CREEK (FLOW) 15627
	19950701	11.02	.00	15.56	14.44	.00
19950702	10.97	.00	15.59	14.68	.00	791.00
19950703	11.08	.00	15.62	14.19	.00	687.00
19950704	11.22	.00	15.61	14.24	.00	611.00
19950705	11.01	.00	15.58	14.04	91.00	556.00
19950706	10.91	235.00	15.56	14.05	262.00	512.00
19950707	10.95	326.00	15.56	14.18	402.00	462.00
19950708	10.92	323.00	15.56	14.33	228.00	408.00
19950709	11.00	320.00	15.59	14.22	28.00	359.00
19950710	11.04	318.00	15.61	14.01	233.00	314.00
19950711	11.09	117.00	15.63	14.06	215.00	290.00
19950712	11.18	.00	15.63	14.34	78.00	398.00
19950713	11.14	.00	15.59	14.52	.00	509.00
19950714	11.17	.00	15.60	14.30	.00	434.00
19950715	10.91	.00	15.60	14.10	.00	345.00
19950716	10.92	.00	15.61	13.98	.00	276.00
19950717	10.90	.00	15.65	14.10	.00	227.00
19950718	11.16	.00	15.80	14.30	.00	212.00
19950719	11.15	.00	15.77	14.25	.00	248.00
19950720	11.22	.00	15.76	14.11	.00	282.00
19950721	11.00	.00	15.71	14.26	.00	300.00
19950722	10.94	.00	15.69	14.39	.00	280.00
19950723	11.06	.00	15.67	14.18	.00	279.00
19950724	10.98	.00	15.67	14.12	.00	270.00
19950725	11.03	.00	15.70	14.43	.00	248.00
19950726	11.15	.00	15.76	14.45	.00	264.00
19950727	11.30	.00	15.81	14.28	.00	445.00
19950728	11.17	.00	15.83	14.36	.00	614.00
19950729	11.18	.00	15.82	14.55	.00	600.00
19950730	11.47	.00	15.90	14.18	.00	587.00
19950731	11.05	1400.00	15.87	14.54	816.00	619.00
19950801	10.96	2870.00	15.91	14.44	1240.00	678.00
19950802	11.12	2560.00	16.19	14.49	702.00	782.00
19950803	11.35	4190.00	16.06	14.83	300.00	894.00
19950804	11.17	3410.00	16.17	14.82	.00	902.00
19950805	11.06	2650.00	16.22	14.36	.00	870.00
19950806	11.03	1950.00	16.26	14.22	.00	854.00
19950807	10.95	1160.00	16.29	14.09	82.00	870.00
19950808	11.05	690.00	16.34	14.14	237.00	848.00
19950809	11.29	3510.00	16.38	14.39	1760.00	800.00
19950810	11.45	4560.00	16.44	14.55	2400.00	764.00
19950811	11.49	4620.00	16.45	14.60	2250.00	742.00
19950812	11.40	4620.00	16.49	14.73	1590.00	639.00
19950813	11.33	4640.00	16.50	14.36	2070.00	560.00
19950814	11.29	4660.00	16.47	14.47	2530.00	499.00
19950815	11.23	4660.00	16.48	14.56	2850.00	463.00
19950816	11.23	4660.00	16.46	14.69	2740.00	448.00
19950817	11.33	4640.00	16.48	14.71	2740.00	437.00
19950818	11.36	4640.00	16.48	14.69	2750.00	416.00
19950819	11.32	4610.00	16.43	14.68	2730.00	381.00
19950820	11.36	4620.00	16.38	14.72	2650.00	346.00
19950821	11.44	4690.00	16.34	14.70	2640.00	319.00
19950822	11.35	4700.00	16.33	14.66	2660.00	263.00
19950823	11.51	4670.00	16.46	14.51	1850.00	259.00
19950824	11.46	3610.00	16.63	16.04	.00	281.00
19950825	11.18	729.00	16.70	15.00	.00	362.00
19950826	11.32	1450.00	16.80	14.45	.00	488.00
19950827	11.32	3620.00	16.89	14.23	370.00	742.00
19950828	11.65	5600.00	16.96	14.56	1400.00	2720.00
19950829	11.91	5860.00	17.01	14.79	2040.00	3150.00
19950830	11.84	6100.00	16.98	14.64	2190.00	2760.00
19950831	11.92	6230.00	16.98	14.74	2430.00	2570.00
19950901	11.88	4850.00	17.01	14.74	2500.00	2530.00
19950902	11.79	4490.00	17.10	14.79	2610.00	2670.00
19950903	11.69	4650.00	17.12	14.81	2610.00	2630.00

TABLE E-1. Mean Daily Stages (ft) and Controlled Outflows (cfs) from Lake Okeechobee to the Caloosahatchee and St. Lucie Waterways, and Natural Uncontrolled Inflows (cfs) from Fisheating Creek to the Lake (continued).

DATE	S-77 (HW) 00852	S-77 (FLOW) 15635	S-308 (HW) 00276	S-308 (TW) 00278	S-308 (FLOW) 15626	FISHEATING CREEK (FLOW) 15627
19950904	11.82	5310.00	17.17	14.74	2720.00	2490.00
19950905	11.90	5220.00	17.22	14.77	2800.00	2400.00
19950906	11.78	5260.00	17.33	14.84	2910.00	2110.00
19950907	11.81	5790.00	17.35	14.80	2870.00	1830.00
19950908	11.79	5570.00	17.38	14.90	2750.00	1600.00
19950909	11.87	6020.00	17.46	14.75	2660.00	1430.00
19950910	11.79	6300.00	17.46	14.84	2820.00	1370.00
19950911	11.82	6420.00	17.52	14.79	2540.00	1330.00
19950912	11.85	6230.00	17.55	14.77	2570.00	1290.00
19950913	11.83	6340.00	17.59	14.77	2040.00	1250.00
19950914	11.78	6320.00	17.61	14.70	2700.00	1170.00
19950915	11.72	6230.00	17.62	14.88	2840.00	1120.00
19950916	11.68	6290.00	17.64	14.85	2940.00	1040.00
19950917	11.67	6290.00	17.65	14.85	3010.00	931.00
19950918	11.64	6290.00	17.67	14.85	3020.00	834.00
19950919	11.59	6290.00	17.62	14.90	3140.00	760.00
19950920	11.49	6290.00	17.60	14.91	3170.00	697.00
19950921	11.50	6290.00	17.58	14.86	3340.00	655.00
19950922	11.56	6290.00	17.56	15.03	3420.00	623.00
19950923	11.72	6290.00	17.52	15.35	3400.00	588.00
19950924	11.73	6290.00	17.50	15.48	3250.00	545.00
19950925	11.69	6290.00	17.46	15.36	3270.00	502.00
19950926	11.67	6360.00	17.43	15.33	3310.00	463.00
19950927	11.62	6420.00	17.39	15.40	3130.00	420.00
19950928	11.36	5700.00	17.36	15.40	2810.00	383.00
19950929	11.41	4750.00	17.36	14.98	1600.00	352.00
19950930	11.56	4750.00	17.37	14.75	1940.00	315.00
19951001	11.52	4500.00	17.35	14.68	1960.00	289.00
19951002	11.52	4523.95	17.24	14.76	1890.00	288.00
19951003	11.72	4400.96	17.29	14.79	1510.00	355.00
19951004	11.29	3111.45	17.26	14.53	1620.00	378.00
19951005	11.00	.00	17.32	14.60	1900.00	473.00
19951006	11.40	3226.72	17.39	14.82	763.00	588.00
19951007	11.73	4461.27	17.39	14.47	1330.00	671.00
19951008	11.85	4531.54	17.41	14.47	1470.00	877.00
19951009	11.39	4632.79	17.47	14.54	1440.00	1560.00
19951010	11.40	4491.00	17.49	14.55	1360.00	2000.00
19951011	11.37	4519.47	17.52	14.54	1360.00	1940.00
19951012	11.34	4539.53	17.51	14.45	1630.00	1630.00
19951013	11.36	4543.03	17.49	14.51	1760.00	1420.00
19951014	11.56	4468.92	17.53	14.56	1820.00	1380.00
19951015	11.65	4033.64	17.71	14.85	1140.00	1520.00
19951016	11.44	3793.25	17.64	14.45	1210.00	1610.00
19951017	11.33	3248.80	17.80	15.46	448.00	1680.00
19951018	11.10	3422.51	18.20	15.97	.00	1940.00
19951019	11.40	4337.52	18.33	15.37	.00	2620.00
19951020	11.71	4246.77	18.52	14.77	114.00	3620.00
19951021	11.71	4698.78	18.56	14.71	652.00	3440.00
19951022	11.57	5351.99	18.55	14.86	1550.00	2820.00
19951023	11.68	6154.90	18.62 ?	15.01	1540.00	2300.00
19951024	11.65	6355.11	18.67 ?	15.12	2250.00	1920.00
19951025	11.79	6469.13	18.67 ?	15.37	3070.00	1640.00
19951026	11.70	6467.03	18.70 ?	15.53	3870.00	1420.00
19951027	11.54	6645.51	18.70 ?	16.09	4880.00	1250.00
19951028	11.55	6703.66	18.70 ?	17.10	7330.00	1100.00
19951029	11.46	7044.74	18.56	17.35	6720.00	960.00
19951030	11.49	7023.72	18.49	17.90	7410.00	834.00
19951031	11.54	6968.71	18.47	17.97	7000.00	733.00
19951101	11.53	6953.38	18.48	17.99	6900.00	648.00
19951102	11.50	6910.83	18.43	17.94	6900.00	574.00
19951103	11.45	6564.13	18.42	17.68	7080.00	510.00
19951104	11.44	6225.81	18.35	16.47	5160.00	454.00
19951105	11.46	6230.37	18.29	15.71	3250.00	405.00

TABLE E-1. Mean Daily Stages (ft) and Controlled Outflows (cfs) from Lake Okeechobee to the Caloosahatchee and St. Lucie Waterways, and Natural Uncontrolled Inflows (cfs) from Fisheating Creek to the Lake (continued).

DATE	S-77 (HW) 00852	S-77 (FLOW) 15635	S-308 (HW) 00276	S-308 (TW) 00278	S-308 (FLOW) 15626	FISHEATING CREEK (FLOW) 15627
19951106	11.45	6191.56	18.29	15.45	3190.00	365.00
19951107	11.37	6180.33	18.29	15.47	3350.00	334.00
19951108	11.42	6117.12	18.26	15.64	3230.00	318.00
19951109	11.33	6242.18	18.13	15.60	3090.00	298.00
19951110	11.64	6139.50	18.12	15.44	3180.00	264.00
19951111	11.48	6194.73	18.12	15.46	3250.00	234.00
19951112	11.56	6112.15	18.03	15.47	3190.00	202.00
19951113	11.57	6099.83	17.98	15.43	3260.00	174.00
19951114	11.42	6114.98	18.07	15.56	3380.00	152.00
19951115	11.31	6124.37	17.90	15.50	3300.00	135.00
19951116	11.41	6080.10	17.77	15.49	3300.00	120.00
19951117	11.22	5585.70	17.71	15.46	2960.00	107.00
19951118	11.36	4580.50	17.70	14.88	2490.00	95.00
19951119	11.25	4614.69	17.64	15.03	2610.00	87.00
19951120	11.23	4603.20	17.60	14.93	2580.00	78.00
19951121	11.30	4467.14	17.57	15.07	2710.00	71.00
19951122	11.31	4394.13	17.48	15.14	2630.00	64.00
19951123	11.18	4428.67	17.45	15.14	2580.00	58.00
19951124	11.23	4383.02	17.43	15.00	2500.00	53.00
19951125	11.20	4376.40	17.36	14.85	2560.00	48.00
19951126	11.16	4378.19	17.30	14.87	2570.00	44.00
19951127	11.19	4395.40	17.26	14.84	2790.00	41.00
19951128	11.27	4412.60	17.22	15.20	2870.00	39.00
19951129	11.43	4314.33	17.20	15.07	2790.00	36.00
19951130	11.12	2680.33	17.16	14.89	2220.00	35.00
19951201	11.45	4356.57	17.13	14.71	2380.00	32.00
19951202	11.61	5709.88	17.07	14.56	2360.00	30.00
19951203	11.40	5401.10	17.02	14.52	1790.00	29.00
19951204	11.22	4439.15	16.98	14.26	1210.00	28.00
19951205	11.29	3399.17	16.94	14.40	1230.00	26.00
19951206	11.18	2442.82	16.92	14.33	788.00	25.00
19951207	11.00	1477.45	16.92	14.05	727.00	23.00
19951208	10.99	1127.28	16.89	14.07	628.00	22.00
19951209	11.14	1109.28	16.89	14.09	574.00	21.00
19951210	11.16	1473.33	16.80	14.38	1140.00	20.00
19951211	11.33	3493.35	16.72	14.47	2080.00	19.00
19951212	11.46	4669.49	16.71	14.54	2150.00	17.00
19951213	11.34	4155.83	16.72	14.49	1580.00	16.00
19951214	11.25	3312.40	16.70	14.31	1140.00	16.00
19951215	11.13	2497.14	16.67	14.33	856.00	15.00
19951216	10.99	1767.30	16.66	14.30	669.00	15.00
19951217	11.30	1013.87	16.62	14.48	363.00	14.00
19951218	11.25	510.30	16.62	14.17	6830.00	13.00
19951219	11.23	398.98	16.68	14.06	3520.00	12.00
19951220	11.11	905.67	16.78	14.08	972.00	12.00
19951221	11.24	2388.93	16.58	14.30	1940.00	12.00
19951222	11.27	3256.63	16.50	14.52	1790.00	11.00
19951223	11.26	2687.72	16.49	14.45	1090.00	11.00
19951224	11.30	2146.40	16.55	14.36	625.00	11.00
19951225	11.14	1742.19	16.48	14.08	532.00	11.00
19951226	11.15	1362.71	16.45	14.09	751.00	10.00
19951227	11.22	930.11	16.39	14.29	683.00	10.00
19951228	11.23	573.86	16.35	14.27	240.00	9.70
19951229	11.20	497.11	16.31	14.22	124.00	9.50
19951230	11.14	917.78	16.31	14.49	981.00	9.40
19951231	11.14	2354.23	16.31	14.40	1350.00	9.70

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APPENDIX F

APPENDIX F

TABLE F-1. Mean Daily Outflows (cfs) from lake Okeechobee to the Everglades Agricultural Subbasin (EAA).

DATE	S-2 (HW) 00432	S-2 (TW) 00345	S-2 (FLOW) 00426	S-3 (HW) 00532	S-3 (TW) 00537	S-3 (FLOW) 00539	S-352 (HW) 00311	(HGSEX)	S-352 (TW) 00315	S-352 (FLOW) 00313
19950501	10.89	10.92	.00	15.69	11.23	50.00	15.73		9.92	238.00
19950502	10.85	10.90	.00	15.66	11.00	50.00	15.73		11.08	378.00
19950503	10.24	10.28	.00	15.71	9.97	50.00	15.72		11.39	364.00
19950504	9.98	10.02	.00	15.68	9.73	50.00	15.68		11.17	266.00
19950505	10.51	10.62	.00	15.71	10.73	50.00	15.74		10.38	.00
19950506	10.09	10.13	.00	15.75	11.38	50.00	15.74		10.40	214.00
19950507	10.04	10.13	.00	15.74	10.75	50.00	15.67		10.95	360.00
19950508	10.04	10.08	.00	15.69	10.33	50.00	15.65		11.02	376.00
19950509	10.18	10.20	387.00	15.52	10.53	50.00	15.56		10.94	376.00
19950510	10.32	10.32	518.00	15.51	10.46	201.00	15.60		11.11	370.00
19950511	10.66	10.67	456.00	15.61	10.85	210.00	15.68		11.14	372.00
19950512	10.74	10.77	534.00	15.61	10.85	217.00	15.71		11.25	370.00
19950513	11.25	11.28	757.00	15.60	11.33	365.00	15.66		11.34	364.00
19950514	11.32	11.36	712.00	15.60	11.36	341.00	15.64		11.16	370.00
19950515	11.11	11.13	679.00	15.58	11.36	339.00	15.64		11.27	366.00
19950516	10.83	10.86	1020.00	15.52	11.04	358.00	15.63		11.02	376.00
19950517	11.02	11.05	1100.00	15.52	10.93	344.00	15.56		10.88	378.00
19950518	11.05	11.07	1040.00	15.41	11.03	473.00	15.52		11.26	684.00
19950519	11.27	11.29	1380.00	15.33	11.15	535.00	15.54		12.17	962.00
19950520	11.73	11.75	1480.00	15.34	11.30	521.00	15.59		12.23	962.00
19950521	11.71	11.74	582.00	15.51	11.46	195.00	15.64		11.79	348.00
19950522	10.94	10.97	.00	15.52	10.87	50.00	15.62		10.73	160.00
19950523	10.86	10.89	219.00	15.54	10.46	226.00	15.54		11.46	354.00
19950524	11.11	11.14	299.00	15.45	10.62	331.00	15.47		11.43	208.00
19950525	11.17	11.19	265.00	15.40	11.23	197.00	15.49		10.88	.00
19950526	11.12	11.14	544.00	15.37	11.12	50.00	15.47		11.16	214.00
19950527	10.98	11.01	647.00	15.31	10.68	50.00	15.43		11.63	342.00
19950528	10.92	10.95	583.00	15.32	10.47	190.00	15.42		11.50	346.00
19950529	10.81	10.84	548.00	15.29	10.80	119.00	15.39		11.36	352.00
19950530	10.94	10.96	1070.00	15.24	10.90	119.00	15.38		11.25	356.00
19950531	11.20	11.22	1350.00	15.18	10.77	113.00	15.33		11.33	554.00
19950601	11.14	11.15	1300.00	15.15	10.57	424.00	15.26		11.46	682.00
19950602	10.96	10.98	809.00	15.10	10.55	304.00	15.16		11.06	412.00
19950603	10.10	10.13	.00	15.07	10.18	66.00	15.16		10.11	.00
19950604	9.62	9.66	.00	15.04	9.98	50.00	15.16		9.87	.00
19950605	9.65	9.68	.00	14.95	10.39	40.00	15.28		10.08	.00
19950606	10.04	10.07	.00	15.18	11.05	-1.40	15.43		10.16	.00
19950607	10.52	10.55	.00	15.26	10.69	50.00	15.44		10.48	.00
19950608	10.83	10.86	.00	15.26	10.33	50.00	15.40		10.37	.00
19950609	10.35	10.38	.00	15.22	10.27	50.00	15.35		9.75	.00
19950610	9.80	9.83	.00	15.20	9.64	50.00	15.33		9.39	.00
19950611	9.46	9.49	.00	15.15	9.60	50.00	15.30		9.19	.00
19950612	10.65	10.68	.00	15.06	10.11	-32.00	15.34		9.14	.00
19950613	11.10	11.12	.00	15.10	10.72	1.00	15.39		9.34	.00

TABLE F-1. Mean Daily Outflows (cfs) from lake Okeechobee to the Everglades Agricultural Subbasin (EAA) (continued).

DATE	S-2 (HW) 00432	S-2 (TW) 00345	S-2 (FLOW) 00426	S-3 (HW) 00532	S-3 (TW) 00537	S-3 (FLOW) 00539	S-352 (HGS5X) (HW) 00311	S-352 (TW) 00315	S-352 (FLOW) 00313
19950614	11.09	11.11	.00	15.21	10.44	24.00	15.32	9.91	.00
19950615	10.40	10.43	.00	15.17	9.78	9.70	15.20	10.04	.00
19950616	9.93	9.96	.00	15.22	9.48	9.70	15.16	9.63	.00
19950617	9.60	9.63	.00	15.23	9.40	15.00	15.18	9.15	.00
19950618	9.61	9.53	.00	15.19	9.50	-21.00	15.23	8.87	.00
19950619	10.83	10.85	.00	15.12	10.53	50.00	15.27	9.15	.00
19950620	11.35	11.39	-324.00	15.07	11.50	15.00	15.23	10.10	.00
19950621	11.37	11.40	.00	14.94	10.99	33.00	15.16	10.92	.00
19950622	11.49	11.52	.00	15.03	11.43	55.00	15.26	11.08	.00
19950623	11.70	11.74	.00	15.08	11.83	-86.00	15.32	11.13	.00
19950624	10.72	10.75	.00	15.23	11.17	16.00	15.35	10.96	.00
19950625	10.41	10.45	.00	15.31	10.28	35.00	15.42	11.49	.00
19950626	10.64	10.68	.00	15.37	10.14	-17.00	15.50	11.53	.00
19950627	10.24	10.28	.00	15.40	11.03	50.00	15.54	10.37	.00
19950628	10.47	10.52	.00	15.46	10.28	50.00	15.55	10.23	.00
19950629	10.43	10.48	.00	15.46	9.76	50.00	15.56	10.26	.00
19950630	10.87	10.92	.00	15.48	9.95	50.00	15.59	9.99	.00
19950701	10.94	10.98	.00	15.49	11.08	50.00	15.61	10.39	.00
19950702	10.66	10.70	.00	15.49	10.97	50.00	15.64	10.21	.00
19950703	10.89	10.90	.00	15.48	11.45	50.00	15.65	10.21	.00
19950704	10.96	10.94	.00	15.54	11.14	50.00	15.66	10.01	.00
19950705	10.85	10.83	.00	15.52	11.51	50.00	15.62	9.96	.00
19950706	10.38	10.36	.00	15.56	10.04	50.00	15.62	9.75	123.00
19950707	10.08	10.07	.00	15.53	10.20	50.00	15.61	10.40	335.00
19950708	10.22	10.21	.00	15.47	10.02	50.00	15.60	10.65	390.00
19950709	10.12	10.11	.00	15.40	10.07	50.00	15.60	10.29	404.00
19950710	10.39	10.38	.00	15.38	10.14	50.00	15.58	10.36	250.00
19950711	10.50	10.49	.00	15.43	10.19	50.00	15.64	9.79	.00
19950712	10.74	10.72	.00	15.50	10.82	50.00	15.66	9.95	.00
19950713	11.01	10.99	.00	15.50	10.15	50.00	15.63	11.12	.00
19950714	11.06	11.05	.00	15.54	11.26	50.00	15.65	11.28	.00
19950715	10.09	10.08	.00	15.56	9.41	50.00	15.66	9.94	.00
19950716	11.06	11.04	.00	15.55	10.47	50.00	15.66	9.72	.00
19950717	11.36	11.34	.00	15.54	10.47	50.00	15.66	10.05	.00
19950718	12.31	12.30	.00	15.54	11.14	50.00	15.69	10.05	.00
19950719	11.66	11.65	.00	15.39	11.81	50.00	15.73	11.11	.00
19950720	11.22	11.20	.00	15.43	11.48	50.00	15.73	10.28	.00
19950721	10.77	10.76	.00	15.51	11.09	50.00	15.76	10.02	.00
19950722	10.58	10.57	.00	15.59	10.50	50.00	15.75	9.63	.00
19950723	10.53	10.52	.00	15.57	10.27	50.00	15.73	9.89	.00
19950724	10.61	10.59	.00	15.57	11.23	50.00	15.70	10.27	.00
19950725	10.33	10.33	.00	15.59	10.95	50.00	15.71	10.04	.00
19950726	11.35	11.35	.00	15.61	11.49	-67.00	15.75	9.83	.00
19950727	11.82	11.82	.00	15.64	11.33	50.00	15.79	10.29	.00
19950728	11.99	11.98	.00	15.67	11.99	50.00	15.80	11.43	.00
19950729	11.11	11.09	.00	15.77	11.68	50.00	15.77	10.82	.00
19950730	10.57	10.56	.00	15.83	11.18	50.00	15.80	9.79	.00
				15.95	10.46	50.00	15.89	10.66	.00

TABLE F-1. Mean Daily Outflows (cfs) from lake Okeechobee to the Everglades Agricultural Subbasin (EAA) (continued).

DATE	S-2 (HW) 00432	S-2 (TW) 00345	S-2 (FLOW) 00426	S-3 (HW) 00532	S-3 (TW) 00537	S-3 (FLOW) 00539	S-352 (HW) 00311	S-352 (HGS5X) (TW) 00315	S-352 (FLOW) 00313
19950731	10.68	10.66	.00	16.04	10.75	50.00	15.90	10.84	.00
19950801	11.08	11.05	.00	16.30	11.21	50.00	16.02	10.17	.00
19950802	10.15	10.15	.00	15.67	10.09	50.00	16.01	9.89	.00
19950803	10.74	10.73	.00	15.96	9.96	50.00	16.01	10.81	.00
19950804	10.40	10.39	.00	16.09	9.84	50.00	16.13	10.92	.00
19950805	10.11	10.09	.00	16.15	9.82	50.00	16.19	10.48	.00
19950806	10.25	10.23	.00	16.20	11.11	50.00	16.23	9.40	.00
19950807	10.50	10.50	.00	16.23	11.28	50.00	16.27	10.54	.00
19950808	10.13	10.12	.00	16.25	10.64	-34.00	16.31	10.75	.00
19950809	9.89	9.88	.00	16.32	10.35	50.00	16.37	10.44	.00
19950810	10.73	10.71	.00	16.33	10.61	50.00	16.42	10.80	.00
19950811	11.29	11.28	.00	16.33	11.05	50.00	16.47	9.80	.00
19950812	11.19	11.18	.00	16.40	10.07	50.00	16.47	9.80	.00
19950813	10.60	10.59	.00	16.43	9.46	50.00	16.49	10.01	.00
19950814	10.33	10.32	.00	16.45	9.75	50.00	16.47	10.10	.00
19950815	10.36	10.36	.00	16.45	9.94	50.00	16.49	9.79	.00
19950816	10.53	10.53	.00	16.41	10.35	50.00	16.46	9.77	.00
19950817	10.09	10.05	.00	16.36	9.82	50.00	16.44	10.67	484.00
19950818	9.87	9.87	.00	16.37	9.49	50.00	16.44	11.67	764.00
19950819	10.14	10.15	.00	16.39	9.70	50.00	16.42	11.75	756.00
19950820	10.42	10.42	.00	16.34	9.75	50.00	16.36	11.74	752.00
19950821	10.42	10.43	.00	16.33	9.91	50.00	16.31	11.79	744.00
19950822	10.14	10.14	.00	16.34	9.90	50.00	16.32	11.26	506.00
19950823	10.39	10.38	.00	16.26	9.72	50.00	16.41	9.83	.00
19950824	11.62	11.69	-2090.00	15.92	11.20	-769.00	16.36	11.45	.00
19950825	10.74	10.85	-3540.00	16.41	11.06	-1680.00	16.59	13.16	.00
19950826	10.33	10.42	-2880.00	16.60	10.80	-1470.00	16.73	12.61	.00
19950827	10.71	10.73	-1340.00	16.73	11.07	-610.00	16.84	11.34	.00
19950828	11.78	11.77	.00	16.80	11.93	50.00	16.92	10.06	.00
19950829	11.18	11.18	.00	16.87	11.15	50.00	16.99	9.38	.00
19950830	10.85	10.84	.00	16.85	10.77	50.00	16.96	9.19	.00
19950831	10.48	10.49	.00	16.86	10.11	50.00	16.96	9.22	.00
19950901	M	M	.00	16.86	10.30	50.00	17.00	9.79	.00
19950902	M	M	.00	16.95	11.23	50.00	17.09	11.58	.00
19950903	M	M	.00	17.08	11.37	50.00	17.16	10.91	.00
19950904	M	M	.00	M	11.29	50.00	17.20	10.63	.00
19950905	M	M	.00	M	10.84	50.00	17.28	10.10	.00
19950906	M	M	.00	M	10.75	50.00	17.33	10.34	.00
19950907	M	M	.00	M	10.27	50.00	17.38	10.27	.00
19950908	M	M	.00	M	10.16	50.00	17.40	10.09	.00
19950909	M	M	.00	M	9.81	50.00	17.44	9.02	.00
19950910	M	M	.00	M	9.67	50.00	17.45	10.15	.00
19950911	M	M	.00	M	10.75	50.00	17.52	11.11	.00
19950912	M	M	.00	M	12.05	-350.00	17.54	9.66	.00
19950913	M	M	.00	M	11.48	-167.00	17.55	9.49	.00
19950914	M	M	.00	M	10.83	50.00	17.56	9.71	.00
19950915	M	M	.00	M	10.06	50.00	17.58	10.42	.00

TABLE F-1. Mean Daily Outflows (cfs) from lake Okeechobee to the Everglades Agricultural Subbasin (EAA)
(continued).

DATE	S-2 (HW) 00432	S-2 (TW) 00345	S-2 (FLOW) 00426	S-3 (HW) 00532	S-3 (TW) 00537	S-3 (FLOW) 00539	S-352 (HGS5X) (HW) 00311	S-352 (TW) 00315	S-352 (FLOW) 00313
19950916	M		.00	M	10.05	50.00	17.60	9.92	.00
19950917	M		.00	17.59	11.13	50.00	17.61	9.70	.00
19950918	M		.00	17.59	10.98	50.00	17.65	10.10	.00
19950919	M		.00	17.57	10.86	-75.00	17.60	10.73	.00
M		.00	17.56	10.75	50.00	17.57	10.85	174.00	19950920
19950921	M		.00	17.50	10.61	50.00	17.53	11.21	440.00
19950922	M		.00	17.46	10.48	50.00	17.49	11.33	686.00
19950923	M		.00	17.41	10.59	50.00	17.45	11.72	838.00
19950924	M		.00	17.41	10.42	50.00	17.44	11.59	846.00
19950925	M		.00	17.40	10.46	50.00	17.40	11.72	834.00
19950926	M		.00	17.31	9.98	50.00	17.34	12.02	808.00
19950927	M		.00	17.30	9.85	50.00	17.32	12.24	790.00
19950928	M		.00	17.28	9.96	50.00	17.29	12.40	774.00
19950929	M		.00	17.33	10.16	50.00	17.31	12.19	792.00
19950930	M		.00	17.33	10.32	50.00	17.32	12.10	800.00
19951001	M		.00	17.31	10.29	22.00	17.30	12.27	784.00
19951002	M		.00	17.29	10.17	4.10	17.21	12.29	776.00
19951003	M		.00	17.13	10.88	4.90	17.19	12.03	794.00
19951004	M		.00	16.88	10.99	4.00	17.07	11.91	796.00
19951005	M		.00	17.04	10.60	-15.00	17.17	11.97	798.00
19951006	M		-961.00	17.29	11.95	23.00	17.33	11.49	252.00
19951007	M		-274.00	17.35	0.29	7.60	17.33	10.58	522.00
19951008	M		.00	17.40	9.80	50.00	17.36	12.31	786.00
19951009	M		.00	17.35	10.49	21.00	17.37	12.16	798.00
19951010	M		.00	17.42	10.00	26.00	17.41	12.22	796.00
19951011	M		.00	17.44	9.91	21.00	17.43	12.22	798.00
19951012	M		.49	17.46	9.65	31.00	17.44	12.20	802.00
19951013	M		.00	17.44	9.87	5.30	17.41	12.18	800.00
19951014	M		.00	17.42	10.10	28.00	17.44	11.62	456.00
19951015	M		.00	17.58	10.80	54.00	17.63	10.66	.00
19951016	M		-769.00	17.95	12.10	-349.00	17.69	11.40	.00
19951017	M		-2410.00	17.93	11.09	-1420.00	17.81	12.65	.00
19951018	M		-3200.00	18.11	10.95	-1310.00	18.14	13.87	.00
19951019	M		-2490.00	18.28	11.14	-740.00	18.28	13.70	.00
19951020	M		-2380.00	18.44	11.23	-851.00	18.47	13.54	.00
19951021	M		-911.00	18.65	11.06	-205.00	18.55	12.90	.00
19951022	M		.00	18.72	10.65	69.00	18.55	11.71	.00
19951023	M		.00	18.65	9.97	55.00	18.58	10.58	.00
19951024	M		.00	18.70	10.09	76.00	18.63 ?	9.99	.00
19951025	M		.00	18.70	10.37	29.00	18.65 ?	9.53	.00
19951026	M		.00	18.69	10.45	64.00	18.66 ?	9.22	.00
19951027	M		.00	18.59	10.33	-63.00	18.65 ?	9.09	.00
19951028	M		.00	18.61	10.35	-15.00	18.66 ?	8.95	.00
19951029	M		.00	18.87	10.39	36.00	18.65 ?	9.09	.00
19951030	M		.00	18.56	10.27	34.00	18.49	8.86	.00

TABLE F-1. Mean Daily Outflows (cfs) from lake Okeechobee to the Everglades Agricultural Subbasin (EAA)
(continued).

DATE	S-2 (HW) 00432	S-2 (TW) 00345	S-2 (FLOW) 00426	S-3 (HW) 00532	S-3 (TW) 00537	S-3 (FLOW) 00539	S-352 (HGS5X) (HW) 00311	S-352 (TW) 00315	S-352 (FLOW) 00313
19951031	M	M	M	18.46	10.17	24.00	18.45	9.18	.00
19951101	M	M	M	18.42	10.09	-72.00	18.45	10.51	.00
19951102	M	M	M	18.38	10.01	-56.00	18.40	10.25	.00
19951103	M	M	M	18.33	10.72	-73.00	18.38	9.76	.00
19951104	M	M	.00	18.46	10.54	43.00	18.36	9.83	.00
19951105	M	M	.00	18.38	10.47	17.00	18.29	10.83	.00
19951106	M	M	.00	18.24	10.55	-58.00	18.24	11.06	.00
19951107	M	M	.00	18.11	10.64	-34.00	18.21	11.10	.00
19951108	M	M	.00	18.25	10.39	39.00	18.24	11.82	398.00
19951109	M	M	.00	18.48	10.21	12.00	18.20	11.95	438.00
19951110	M	M	.00	18.08	10.24	.89	18.05	11.15	460.00
19951111	M	M	.00	17.99	10.54	-51.00	18.04	11.11	460.00
19951112	M	M	.00	18.24	10.63	.72	18.09	11.07	464.00
19951113	M	M	573.00	18.06	10.63	24.00	17.98	11.32	568.00
19951114	M	M	847.00	18.07	10.54	-77	18.09	11.51	564.00
19951115	M	M	1130.00	18.01	10.66	293.00	17.91	11.65	612.00
19951116	M	M	1250.00	17.85	11.38	343.00	17.75	11.71	602.00
19951117	M	M	1070.00	17.80	11.51	193.00	17.67	12.09	578.00
19951118	M	M	831.00	17.68	11.52	194.00	17.62	12.30	566.00
19951119	M	M	820.00	17.68	11.49	192.00	17.58	12.20	568.00
19951120	M	M	801.00	17.59	11.50	192.00	17.53	11.84	584.00
19951121	M	M	785.00	17.54	11.50	186.00	17.50	11.94	738.00
19951122	M	M	652.00	17.62	11.63	183.00	17.50	12.07	660.00
19951123	M	M	434.00	17.54	11.61	187.00	17.39	11.49	424.00
19951124	M	M	801.00	17.48	11.67	190.00	17.35	12.01	674.00
19951125	M	M	1000.00	17.46	11.67	181.00	17.35	12.13	800.00
19951126	M	M	973.00	17.41	11.70	178.00	17.26	12.22	786.00
19951127	M	M	964.00	17.21	11.68	149.00	17.16	12.11	786.00
19951128	M	M	965.00	17.12	11.55	183.00	17.12	11.99	792.00
19951129	M	M	925.00	17.06	11.56	180.00	17.09	11.90	798.00
19951130	M	M	910.00	17.12	11.59	178.00	17.09	11.95	794.00
19951201	M	M	1100.00	17.04	11.47	260.00	17.03	11.87	796.00
19951202	M	M	1170.00	16.99	11.81	383.00	16.98	11.91	788.00
19951203	M	M	1140.00	16.94	11.89	366.00	16.92	11.87	786.00
19951204	M	M	1130.00	16.92	11.92	281.00	16.89	12.04	770.00
19951205	M	M	771.00	16.89	11.92	176.00	16.85	12.05	766.00
19951206	M	M	604.00	16.84	11.65	173.00	16.82	12.12	758.00
19951207	M	M	965.00	16.81	11.65	183.00	16.81	12.10	760.00
19951208	M	M	1030.00	16.83	11.51	185.00	16.79	11.80	782.00
19951209	M	M	1220.00	16.76	11.37	153.00	16.78	11.84	778.00
19951210	M	M	1210.00	17.11	11.44	159.00	16.83	11.74	790.00
19951211	M	M	1200.00	17.07	11.55	162.00	16.75	11.81	778.00
19951212	M	M	1160.00	16.80	11.46	172.00	16.64	11.96	758.00
19951213	M	M	1150.00	16.69	11.57	195.00	16.62	12.11	744.00
19951214	M	M	1290.00	16.63	11.80	80.00	16.59	11.95	754.00

TABLE F-1. Mean Daily Outflows (cfs) from lake Okeechobee to the Everglades Agricultural Subbasin (EAA)
(continued).

DATE	S-2 (HW) 00432	S-2 (TW) 00345	S-2 (FLOW) 00426	S-3 (HW) 00532	S-3 (TW) 00537	S-3 (FLOW) 00539	S-352 (HW) 00311	S-352 (TWSX) 00315	S-352 (FLOW) 00313
19951215	M	M	1470.00	16.60	11.61	47.00	16.56	11.75	768.00
19951216	M	M	1450.00	16.57	11.27	48.00	16.55	11.93	752.00
19951217	M	M	1430.00	16.54	11.21	35.00	16.52	11.82	758.00
19951218	M	M	1410.00	16.47	11.09	-6.20	16.49	11.96	744.00
19951219	M	M	1100.00	16.38	11.17	-13.00	16.52	11.92	590.00
19951220	M	M	1190.00	16.62	11.15	-8.20	16.72	11.50	554.00
19951221	M	M	1520.00	16.62	11.27	-7.50	16.55	11.69	618.00
19951222	M	M	1470.00	16.56	11.43	-33.00	16.45	11.89	598.00
19951223	M	M	1500.00	16.77	11.58	-20.00	16.54	12.14	588.00
19951224	M	M	903.00	16.64	11.83	-36.00	16.54	12.18	584.00
19951225	M	M	222.00	16.53	11.37	-44.00	16.45	12.11	584.00
19951226	M	M	918.00	16.39	11.15	-44.00	16.38	11.64	608.00
19951227	M	M	1190.00	16.30	11.06	-61.00	16.29	11.51	700.00
19951228	M	M	1160.00	16.31	11.12	-48.00	16.26	11.97	724.00
19951229	M	M	1230.00	16.31	11.08	-34.00	16.23	11.89	728.00
19951230	M	M	1270.00	16.19	11.39	-103.00	16.19	11.84	730.00
19951231	M	M	490.00	16.13	11.72	-75.00	16.19	11.62	274.00

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APPENDIX G

APPENDIX G

TABLE G-1. Mean Daily Outflows (cfs) from the EAA through various canals to Water Conservation Areas 1, 2, and 3 (WCA's)

DATE	S-6 (HR)	S-6 (TW)	S-6 (FW)	S-7 (HR)	S-7 (TW)	S-7 (FW)	S-8 (HR)	S-8 (TW)	S-R (FLOW)	S-A+SSAW (HR)	S-A+SSAW (TW)	S-A+SSAW (FW)
	00356	06685	15034	06695	06696	15037	06697	06698	15040	06676	06677	15031
19950501	10.45	15.57	526.00	10.95	13.15	372.00	10.85	11.59	582.00	9.60	15.48	.00
19950502	10.45	15.59 E	452.00	10.81	13.20 E	494.00	10.40 E	12.02	751.00	10.61	15.53	.00
19950503	10.08	15.61	373.00	10.33	13.00	271.00	9.72 E	11.68 E	417.00	10.98 E	15.53	.00
19950504	10.09	15.59	.00	10.19	12.79	.00 E	9.67	11.07	.00 E	10.88 E	15.53	.00
19950505	10.21	15.60	362.00	10.68	13.00	371.00	10.41	11.84	535.00	10.18 E	15.55	.00
19950506	10.02	15.62	416.00	10.53	12.97	354.00	10.88 E	12.06 E	780.00	10.01 E	15.55	.00
19950507	10.09	15.59	.00 E	10.31	12.67	.00 E	10.36	11.89	595.00	10.24 E	15.51	.00
19950508	10.14	15.57	.00	10.24	12.58	.00 E	10.34	11.31	148.00	10.14 E	15.50	.00
19950509	10.01	15.56	.00 E	10.25	12.52	.00 E	10.43	11.03	.00 E	10.14 E	15.50	.00
19950510	10.02	15.53	.00 E	10.36	12.45	.00 E	10.32	10.95	.00 E	10.14 E	15.47	.00
19950511	10.48	15.49	.00 E	10.73	12.39	36.00 E	10.64	10.91	.00 E	10.82 E	15.44	.00
19950512	10.52	15.45	.00 E	10.76	12.30	.00 E	10.73	10.87	99.00	10.88 E	15.40	.00
19950513	11.11	15.41	.00	11.25	12.25	.00 E	11.22	11.19	136.00	10.96 E	15.34	.00
19950514	11.28	15.39	.00	11.37	12.20	.00 E	11.29 E	11.21 E	145.00	10.93 E	15.31	.00
19950515	10.53	15.34 E	.00	11.16 E	12.16 E	.00 E	11.28 E	10.89 E	.00 E	10.99 E	15.27 E	.00
19950516	10.61	15.30	.00 E	10.79	12.13	.00 E	10.97	10.75	.00 E	10.63 E	15.23	.00
19950517	10.74	15.27	.00 E	10.95	12.11	.00 E	10.82	10.69	.00 E	10.37 E	15.22	.00
19950518	10.73	15.18	.00 E	11.01	12.10	.00 E	10.86	10.66	.00 E	10.19 E	15.14	.00
19950519	10.77	15.28	.00 E	11.46	12.07	.00 E	11.11	10.69	.00 E	10.87 E	15.22	.00
19950520	11.17	15.34	.00 E	11.59	12.11	.00 E	11.36	11.30	97.00	10.39 E	15.28	.00
19950521	11.67	15.36	.00 E	11.17	12.09	.00 E	10.85	10.85	216.00	10.70 E	15.29	.00
19950522	11.20	15.35	.00 E	11.05	12.05	.00 E	10.42	10.63	65.00	10.14 E	15.26	.00
19950523	11.24	15.35	.00 E	11.25	12.05	.00 E	10.53	10.58	43.00	11.32 E	15.27	66.00 E
19950524	11.26	15.37	.00	11.31	12.03	.00 E	11.16	10.83	144.00	10.98 E	15.29	-158.00
19950525	11.06	15.36	.00	11.21	12.00	.00 E	11.06	10.88	83.00	10.97 E	15.27	-158.00
19950526	10.90	15.34	.00	11.04	11.97	.00 E	11.02	10.84	.00 E	11.31 E	15.27	-112.00
19950527	10.69	15.31 E	.00	10.97 E	11.95 E	.00 E	10.62	10.94	.00 E	11.24 E	15.26 E	-64.00
19950528	10.70	15.30	.00	10.84	11.91	.00 E	10.40 E	10.90 E	.00 E	11.21 E	15.26	.00
19950529	10.57	15.28	.00 E	10.83	11.88	.00 E	10.45	10.45	.00 E	11.21 E	15.23	.00
19950530	10.57	15.21 E	.00 E	11.01 E	11.85 E	.00 E	10.81	10.42	.00 E	10.94 E	15.20	.00
19950531	10.59	15.18 E	.00 E	10.94 E	11.82 E	.00 E	10.68 E	10.39 E	.00 E	10.67 E	15.15	.00
19950601	10.67	15.15	.00 E	10.87	11.79	.00 E	10.41	10.33 E	.00 E	10.67 E	15.11 E	-28.00
19950602	10.70	15.15	.00 E	10.20	11.79	.00 E	10.38	10.71	124.00	10.55 E	15.08	-45.00
19950603	10.24	15.18	.00	10.20	11.79	.00 E	10.12	10.56	.00 E	10.11 E	15.10	.00
19950604	9.78	15.21	.00	9.74	11.81	.00 E	9.91	10.45	.00 E	9.93 E	15.16	.00
19950605	9.81	15.27	.00	9.76	11.89	.00 E	10.24	10.51	.00 E	10.16 E	15.27	.00
19950606	10.20	15.34	.00 E	10.17	11.95	.00 E	10.93	10.92	126.00	10.29 E	15.33	.00
19950607	10.73	15.39	21.00	10.67	11.95	.00 E	10.36	11.80	558.00	10.61 E	15.34	.00
19950608	11.06	15.43 E	.00 E	10.98 E	11.91 E	.00 E	10.18 E	11.82 E	591.00	10.47 E	15.36 E	.00
19950609	10.14	15.46 E	386.00	10.50 E	11.91 E	.00 E	10.04 E	11.89 E	9.87 E	9.50 E	15.39 E	.00
19950610	9.39	15.43	.00	9.95	11.89	.00 E	9.55 E	11.48	269.00	9.50 E	15.37	.00
19950611	9.64	15.43	.00 E	9.64	11.90	.00 E	9.56 E	11.02	.00 E	9.30 E	15.35	.00
19950612	10.53	15.45	342.00	10.75	11.93	.00 E	10.04	10.95	.00 E	9.28 E	15.39	.00
19950613	10.82	15.53	488.00	10.98	12.29	297.00	10.42	11.74	547.00	9.52 E	15.45	.00
19950614	10.75	15.63	621.00	10.93	12.53	483.00	10.17	11.93	614.00	10.08 E	15.52	.00
19950615	10.27	15.59	339.00	10.45	12.41 E	353.00	9.63 E	11.73	446.00	10.13 E	15.50	.00
19950616	9.86	15.57	297.00	10.06	12.24	227.00	9.45 E	11.33	151.00	9.73 E	15.46	.00
19950617	9.61	15.54	200.00	9.81	11.99	.00 E	9.39 E	11.04	.00 E	9.27 E	13.46	.00 E
19950618	9.75	15.49	.00 E	9.84	11.89	.00 E	9.47 E	10.99	.00 E	8.99 E	15.39	.00
19950619	10.47	15.51	425.00	10.98	11.84	.00 E	10.53	10.99	.00 E	9.29 E	15.42 E	.00
19950620	10.12	15.54	1080.00	10.58	13.06	1150.00	10.14 E	13.14	128.00	10.23 E	15.53	.00
19950621	9.23	15.76	1480.00	10.24	13.52	1490.00	9.16 E	13.68	1800.00	10.23 E	15.53	.00
19950622	9.36	15.85	1740.00	10.32	13.63	1550.00	9.41 E	13.79	2410.00	11.17 E	15.78	.00
19950623	9.28	16.00	1900.00	10.34	13.78	1680.00	9.42	13.98	2710.00	11.07 E	15.96	941.00
19950624	9.21	15.97	1570.00	10.12	13.44	1180.00	9.11	13.80	3370.00	11.07 E	15.94	.00
19950625	9.25	15.99	1450.00	10.39	12.80	560.00	9.15	13.34	1720.00	11.44 E	15.99	.00
19950626	9.28	16.01	1530.00	10.71	12.32	250.00	9.89	12.68	803.00	10.69 E	16.14	1310.00
19950627	9.68	15.93	753.00	10.40	12.09	291.00	10.53	12.34	788.00	10.09 E	16.15	863.00

TABLE G-1. Mean Daily Outflows (cfs) from the EAA through various canals to Water Conservation Areas 1, 2, and 3 (WCA's) (continued).

DATE	S-6 (FW)	S-6 (TW)	S-6 (FLOW)	S-7 (FW)	S-7 (TW)	S-7 (FLOW)	S-8 (FW)	S-8 (TW)	S-8 (FLOW)	S-8 (FW)	S-8 (TW)	S-8 (FLOW)	S-8+SSAW (FW)	S-8+SSAW (TW)	S-8+SSAW (FLOW)
19950628	10.76	15.68	13.00	10.73	11.25	.00 E	9.93	12.15	565.00	10.37	15.93	00	06697	15031	00
19950629	10.75	15.52	.00 E	10.68	11.02	.00 E	9.66	11.84	290.00	10.39	15.67	E	06697	15031	00
19950630	10.60	15.53	464.00	10.86	11.58	305.00	9.94	11.43	93.00	10.13	15.52	10	06697	15031	10
19950701	10.63	15.53	526.00	10.93	11.95	408.00	11.07	11.44	93.00	10.50	15.47	E	06697	15031	00
19950702	10.39	15.48	524.00	10.68	11.56	351.00	10.55	12.04	611.00	10.30	15.43	E	06697	15031	00
19950703	10.48	15.48	487.00	10.80	12.18	406.00	11.00	12.29	641.00	10.33	15.42	E	06697	15031	00
19950704	10.48	15.49	581.00	11.10	11.53	.00 E	9.90	13.15	1800.00	10.12	15.41	E	06697	15031	00
19950705	10.39	15.48	487.00	10.94	11.38	.00 E	10.29	13.08	1660.00	10.07	15.39	E	06697	15031	00
19950706	10.16	15.50	415.00	10.59	11.30	.00 E	9.62	12.49	879.00	9.74	15.40	E	06697	15031	00
19950707	10.28	15.44	.00 E	10.28	11.25	.00 E	9.88	12.12	544.00	9.95	15.36	E	06697	15031	00
19950708	10.41	15.41	.00 E	10.38	11.80	.00 E	9.85	11.83	332.00	10.21	15.33	E	06697	15031	00
19950709	10.32	15.38	.00 E	10.23	11.15	.00 E	10.04	11.40	.00 E	9.94	15.32	E	06697	15031	00
19950710	10.23	15.43	339.00	10.51	11.16	.00 E	9.95	11.81	374.00	10.14	15.37	E	06697	15031	00
19950711	10.23	15.43	446.00	10.58	11.14	.00 E	9.95	11.81	446.00	9.82	15.45	E	06697	15031	00
19950712	10.29	15.52	371.00	10.79	11.90	226.00	9.76	12.58	1410.00	10.05	15.48	E	06697	15031	00
19950713	10.31	15.62	811.00	10.70	12.84	860.00	9.45	12.93	1410.00	10.89	15.51	E	06697	15031	00
19950714	10.09	15.73	995.00	10.57	13.09	1040.00	10.03	13.09	1600.00	10.10	15.75	E	06697	15031	00
19950715	9.83	15.65	553.00	10.23	12.41	389.00	9.27	12.32	611.00	9.47	15.70	E	06697	15031	00
19950716	9.83	15.65	553.00	10.23	12.41	389.00	9.27	12.32	611.00	9.47	15.70	E	06697	15031	00
19950717	10.77	15.31	691.00	11.23	11.52	168.00	10.38	11.95	308.00	9.73	15.53	E	06697	15031	00
19950718	9.38	15.98	2170.00	11.43	13.42	1330.00	10.72	12.35	714.00	10.10	15.44	E	06697	15031	00
19950719	9.26	16.11	1770.00	11.35	13.42	1330.00	9.77	13.83	2530.00	9.96	15.95	E	06697	15031	00
19950720	9.28	16.09	1570.00	10.50	13.91	1740.00	9.27	13.93	2660.00	9.53	16.11	E	06697	15031	00
19950721	9.28	16.17	1400.00	10.07	13.85	1560.00	9.29	13.79	2320.00	9.73	16.07	E	06697	15031	00
19950722	9.28	16.28	1600.00	9.95	13.68	1390.00	9.19	13.62	2090.00	9.55	16.10	E	06697	15031	00
19950723	9.26	16.26	1480.00	10.19	13.08	1070.00	10.43	12.89	910.00	10.35	16.15	E	06697	15031	00
19950724	9.26	16.26	1600.00	10.45	13.08	595.00	10.43	12.89	1210.00	10.34	16.17	E	06697	15031	00
19950725	9.70	16.19	879.00	10.40	13.81	339.00	10.31	12.71	1030.00	10.15	16.23	E	06697	15031	00
19950726	10.02	16.21	1130.00	10.73	13.35	1020.00	10.08	13.27	1750.00	9.91	16.18	E	06697	15031	00
19950727	9.31	16.53	2100.00	10.42	14.06	1910.00	9.56	13.67	2190.00	10.19	16.18	E	06697	15031	00
19950728	9.26	16.53	2140.00	10.42	14.06	1910.00	9.42	14.08	2810.00	9.60	16.48	E	06697	15031	00
19950729	9.21	16.64	1790.00	10.04	14.37	2190.00	9.23	14.15	2830.00	9.09	16.64	E	06697	15031	00
19950730	9.21	16.52	1410.00	10.06	14.04	1670.00	9.17	14.05	2590.00	9.48	16.63	E	06697	15031	00
19950801	9.25	16.50	1800.00	10.11	13.74	1210.00	9.15	13.77	2160.00	9.97	16.57	E	06697	15031	00
19950802	9.52	16.34	772.00	9.79	13.85	1620.00	9.24	13.92	2370.00	9.59	16.54	E	06697	15031	00
19950803	9.76	16.41	981.00	9.82	13.37	645.00	9.19	14.24	2860.00	9.01	16.65	E	06697	15031	00
19950804	9.22	16.63	1520.00	10.21	13.38	815.00	9.17	13.81	1880.00	9.52	16.67	E	06697	15031	00
19950805	9.53	16.67	1310.00	10.20	13.51	855.00	9.45	13.60	1560.00	9.50	16.76	E	06697	15031	00
19950806	9.53	16.54	781.00	10.09	13.26	540.00	9.20	13.57	1820.00	9.22	17.09	E	06697	15031	00
19950807	10.07	16.34	328.00	10.44	12.97	.00 E	9.61	13.07	1170.00	9.09	17.13	E	06697	15031	00
19950808	10.07	16.21	309.00	10.45	13.14	285.00	10.71	12.69	772.00	9.41	16.93	E	06697	15031	00
19950809	9.87	16.11	316.00	10.19	13.08	244.00	10.66	12.78	1030.00	10.61	16.70	E	06697	15031	00
19950810	10.36	16.10	471.00	10.02	13.05	220.00	10.29	12.61	779.00	10.77	16.54	E	06697	15031	00
19950811	10.12	16.08	620.00	10.81	13.32	423.00	10.12	13.49	623.00	10.51	16.42	E	06697	15031	00
19950812	9.24	16.18	1140.00	11.10	13.62	735.00	10.39	12.46	627.00	10.52	16.39	E	06697	15031	00
19950813	9.24	16.21	1400.00	10.68	13.63	740.00	10.11	12.90	1320.00	10.86	16.32	E	06697	15031	00
19950814	9.66	16.04	764.00	10.54	13.38	297.00	9.52	12.76	937.00	9.82	16.33	E	06697	15031	00
19950815	10.33	15.87	343.00	10.38	13.29	272.00	9.40	12.15	283.00	10.12	16.29	E	06697	15031	00
19950816	10.66	15.89	366.00	10.39	13.29	312.00	9.54	12.25	438.00	10.23	16.20	E	06697	15031	00
19950817	10.33	15.92	297.00	10.70	13.02	.00 E	9.31	11.82	.00 E	9.71	16.11	E	06697	15031	00
19950818	10.39	15.92	297.00	10.17	13.09	199.00	10.28	11.76	.00 E	9.86	15.97	E	06697	15031	00
19950819	10.66	15.93	.00 E	9.95	13.06	188.00	9.58	12.12	419.00	9.92	15.92	E	06697	15031	00
19950820	10.27	16.05	404.00	10.33	12.88	.00 E	9.42	11.70	.00 E	9.98	15.93	E	06697	15031	00
19950821	10.09	16.05	355.00	10.59	12.78	.00 E	9.65	11.64	.00 E	10.47	15.91	E	06697	15031	00
19950822	10.39	16.05	404.00	10.47	12.98	245.00	9.71	11.63	.00 E	10.71	15.92	E	06697	15031	00
19950823	10.09	16.36	1434.72	10.22	13.00	321.00	9.75	12.00	346.00	10.31	16.03	E	06697	15031	00
19950824	10.39	16.36	1434.72	10.11	13.47	755.00	9.22	12.58	799.00	10.01	16.09	E	06697	15031	00
19950825	10.42	17.06	2445.79	10.52	14.70	2270.00	9.21	13.92	2590.00	9.37	16.31	E	06697	15031	00
19950826	10.42	17.22	2403.15	10.18	14.96	2450.00	9.22	14.13	2900.00	9.42	16.86	E	06697	15031	00
19950827	9.90	17.25	2341.30	10.16	14.93	2210.00	9.22	14.13	2860.00	10.07	17.28	E	06697	15031	00
19950828	9.90	17.25	2341.30	10.16	14.93	2210.00	9.37	14.30	2566.00	9.27	17.54	E	06697	15031	00
19950829	9.90	17.25	2341.30	10.16	14.93	2210.00	9.37	14.30	2566.00	9.00	17.61	E	06697	15031	00

TABLE G-1. Mean Daily Outflows (cfs) from the EAA through various canals to Water Conservation Areas 1, 2, and 3 (WCA's) (continued).

DATE	S-6 (HW)	S-6 (TW)	S-6 (FLOW)	S-7 (HW)	S-7 (TW)	S-7 (FLOW)	S-8 (HW)	S-8 (TW)	S-8 (FLOW)	S-8 (HW)	S-8 (TW)	S-8 (FLOW)	S-9 (HW)	S-9 (TW)	S-9 (FLOW)	S-10 (HW)	S-10 (TW)	S-10 (FLOW)
19950828	10.16	17.30	2360.41 E	10.30	15.07 E	2300.00	9.55	14.53	1460.00	9.08	17.66	2260.00	9.55	14.53	1460.00	10.11	17.20 E	2180.00
19950829	9.57	17.31	2288.80 E	10.01	14.98 E	2040.00	9.21	14.97	3010.00	8.88	17.60	1600.00	9.21	14.97	3010.00	10.11	17.20 E	2180.00
19950830	9.33	17.32	2234.47 E	10.27	14.81 E	1640.00	9.36	14.15	2600.00	8.96	17.55	1600.00	9.36	14.15	2600.00	10.11	17.20 E	2180.00
19950831	9.23	17.27	1930.66 E	10.00	14.79 E	1530.00	9.11	14.02	2360.00	8.96	17.49	1320.00	9.11	14.02	2360.00	10.11	17.20 E	2180.00
19950901	9.23	17.19	1726.80 E	10.03	14.74 E	1330.00	9.45	13.93	2200.00	9.92	17.35 E	350.00	9.45	13.93	2200.00	10.11	17.20 E	2180.00
19950902	9.27	17.15	1920.86 E	10.21	14.88	1480.00	9.48	14.30	2840.00	10.74	17.35 E	1240.00	9.48	14.30	2840.00	10.11	17.20 E	2180.00
19950903	9.33	17.15	1880.76 E	10.21	14.88	1570.00	9.22	14.50	3160.00	10.32	17.33 E	1260.00	9.22	14.50	3160.00	10.11	17.20 E	2180.00
19950904	9.17	17.07	1596.42 E	10.18	14.69	995.00	9.17	14.50	3100.00	10.01	17.26 E	376.00	9.17	14.50	3100.00	10.11	17.20 E	2180.00
19950905	9.25	16.98	1498.64 E	10.98	14.46	298.00	9.30	14.31	2730.00	9.92	17.23 E	326.00	9.30	14.31	2730.00	10.11	17.20 E	2180.00
19950906	9.23	17.01	1747.70 E	10.47	14.72 E	960.00	9.46	14.26	2570.00	10.25	17.21 E	158.00	9.46	14.26	2570.00	10.11	17.20 E	2180.00
19950907	9.26	16.95	1550.53 E	10.47	14.68	750.00	9.55	14.01	2110.00	10.11	17.20 E	218.00	9.55	14.01	2110.00	10.11	17.20 E	2180.00
19950908	9.18	16.94	1554.55 E	10.63	14.63	610.00	9.31	14.00	2170.00	9.55	17.26 E	1220.00	9.31	14.00	2170.00	10.11	17.20 E	2180.00
19950909	9.26	16.88	1315.06 E	10.45	14.47	402.00	9.31	14.00	2170.00	9.55	17.26 E	1220.00	9.31	14.00	2170.00	10.11	17.20 E	2180.00
19950910	9.32	16.88	1382.15 E	10.58	14.87	402.00	9.36	13.86	1910.00	9.17	17.20 E	192.00	9.36	13.86	1910.00	10.11	17.20 E	2180.00
19950911	9.32	17.04	2213.96 E	10.75 E	14.96 E	1490.00	9.36	13.72	1470.00	10.01	17.06 E	238.00	9.36	13.72	1470.00	10.11	17.20 E	2180.00
19950912	9.31	17.12	2213.89 E	10.26 E	15.21 E	1980.00	10.10	14.16	2350.00	9.89	17.19 E	2120.00	10.10	14.16	2350.00	10.11	17.20 E	2180.00
19950913	9.25	17.16	2069.12 E	10.15	15.14	1980.00	9.62	14.51	3130.00	8.91	17.43 E	2110.00	9.62	14.51	3130.00	10.11	17.20 E	2180.00
19950914	9.25	17.10	1534.02 E	10.01	14.93	1170.00	9.29	14.39	2980.00	9.05	17.48 E	1670.00	9.29	14.39	2980.00	10.11	17.20 E	2180.00
19950915	9.19	16.97	1298.36 E	10.11	14.73	720.00	9.45	14.00	1990.00	10.14	17.24 E	309.00	9.45	14.00	1990.00	10.11	17.20 E	2180.00
19950916	9.74	16.89	1375.13 E	10.79	14.59	428.00	9.91	13.59	1110.00	9.69	17.42 E	321.00	9.91	13.59	1110.00	10.11	17.20 E	2180.00
19950917	10.53	16.74	721.13 E	10.69	14.50	299.00	10.54	13.62	1250.00	9.51	16.98 E	222.00	10.54	13.62	1250.00	10.11	17.20 E	2180.00
19950918	10.53	16.61	581.83 E	11.06	14.43	287.00	10.37	13.57	1260.00	10.26	16.88 E	222.00	10.37	13.57	1260.00	10.11	17.20 E	2180.00
19950919	10.42	16.52	477.18 E	10.64	14.53	486.00	10.31	13.53	1260.00	10.80	16.74 E	188.00	10.31	13.53	1260.00	10.11	17.20 E	2180.00
19950920	10.42	16.56	497.18 E	10.78	14.60	580.00	10.31	13.53	1260.00	10.80	16.74 E	188.00	10.31	13.53	1260.00	10.11	17.20 E	2180.00
19950921	10.42	16.61	437.00 E	10.62	14.52	580.00	10.31	13.53	1260.00	10.80	16.74 E	188.00	10.31	13.53	1260.00	10.11	17.20 E	2180.00
19950922	10.42	16.61	437.00 E	10.62	14.52	580.00	10.31	13.53	1260.00	10.80	16.74 E	188.00	10.31	13.53	1260.00	10.11	17.20 E	2180.00
19950923	10.09	16.82	423.00	10.33	14.47	520.00	10.23	13.42	966.00	10.03	16.63 E	621.00	10.23	13.42	966.00	10.11	17.20 E	2180.00
19950924	10.03	16.68	397.00	10.33	14.27	475.00	10.15	13.25	765.00	9.54	16.65	479.00	10.15	13.25	765.00	10.11	17.20 E	2180.00
19950925	10.08	16.65	385.00	10.70	14.08	265.00	10.28	13.15	901.00	9.54	16.65	479.00	10.28	13.15	901.00	10.11	17.20 E	2180.00
19950926	10.08	16.64	363.00	10.28	14.04	285.00	10.16	13.10	777.00	9.59	16.61	486.00	10.16	13.10	777.00	10.11	17.20 E	2180.00
19950927	10.08	16.62	338.00	10.26	13.85	285.00	10.21	13.01	661.00	9.61	16.60	470.00	10.21	13.01	661.00	10.11	17.20 E	2180.00
19950928	10.08	16.62	338.00	10.26	13.85	285.00	10.21	13.01	661.00	9.61	16.60	470.00	10.21	13.01	661.00	10.11	17.20 E	2180.00
19950929	10.08	16.62	338.00	10.26	13.85	285.00	10.21	13.01	661.00	9.61	16.60	470.00	10.21	13.01	661.00	10.11	17.20 E	2180.00
19950930	10.08	16.62	338.00	10.26	13.85	285.00	10.21	13.01	661.00	9.61	16.60	470.00	10.21	13.01	661.00	10.11	17.20 E	2180.00
19950931	10.08	16.62	338.00	10.26	13.85	285.00	10.21	13.01	661.00	9.61	16.60	470.00	10.21	13.01	661.00	10.11	17.20 E	2180.00
19951001	10.08	16.62	338.00	10.26	13.85	285.00	10.21	13.01	661.00	9.61	16.60	470.00	10.21	13.01	661.00	10.11	17.20 E	2180.00
19951002	10.08	16.62	338.00	10.26	13.85	285.00	10.21	13.01	661.00	9.61	16.60	470.00	10.21	13.01	661.00	10.11	17.20 E	2180.00
19951003	10.08	16.62	338.00	10.26	13.85	285.00	10.21	13.01	661.00	9.61	16.60	470.00	10.21	13.01	661.00	10.11	17.20 E	2180.00
19951004	10.08	16.62	338.00	10.26	13.85	285.00	10.21	13.01	661.00	9.61	16.60	470.00	10.21	13.01	661.00	10.11	17.20 E	2180.00
19951005	10.08	16.62	338.00	10.26	13.85	285.00	10.21	13.01	661.00	9.61	16.60	470.00	10.21	13.01	661.00	10.11	17.20 E	2180.00
19951006	10.08	16.62	338.00	10.26	13.85	285.00	10.21	13.01	661.00	9.61	16.60	470.00	10.21	13.01	661.00	10.11	17.20 E	2180.00
19951007	10.08	16.62	338.00	10.26	13.85	285.00	10.21	13.01	661.00	9.61	16.60	470.00	10.21	13.01	661.00	10.11	17.20 E	2180.00
19951008	10.08	16.62	338.00	10.26	13.85	285.00	10.21	13.01	661.00	9.61	16.60	470.00	10.21	13.01	661.00	10.11	17.20 E	2180.00
19951009	10.08	16.62	338.00	10.26	13.85	285.00	10.21	13.01	661.00	9.61	16.60	470.00	10.21	13.01	661.00	10.11	17.20 E	2180.00
19951010	10.08	16.62	338.00	10.26	13.85	285.00	10.21	13.01	661.00	9.61	16.60	470.00	10.21	13.01	661.00	10.11	17.20 E	2180.00
19951011	10.08	16.62	338.00	10.26	13.85	285.00	10.21	13.01	661.00	9.61	16.60	470.00	10.21	13.01	661.00	10.11	17.20 E	2180.00
19951012	10.08	16.62	338.00	10.26	13.85	285.00	10.21	13.01	661.00	9.61	16.60	470.00	10.21	13.01	661.00	10.11	17.20 E	2180.00
19951013	10.08	16.62	338.00	10.26	13.85	285.00	10.21	13.01	661.00	9.61	16.60	470.00	10.21	13.01	661.00	10.11	17.20 E	2180.00
19951014	10.08	16.62	338.00	10.26	13.85	285.00	10.21	13.01	661.00	9.61	16.60	470.00	10.21	13.01	661.00	10.11	17.20 E	2180.00
19951015	10.08	16.62	338.00	10.26	13.85	285.00	10.21	13.01	661.00	9.61	16.60	470.00	10.21	13.01	661.00	10.11	17.20 E	2180.00
19951016	10.08	16.62	338.00	10.26	13.85	285.00	10.21	13.01	661.00	9.61	16.60	470.00	10.21	13.01	661.00	10.11	17.20 E	2180.00
19951017	10.08	16.62	338.00	10.26	13.85	285.00	10.21	13.01	661.00	9.61	16.60	470.00	10.21	13.01	661.00	10.11	17.20 E	2180.00
19951018	10.08	16.62	338.00	10.26	13.85	285.00	10.21	13.01	661.00	9.61	16.60	470.00	10.21	13.01	661.00	10.11	17.20 E	2180.00
19951019	10.08	16.62	338.00	10.26	13.85	285.00	10.21	13.01	661.00	9.61	16.60	470.00	10.21	13.01	661.00	10.11	17.20 E	2180.00
19951020	10.08	16.62	338.00	10.26	13.85	285.00	10.21	13.01	661.00	9.61	16.60	470.00	10.21	13.01	661.00	10.11	17.20 E	2180.00
19951021	10.08	16.62	338.00	10.26	13.85	285.00	10.21	13.01	661.00	9.61	16.60	470.00	10.21	13.01	661.00	10.11	17.20 E	2180.00
19951022	10.08	16.62	338.00	10.26	13.85	285.00	10.21	13.01	661.00	9.61	16.60	470.00	10.21	13.01	661.00	10.11	17.20 E	2180.00
19951023	10.08	16.62	338.00	10.26	13.85	285.00	10.21	13.01	661.00	9.61	16.60	470.00	10.21	13.01	661.00	10.11	17.20 E	2180.00
19951024	10.08																	

TABLE G-1. Mean Daily Outflows (cfs) from the EAA through various canals to Water Conservation Areas 1, 2, and 3 (WCA's) (continued).

DATE	S-6 (HR)	S-6 (TW)	S-6 (FLOW)	S-7 (HR)	S-7 (TW)	S-7 (FLOW)	S-8 (HR)	S-8 (TW)	S-8 (FLOW)	S-8 (HR)	S-8 (TW)	S-8 (FLOW)	S-8 (HR)	S-8 (TW)	S-8 (FLOW)	S-8 (HR)	S-8 (TW)	S-8 (FLOW)
	00136	06685	15014	06695	06696	15037	06697	06699	15040	06676	06677	15031	06676	06677	15031	06676	06677	15031
19951227	M	16.78	449.00	10.92	12.57	570.00	11.04	11.08	00 E	10.35	18.71	00	10.35	18.71	00	10.35	18.71	00
19951228	M	16.77	461.00	11.15	12.46	505.00	11.08	11.06	00 E	10.93	16.71	00	10.93	16.71	00	10.93	16.71	00
19951229	M	16.80	485.00	11.15	12.58	610.00	11.07	11.02	00 E	10.25	16.71	710.00	10.25	16.71	710.00	10.25	16.71	710.00
19951230	M	16.81	542.00	11.31	12.72	770.00	11.31	11.01	00 E	10.73	16.73	00	10.73	16.73	00	10.73	16.73	00
19951231	M	16.79	533.00	11.08	12.74	775.00	11.53	10.98	00 E	11.25	16.73	00	11.25	16.73	00	11.25	16.73	00

APPENDIX H

APPENDIX H

TABLE H-1. Lake Okeechobee and Water Conservation Area Mean Daily Stages (ft)

DATE	WCA-1	WCA-2	WCA-3	LAKE-OKEE
	STAGE 15810	STAGE 16016	STAGE 15943	STAGE 15611
19950501	15.76	12.91	9.83	15.73
19950502	15.79	12.92	9.82	15.71
19950503	15.82	12.90	9.80	15.70
19950504	15.79	12.86	9.79	15.70
19950505	15.82	12.82	9.84	15.70
19950506	15.82	12.77	9.82	15.70
19950507	15.79	12.76	9.80	15.70
19950508	15.77	12.72	9.78	15.70
19950509	15.72	12.65	9.76	15.68
19950510	15.69	12.60	9.74	15.64
19950511	15.69	12.54	9.72	15.74
19950512	15.67	12.49	9.70	15.67
19950513	15.63	12.44	9.66	15.64
19950514	15.60	12.39	9.63	15.62
19950515	15.57	12.35	9.60	15.58
19950516	15.54	12.31	9.58	15.51
19950517	15.50	12.27	9.56	15.55
19950518	15.47	12.24	9.54	15.53
19950519	15.43	12.21	9.49	15.53
19950520	15.51	12.21	9.51	15.50
19950521	15.58	12.23	9.58	15.48
19950522	15.60	12.24	9.60	15.44
19950523	15.56	12.21	9.58	15.44
19950524	15.55	12.19	9.54	15.43
19950525	15.57	12.20	9.53	15.44
19950526	15.57	12.18	9.58	15.39
19950527	15.55	12.17	9.57	15.38
19950528	15.53	12.15	9.55	15.38
19950529	15.51	12.14	9.53	15.37
19950530	15.47	12.12	9.51	15.33
19950531	15.42	12.10	9.48	15.29
19950601	15.35	11.98	9.45	15.23
19950602	15.33	11.95	9.43	15.17
19950603	15.36	11.98	9.44	15.19
19950604	15.42	11.98	9.43	15.21
19950605	15.52	12.01	9.47	15.24
19950606	15.61	12.05	9.49	15.27
19950607	15.65	12.10	9.55	15.29
19950608	15.68	12.09	9.53	15.26
19950609	15.67	12.08	9.53	15.25
19950610	15.66	12.06	9.44	15.21
19950611	15.64	12.04	9.52	15.18
19950612	15.66	12.03	9.52	15.13
19950613	15.72	12.03	9.50	15.13
19950614	15.80	12.21	9.55	15.16
19950615	15.77	12.19	9.53	15.13
19950616	15.75	12.17	9.52	15.11
19950617	15.75	12.18	9.56	15.12
19950618	15.72	12.15	9.50	15.13
19950619	15.72	12.14	9.56	15.14
19950620	15.76	12.11	9.55	15.11
19950621	15.88	12.15	9.71	15.12
19950622	15.99	12.21	9.84	15.18
19950623	16.02	12.27	10.01	15.20
19950624	16.06	12.31	10.06	15.24
19950625	16.14	12.48	10.09	15.27
19950626	16.14	12.45	10.10	15.32
19950627	16.16	12.49	10.11	15.36
19950628	16.05	12.51	10.12	15.38
19950629	15.89	12.54	10.12	15.39
19950630	15.74	12.69	10.15	15.45
19950701	15.74	12.76	10.15	15.47
19950702	15.72	12.79	10.13	15.49

TABLE H-1. Lake Okeechobee and Water Conservation Area Mean Daily Stages (ft)(continued).

DATE	WCA-1	WCA-2	WCA-3	LAKE-OKEE
	STAGE 15810	STAGE 16016	STAGE 15943	STAGE 15611
19950703	15.73	12.87	10.13	15.52
19950704	15.72	12.86	10.12	15.52
19950705	15.70	12.83	10.12	15.52
19950706	15.72	12.79	10.12	15.51
19950707	15.70	12.75	10.11	15.52
19950708	15.67	12.63	10.10	15.49
19950709	15.66	12.58	10.09	15.48
19950710	15.68	12.58	10.09	15.44
19950711	15.73	12.56	10.16	15.45
19950712	15.76	12.53	10.17	15.53
19950713	15.79	12.58	10.17	15.51
19950714	15.83	12.52	10.18	15.51
19950715	15.82	12.47	10.21	15.52
19950716	15.72	12.41	10.22	15.53
19950717	15.66	12.39	10.22	15.54
19950718	15.86	12.44	10.31	15.54
19950719	16.02	12.43	10.33	15.54
19950720	16.10	12.45	10.33	15.37
19950721	16.16	12.47	10.35	15.56
19950722	16.27	12.51	10.39	15.57
19950723	16.32	12.54	10.39	15.58
19950724	16.36	12.55	10.43	15.60
19950725	16.36	12.53	10.43	15.57
19950726	16.37	12.52	10.43	15.68
19950727	16.50	12.67	10.49	15.74
19950728	16.52	12.67	10.58	15.80
19950729	16.51	12.66	10.61	15.83
19950730	16.47	12.69	10.62	15.86
19950731	16.45	12.74	10.63	15.90
19950801	16.43	12.80	10.65	15.92
19950802	16.37	12.90	10.65	16.00
19950803	16.48	13.01	10.65	16.00
19950804	16.62	13.27	10.69	16.01
19950805	16.64	13.40	10.75	16.08
19950806	16.60	13.43	10.76	16.13
19950807	16.55	13.45	10.76	16.22
19950808	16.49	13.46	10.76	16.24
19950809	16.44	13.45	10.76	16.27
19950810	16.47	13.58	10.87	16.27
19950811	16.45	13.53	10.88	16.28
19950812	16.36	13.51	10.88	16.30
19950813	16.26	13.54	10.87	16.31
19950814	16.18	13.47	10.87	16.34
19950815	16.09	13.44	10.87	16.36
19950816	16.06	13.41	10.86	16.34
19950817	16.08	13.38	10.90	16.33
19950818	16.12	13.35	10.89	16.35
19950819	16.15	13.29	10.88	16.32
19950820	16.16	13.21	10.91	16.31
19950821	16.17	13.15	10.89	16.27
19950822	16.21	13.07	10.89	16.21
19950823	16.50	13.02	10.90	16.20
19950824	17.04	13.55	11.29	16.31
19950825	17.06	13.65	11.44	16.52
19950826	17.03	13.62	11.47	16.61
19950827	17.00	13.79	11.45	16.66
19950828	17.01	13.93	11.52	16.78
19950829	17.12	14.07	11.55	16.83
19950830	17.12	14.13	11.55	16.82
19950831	17.09	14.18	11.55	16.84
19950901	17.05	14.23	11.56	16.90
19950902	17.05	14.26	11.60	16.95
19950903	17.04	14.29	11.63	17.00
19950904	17.00	14.32	11.65	17.06
19950905	17.02	14.34	11.71	17.11
19950906	17.02	14.43	11.79	17.18

TABLE H-1. Lake Okeechobee and Water Conservation Area Mean Daily Stages (ft)(continued).

DATE	WCA-1 STAGE 15810	WCA-2 STAGE 16016	WCA-3 STAGE 15943	LAKE-OKEE STAGE 15611
19950907	17.00	14.43	11.81	17.22
19950908	17.00	14.45	11.83	17.27
19950909	16.97	14.45	11.85	17.31
19950910	16.97	14.42	11.87	17.33
19950911	17.03	14.54	11.93	17.38
19950912	17.03	14.51	11.95	17.41
19950913	17.01	14.52	11.98	17.48
19950914	16.97	14.52	11.99	17.50
19950915	16.93	14.51	12.00	17.51
19950916	16.88	14.48	12.01	17.52
19950917	16.85	14.45	12.01	17.53
19950918	16.83	14.41	12.02	17.55
19950919	16.75	14.37	12.03	17.53
19950920	16.71	14.38	12.08	17.54
19950921	16.70	14.36	12.08	17.49
19950922	16.72	14.27	12.10	17.46
19950923	16.76	14.19	12.10	17.43
19950924	16.77	14.04	12.09	17.42
19950925	16.78	13.98	12.07	17.38
19950926	16.78	13.88	12.06	17.37
19950927	16.78	13.78	12.05	17.33
19950928	16.80	13.68	12.05	17.30
19950929	16.84	13.61	12.07	17.27
19950930	16.88	13.52	12.08	17.26
19951001	16.96	13.46	12.10	17.26
19951002	17.00	13.41	12.10	17.25
19951003	17.00	13.34	12.10	17.22
19951004	16.99	13.29	12.08	17.20
19951005	16.99	13.24	12.05	17.19
19951006	17.10	13.32	12.25	17.26
19951007	17.15	13.27	12.27	17.30
19951008	17.21	13.26	12.35	17.32
19951009	17.25	13.26	12.35	17.37
19951010	17.29	13.31	12.32	17.39
19951011	17.30	13.31	12.31	17.44
19951012	17.32	13.26	12.28	17.43
19951013	17.34	13.21	12.25	17.43
19951014	17.40	13.16	12.33	17.50
19951015	17.51	13.21	12.33	17.55
19951016	17.60	13.23	12.35	17.65
19951017	17.74	13.28	12.42	17.74
19951018	17.84	13.34	12.47	18.03
19951019	17.84	13.53	12.56	18.17
19951020	17.84	13.75	12.56	18.34
19951021	17.81	13.96	12.56	18.41
19951022	17.78	14.09	12.55	18.45
19951023	17.74	14.19	12.53	18.54
19951024	17.71	14.26	12.52	18.59
19951025	17.68	14.33	12.51	18.63
19951026	17.64	14.37	12.51	18.64
19951027	17.61	14.41	12.51	18.63
19951028	17.56	14.42	12.51	18.59
19951029	17.50	14.44	12.50	18.56
19951030	17.42	14.43	12.49	18.50
19951031	17.36	14.43	12.47	18.48
19951101	17.35	14.41	12.47	18.45
19951102	17.29	14.40	12.46	18.41
19951103	17.23	14.36	12.45	18.37
19951104	17.17	14.33	12.46	18.32
19951105	17.12	14.24	12.42	18.28
19951106	17.07	14.21	12.41	18.21
19951107	17.02	14.17	12.39	18.20
19951108	17.01	14.10	12.37	18.15
19951109	17.03	14.02	12.36	18.12
19951110	17.03	13.92	12.33	18.07
19951111	17.04	13.83	12.30	18.02

TABLE H-1. Lake Okeechobee and Water Conservation Area Mean Daily Stages (ft)(continued).

DATE	WCA-1	WCA-2	WCA-3	LAKE-OKEE
	STAGE 15810	STAGE 16016	STAGE 15943	STAGE 15611
19951112	17.04	13.74	12.28	17.97
19951113	17.04	13.64	12.26	17.92
19951114	17.04	13.57	12.23	17.88
19951115	17.03	13.50	12.19	17.86
19951116	17.02	13.44	12.15	17.73
19951117	17.01	13.38	12.12	17.67
19951118	17.01	13.32	12.08	17.63
19951119	17.01	13.26	12.05	17.60
19951120	17.01	13.21	12.02	17.54
19951121	17.01	13.15	12.00	17.52
19951122	17.01	13.09	11.96	17.49
19951123	17.01	13.03	11.93	17.44
19951124	16.99	12.97	11.90	17.39
19951125	16.99	12.92	11.87	17.34
19951126	16.99	12.86	11.84	17.29
19951127	16.99	12.80	11.82	17.24
19951128	16.98	12.75	11.79	17.20
19951129	17.02	12.70	11.76	17.17
19951130	17.05	12.73	11.80	17.13
19951201	17.03	12.68	11.78	17.10
19951202	17.03	12.66	11.76	17.05
19951203	17.02	12.58	11.69	17.02
19951204	17.03	12.58	11.69	16.96
19951205	17.04	12.49	11.68	16.90
19951206	17.03	12.49	11.65	16.89
19951207	17.01	12.40	11.62	16.84
19951208	17.01	12.35	11.59	16.82
19951209	17.01	12.27	11.55	16.81
19951210	16.99	12.22	11.51	16.81
19951211	16.99	12.21	11.49	16.80
19951212	16.97	12.17	11.48	16.73
19951213	16.98	12.13	11.44	16.70
19951214	17.04	12.12	11.41	16.67
19951215	17.05	12.09	11.38	16.62
19951216	17.04	12.06	11.36	16.59
19951217	17.02	12.04	11.32	16.57
19951218	17.00	12.02	11.29	16.53
19951219	17.00	12.00	11.27	16.52
19951220	17.03	12.00	11.26	16.51
19951221	17.00	11.98	11.23	16.49
19951222	16.98	11.96	11.20	16.43
19951223	17.02	11.95	11.18	16.40
19951224	17.02	11.96	11.16	16.38
19951225	16.98	11.96	11.13	16.35
19951226	16.95	11.94	11.10	16.32
19951227	16.96	11.92	11.07	16.25
19951228	16.95	11.91	11.06	16.24
19951229	16.95	11.89	11.04	16.21
19951230	16.95	11.88	11.01	16.20
19951231	16.94	11.87	10.99	16.20

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APPENDIX I

APPENDIX I

TABLE I-1. Mean Daily Inflows (cfs) to Everglades National Park (ENP) from Water Conservation Area 3 through the S-12 Structures

STATION DBKEY DATE	S12-A (FLOW) 01313	S12-B (FLOW) 00610	S12-C (FLOW) 00621	S12-D (FLOW) 01310	S12-TOTAL (FLOW) 15807
19950501	99.00	65.00	280.00	337.00	848.00
19950502	95.00	61.00	270.00	324.00	753.00
19950503	72.00	87.00	273.00	352.00	747.00
19950504	53.00	103.00	287.00	386.00	830.00
19950505	55.00	144.00	296.00	385.00	835.00
19950506	56.00	142.00	295.00	377.00	850.00
19950507	57.00	136.00	296.00	373.00	846.00
19950508	57.00	145.00	297.00	360.00	839.00
19950509	56.00	139.00	291.00	367.00	839.00
19950510	55.00	126.00	283.00	359.00	812.00
19950511	261.00	108.00	278.00	340.00	868.00
19950512	285.00	119.00	257.00	351.00	878.00
19950513	221.00	113.00	255.00	353.00	866.00
19950514	190.00	120.00	232.00	342.00	834.00
19950515	197.00	101.00	222.00	326.00	789.00
19950516	178.00	119.00	237.00	332.00	799.00
19950517	165.00	102.00	219.00	325.00	731.00
19950518	155.00	101.00	203.00	315.00	698.00
19950519	119.00	89.00	170.00	298.00	631.00
19950520	157.00	91.00	225.00	321.00	724.00
19950521	185.00	110.00	264.00	353.00	814.00
19950522	182.00	110.00	243.00	351.00	800.00
19950523	163.00	99.00	229.00	342.00	758.00
19950524	142.00	121.00	224.00	340.00	751.00
19950525	103.00	93.00	169.00	234.00	514.00
19950526	41.00	82.00	101.00	158.00	409.00
19950527	43.00	85.00	105.00	162.00	424.00
19950528	43.00	84.00	106.00	164.00	428.00
19950529	42.00	84.00	105.00	163.00	424.00
19950530	42.00	82.00	104.00	162.00	420.00
19950531	41.00	80.00	103.00	161.00	414.00
19950601	40.00	78.00	101.00	158.00	405.00
19950602	39.00	77.00	100.00	157.00	400.00
19950603	40.00	77.00	101.00	159.00	404.00
19950604	40.00	78.00	102.00	161.00	410.00
19950605	40.00	79.00	104.00	163.00	416.00
19950606	41.00	84.00	107.00	165.00	426.00
19950607	44.00	90.00	112.00	172.00	451.00
19950608	45.00	74.00	91.00	154.00	385.00
19950609	47.00	61.00	76.00	141.00	328.00
19950610	48.00	63.00	77.00	143.00	335.00
19950611	48.00	62.00	77.00	143.00	333.00
19950612	47.00	61.00	75.00	141.00	328.00
19950613	46.00	128.00	75.00	141.00	327.00
19950614	46.00	159.00	133.00	200.00	458.00
19950615	45.00	106.00	188.00	253.00	590.00
19950616	44.00	101.00	180.00	247.00	571.00
19950617	44.00	99.00	178.00	245.00	562.00
19950618	43.00	97.00	176.00	242.00	555.00
19950619	43.00	95.00	176.00	241.00	553.00
19950620	46.00	108.00	188.00	260.00	594.00
19950621	41.00	179.00	343.00	249.00	1009.00
19950622	19.00	241.00	522.00	154.00	1662.00
19950623	23.00	278.00	558.00	161.00	1808.00
19950624	22.00	271.00	554.00	158.00	1780.00
19950625	23.00	262.00	538.00	153.00	1731.00
19950626	22.00	261.00	531.00	152.00	1694.00
19950627	21.00	248.00	523.00	151.00	1670.00
19950628	153.00	172.00	472.00	300.00	1530.00
19950629	232.00	118.00	468.00	597.00	1452.00
19950630	239.00	122.00	480.00	613.00	1495.00
19950701	227.00	116.00	466.00	599.00	1450.00

TABLE I-1. Mean Daily Inflows (cfs) to Everglades National Park (ENP) from Water Conservation Area 3 through the S-12 Structures (continued)

STATION DBKEY DATE	S12-A (FLOW) 01313	S12-B (FLOW) 00610	S12-C (FLOW) 00621	S12-D (FLOW) 01310	S12-TOTAL (FLOW) 15807
19950702	214.00	111.00	453.00	585.00	1403.00
19950703	209.00	108.00	441.00	571.00	1371.00
19950704	201.00	105.00	433.00	559.00	1335.00
19950705	202.00	103.00	424.00	553.00	1300.00
19950706	210.00	108.00	417.00	548.00	1265.00
19950707	218.00	115.00	413.00	547.00	1251.00
19950708	226.00	123.00	408.00	533.00	1226.00
19950709	231.00	130.00	399.00	524.00	1208.00
19950710	246.00	147.00	408.00	524.00	1216.00
19950711	268.00	166.00	420.00	547.00	1257.00
19950712	282.00	181.00	424.00	555.00	1272.00
19950713	293.00	194.00	422.00	552.00	1266.00
19950714	303.00	204.00	419.00	552.00	1364.00
19950715	305.00	209.00	426.00	560.00	1496.00
19950716	307.00	209.00	428.00	568.00	1505.00
19950717	306.00	209.00	429.00	571.00	1513.00
19950718	307.00	205.00	421.00	595.00	1574.00
19950719	310.00	205.00	422.00	609.00	1611.00
19950720	311.00	205.00	419.00	612.00	1610.00
19950721	311.00	206.00	426.00	629.00	1638.00
19950722	316.00	210.00	436.00	649.00	1676.00
19950723	318.00	214.00	441.00	659.00	1696.00
19950724	322.00	214.00	442.00	662.00	1710.00
19950725	321.00	213.00	439.00	653.00	1698.00
19950726	320.00	216.00	437.00	658.00	1762.00
19950727	322.00	205.00	417.00	593.00	1990.00
19950728	324.00	208.00	405.00	481.00	2123.00
19950729	220.00	219.00	382.00	484.00	2159.00
19950730	214.00	223.00	382.00	492.00	2167.00
19950731	216.00	229.00	385.00	499.00	2186.00
19950801	216.00	236.00	390.00	505.00	2211.00
19950802	203.00	230.00	377.00	481.00	2130.00
19950803	205.00	233.00	389.00	492.00	2121.00
19950804	217.00	249.00	429.00	542.00	2231.00
19950805	230.00	256.00	455.00	566.00	2277.00
19950806	234.00	254.00	469.00	572.00	2256.00
19950807	234.00	251.00	483.00	580.00	2237.00
19950808	233.00	248.00	499.00	588.00	2220.00
19950809	230.00	246.00	519.00	602.00	2208.00
19950810	238.00	248.00	551.00	637.00	2260.00
19950811	248.00	253.00	578.00	657.00	2285.00
19950812	256.00	257.00	607.00	679.00	2314.00
19950813	257.00	256.00	625.00	698.00	2311.00
19950814	262.00	261.00	656.00	719.00	2333.00
19950815	269.00	263.00	680.00	738.00	2349.00
19950816	269.00	260.00	697.00	751.00	2167.00
19950817	274.00	261.00	705.00	762.00	2021.00
19950818	285.00	266.00	711.00	765.00	2045.00
19950819	292.00	270.00	721.00	773.00	2063.00
19950820	304.00	276.00	735.00	799.00	2102.00
19950821	316.00	284.00	737.00	798.00	2143.00
19950822	324.00	285.00	738.00	799.00	2154.00
19950823	337.00	292.00	755.00	835.00	2231.00
19950824	456.00	331.00	822.00	1010.00	2761.00
19950825	534.00	360.00	858.00	1030.00	3043.00
19950826	543.00	366.00	867.00	982.00	3103.00
19950827	548.00	372.00	885.00	1000.00	3199.00
19950828	550.00	376.00	896.00	1010.00	3225.00
19950829	552.00	380.00	901.00	1010.00	3239.00
19950830	555.00	382.00	906.00	1020.00	3263.00
19950831	559.00	384.00	913.00	1030.00	3286.00
19950901	569.00	395.00	936.00	1070.00	3009.00
19950902	589.00	415.00	978.00	1120.00	2932.00
19950903	606.00	429.00	1010.00	1150.00	3017.00
19950904	617.00	438.00	1020.00	1160.00	3065.00

TABLE I-1. Mean Daily Inflows (cfs) to Everglades National Park (ENP) from Water Conservation Area 3 through the S-12 Structures (continued)

STATION DBKEY DATE	S12-A (FLOW) 01313	S12-B (FLOW) 00610	S12-C (FLOW) 00621	S12-D (FLOW) 01310	S12-TOTAL (FLOW) 15807
19950905	632.00	468.00	1040.00	1230.00	3217.00
19950906	660.00	572.00	1070.00	1300.00	3566.00
19950907	654.00	565.00	1060.00	1290.00	3537.00
19950908	658.00	568.00	1060.00	1290.00	3546.00
19950909	665.00	576.00	1080.00	1320.00	3599.00
19950910	682.00	590.00	1100.00	1350.00	3677.00
19950911	701.00	603.00	1130.00	1400.00	3786.00
19950912	703.00	608.00	1140.00	1420.00	3823.00
19950913	709.00	616.00	1150.00	1450.00	3878.00
19950914	716.00	624.00	1160.00	1460.00	3913.00
19950915	720.00	630.00	1170.00	1470.00	3865.00
19950916	725.00	635.00	1180.00	1490.00	3831.00
19950917	725.00	634.00	1170.00	1490.00	3839.00
19950918	725.00	635.00	1170.00	1500.00	3846.00
19950919	731.00	644.00	1180.00	1540.00	3914.00
19950920	738.00	651.00	1190.00	1560.00	3966.00
19950921	744.00	656.00	1190.00	1570.00	3997.00
19950922	754.00	670.00	1210.00	1630.00	4094.00
19950923	757.00	669.00	1210.00	1630.00	4096.00
19950924	760.00	666.00	1200.00	1640.00	4094.00
19950925	759.00	665.00	1200.00	1630.00	4090.00
19950926	755.00	662.00	1180.00	1620.00	4172.00
19950927	759.00	665.00	1180.00	1620.00	4285.00
19950928	851.00 ?	696.00	1210.00	1670.00 ?	4399.00
19950929	985.00 ?	732.00	1240.00	1710.00 ?	4568.00
19950930	1010.00 ?	753.00	1270.00	1640.00	4687.00
19951001	997.00 ?	755.00	1260.00	1640.00	4660.00
19951002	998.00 ?	758.00	1260.00	1660.00 ?	4694.00
19951003	994.00 ?	748.00	1250.00	1640.00	4644.00
19951004	965.00 ?	722.00	1210.00	1570.00	4476.00
19951005	982.00 ?	756.00	1220.00	1590.00	4610.00
19951006	1070.00 ?	917.00	1290.00	1700.00 ?	5380.00
19951007	1080.00 ?	925.00	1300.00	1700.00 ?	5416.00
19951008	1090.00 ?	930.00	1310.00	1710.00 ?	5448.00
19951009	1090.00 ?	930.00	1320.00	1750.00 ?	5502.00
19951010	1100.00 ?	937.00	1330.00	1750.00 ?	5522.00
19951011	1100.00 ?	937.00	1320.00	1730.00 ?	5506.00
19951012	1100.00 ?	927.00	1310.00	1700.00 ?	5442.00
19951013	1090.00 ?	919.00	1290.00	1670.00 ?	5381.00
19951014	1100.00 ?	929.00	1310.00	1700.00 ?	5442.00
19951015	1100.00 ?	940.00	1340.00	1770.00 ?	5568.00
19951016	1160.00 ?	983.00	1400.00 ?	1880.00 ?	5637.00
19951017	1190.00 ?	1000.00	1440.00 ?	1930.00 ?	5546.00
19951018	1200.00 ?	1010.00	1470.00 ?	2040.00 ?	5682.00
19951019	1220.00 ?	1020.00	1490.00 ?	2050.00 ?	5724.00
19951020	1240.00 ?	1030.00	1490.00 ?	2060.00 ?	5749.00
19951021	1250.00 ?	1030.00	1500.00 ?	2060.00 ?	5754.00
19951022	1260.00 ?	1020.00	1500.00 ?	2050.00 ?	5731.00
19951023	1270.00 ?	1010.00	1500.00 ?	2040.00 ?	5707.00
19951024	1270.00 ?	1000.00	1500.00 ?	2030.00 ?	5693.00
19951025	1270.00 ?	991.00	1500.00 ?	2010.00 ?	5650.00
19951026	1260.00 ?	978.00	1490.00 ?	2000.00 ?	5586.00
19951027	1250.00 ?	962.00	1480.00 ?	1960.00 ?	5497.00
19951028	1250.00 ?	950.00	1470.00 ?	1950.00 ?	5432.00
19951029	1260.00 ?	951.00	1470.00 ?	1960.00 ?	5449.00
19951030	1260.00 ?	939.00	1460.00 ?	1930.00 ?	5385.00
19951031	1250.00 ?	927.00	1450.00 ?	1900.00 ?	5303.00
19951101	1250.00 ?	921.00	1450.00 ?	1900.00 ?	5410.00
19951102	1240.00 ?	915.00	1440.00 ?	1900.00 ?	5506.00
19951103	1230.00 ?	910.00	1430.00 ?	1900.00 ?	5488.00
19951104	1240.00 ?	909.00	1440.00 ?	1910.00 ?	5506.00
19951105	1240.00 ?	903.00	1430.00 ?	1900.00 ?	5485.00
19951106	1230.00 ?	893.00	1410.00 ?	1860.00 ?	5421.00
19951107	1210.00 ?	877.00	1390.00 ?	1830.00 ?	5335.00
19951108	1190.00 ?	868.00	1370.00 ?	1810.00 ?	5276.00

TABLE I-1. Mean Daily Inflows (cfs) to Everglades National Park (ENP) from Water Conservation Area 3 through the S-12 Structures (continued)

STATION DBKEY DATE	S12-A (FLOW) 01313	S12-B (FLOW) 00610	S12-C (FLOW) 00621	S12-D (FLOW) 01310	S12-TOTAL (FLOW) 15807
19951109	1210.00 ?	873.00	1380.00 ?	1830.00 ?	5328.00
19951110	1190.00 ?	858.00	1350.00	1780.00 ?	5235.00
19951111	1170.00 ?	845.00	1340.00	1740.00 ?	5154.00
19951112	1180.00 ?	848.00	1340.00	1760.00 ?	5183.00
19951113	1170.00 ?	839.00	1330.00	1750.00 ?	5157.00
19951114	1150.00 ?	832.00	1320.00	1730.00 ?	5106.00
19951115	1150.00 ?	821.00	1300.00	1710.00 ?	5056.00
19951116	1140.00 ?	809.00	1280.00	1670.00 ?	4979.00
19951117	1130.00 ?	801.00	1270.00	1640.00	4923.00
19951118	1120.00 ?	788.00	1250.00	1610.00	4858.00
19951119	1120.00 ?	782.00	1230.00	1580.00	4814.00
19951120	1100.00 ?	772.00	1210.00	1560.00	4697.00
19951121	1080.00 ?	764.00	1210.00	1560.00	4604.00
19951122	1060.00 ?	756.00	1210.00	1550.00	4565.00
19951123	1040.00 ?	742.00	1190.00	1530.00	4475.00
19951124	1020.00 ?	728.00	1170.00	1510.00	4390.00
19951125	1000.00 ?	724.00	1170.00	1520.00	4363.00
19951126	978.00 ?	709.00	1160.00	1500.00	4294.00
19951127	953.00 ?	695.00	1140.00	1460.00	4189.00
19951128	933.00 ?	681.00	1120.00	1440.00	4108.00
19951129	908.00 ?	671.00	1110.00	1430.00	4048.00
19951130	894.00 ?	670.00	1120.00	1470.00	4061.00
19951201	877.00 ?	661.00	1110.00	1470.00	4075.00
19951202	865.00 ?	654.00	1100.00	1470.00	4079.00
19951203	858.00 ?	646.00	1090.00	1450.00	4020.00
19951204	850.00 ?	642.00	1080.00	1430.00	3969.00
19951205	838.00	636.00	1070.00	1420.00	3916.00
19951206	827.00	626.00	1050.00	1400.00	3861.00
19951207	816.00	618.00	1040.00	1370.00	3788.00
19951208	803.00	611.00	1020.00	1350.00	3722.00
19951209	793.00	603.00	1010.00	1330.00	3665.00
19951210	787.00	598.00	1000.00	1320.00	3632.00
19951211	783.00	596.00	1000.00	1310.00	3615.00
19951212	766.00	582.00	974.00	1270.00	3504.00
19951213	748.00	574.00	958.00	1240.00	3423.00
19951214	739.00	563.00	940.00	1220.00	3399.00
19951215	731.00	553.00	923.00	1200.00	3402.00
19951216	721.00	543.00	904.00	1180.00	3334.00
19951217	712.00	533.00	893.00	1160.00	3270.00
19951218	702.00	524.00	874.00	1140.00	3191.00
19951219	690.00	516.00	865.00	1120.00	3141.00
19951220	683.00	513.00	860.00	1130.00	3127.00
19951221	681.00	505.00	848.00	1110.00	3077.00
19951222	668.00	494.00	835.00	1080.00	3000.00
19951223	676.00	501.00	846.00	1110.00	3039.00
19951224	666.00	491.00	833.00	1090.00	2977.00
19951225	652.00	478.00	815.00	1060.00	2903.00
19951226	646.00	468.00	796.00	1040.00	2836.00
19951227	637.00	456.00	782.00	1010.00	2761.00
19951228	632.00	450.00	775.00	997.00	2719.00
19951229	632.00	444.00	767.00	989.00	2688.00
19951230	623.00	435.00	749.00	958.00	2616.00
19951231	619.00	428.00	738.00	936.00	2566.00

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APPENDIX J

APPENDIX J

TABLE J-1. Florida Bay, Mean Daily Stages (ft) and Flows (cfs)

DATE	S-18C	S-18C	S-18C	S-197	S-197	S-197
	(HW) 05776	(TW) 05787	(FLOW) 00718	(HW) 13093	(TW) 13094	(FLOW) 13092
19950501	2.15	2.11	425.00	2.11	.87	.00
19950502	2.10 E	2.02	349.00	2.04	.73	.00
19950503	2.01	1.98	318.00	1.98	.75	.00
19950504	2.03	1.98	342.00	1.98	.81	.00
19950505	2.43	2.18	546.00	2.19	.76	.00
19950506	2.48	2.22	549.00	2.22	.78	.00
19950507	2.45	2.27	659.00	2.28	.86	.00
19950508	2.42	2.38	765.00	2.38	1.01	.00
19950509	2.28	2.27	483.00	2.25	1.09	.00
19950510	2.21 E	2.21	419.00	2.20	.97	.00
19950511	2.16	2.16	401.00	2.17	.84	.00
19950512	2.11	2.10	323.00	2.11	.86	.00
19950513	2.06	2.04	327.00	2.07	1.02	.00
19950514	2.05	2.04	335.00	2.06	1.05	.00
19950515	2.02 E	2.02 E	284.00	2.04	.92	.00
19950516	1.98	1.98	267.00	2.02	.92	.00
19950517	1.97	1.96	271.00	1.98	1.03	.00
19950518	2.01	1.90	205.00	1.91	.90	.00
19950519	2.12	1.79	101.00	1.82	.76	.00
19950520	2.19	1.77	91.00	1.80	.63	.00
19950521	2.36	1.77	61.00	1.81	.91	.00
19950522	2.52	1.80	20.00	1.84	.90	.00
19950523	2.50	1.79	35.00	1.81	.96	.00
19950524	2.47 E	1.78	102.00	1.78	.96	.00
19950525	2.43	1.76	66.00	1.77	1.00	.00
19950526	2.40 E	1.74 E	5.80	1.75	.87	.00
19950527	2.41	1.72	50.00	1.73	.91	.00
19950528	2.40 E	1.71 E	91.00	1.71	.94	.00
19950529	2.36	1.69	94.00	1.69	.94	.00
19950530	2.33	1.67	74.00	1.67	.86	.00
19950531	2.28	1.65	78.00	1.65	.86	.00
19950601	2.22 E	1.63 E	.00	1.63	.90	.00
19950602	2.23	1.68	.00	1.67	.93	.00
19950603	2.39	1.73	.00	1.72	.93	.00
19950604	2.44	1.75	.00	1.75	.81	.00
19950605	2.44	1.77	M	1.79	.42	.00
19950606	2.41	1.94	M	1.96	.27	.00
19950607	2.32	2.21	M	2.23	.48	.00
19950608	2.45 E	2.32	651.00	2.33	.60	.00
19950609	2.46 E	2.41 E	727.00	2.42	.65	.00
19950610	2.36	2.33	505.00	2.34	.72	.00
19950611	2.28	2.27	394.00	2.27	.76	.00
19950612	2.24	2.23	378.00	2.24	.66	.00
19950613	2.24	2.23	356.00	2.24	.56	.00
19950614	2.23	2.22	330.00	2.23	.74	.00
19950615	2.21 E	2.20 E	292.00	2.21	.80	.00
19950616	2.26	2.24	397.00	2.25	.84	.00
19950617	2.42	2.39	599.00	2.39	.86	.00
19950618	2.30	2.29	370.00	2.30	.91	.00
19950619	2.25	2.25	323.00	2.26	.84	.00
19950620	2.40	2.36	505.00	2.35	.88	.00
19950621	2.93	2.75	1420.00	2.64	1.24	765.69
19950622	2.75	2.39	1950.00	2.01	1.13	2565.81
19950623	2.56	2.17	1960.00	1.76	.95	2522.36
19950624	2.37	1.99	1920.00	1.60	.94	2383.82
19950625	2.39	2.13	1640.00	1.90	.77	1572.76
19950626	2.74	2.66	1140.00	2.65	.53	.00
19950627	2.76	2.69	1050.00	2.69	.60	.00
19950628	2.78	2.71	969.00	2.71	.72	.00
19950629	2.79	2.71	923.00	2.71	.81	.00
19950630	2.73	2.65	965.00	2.60	.86	442.12

TABLE J-1. Florida Bay, Mean Daily Stages (ft) and Flows (cfs) (continued).

DATE	S-18C	S-18C	S-18C	S-197	S-197	S-197
	(HW) 05776	(TW) 05787	(FLOW) 00718	(HW) 13093	(TW) 13094	(FLOW) 13092
19950701	2.59	2.51	968.00	2.45	.86	750.72
19950702	2.55	2.48	858.00	2.46	.81	445.76
19950703	2.46	2.46	269.00	2.47	.80	.00
19950704	2.47	2.47	356.00	2.48	.82	.00
19950705	2.49	2.49	406.00	2.48	.83	.00
19950706	2.46	2.46	371.00	2.46	.78	.00
19950707	2.40	2.39	270.00	2.40	.77	.00
19950708	2.35	2.34	278.00	2.35	.76	.00
19950709	2.32	2.32	285.00	2.34	.74	.00
19950710	2.39	2.33	320.00	2.35	.82	.00
19950711	2.54	2.40	402.00	2.41	.95	.00
19950712	2.51	2.40	349.00	2.41	1.02	.00
19950713	2.53	2.43	459.00	2.42	1.16	.00
19950714	2.60	2.58	722.00	2.57	1.15	.00
19950715	2.64	2.60	716.00	2.59	1.23	.00
19950716	2.64	2.61	722.00	2.60	1.18	.00
19950717	2.52	2.50	416.00	2.50	1.03	.00
19950718	2.40	2.38	261.00	2.39	.86	.00
19950719	2.36	2.35	267.00	2.37	.60	.00
19950720	2.35	2.33	271.00	2.35	.56	.00
19950721	2.35	2.35	331.00	2.36	.57	.00
19950722	2.40	2.40	404.00	2.40	.60	.00
19950723	2.40	2.39	392.00	2.38	.56	.00
19950724	2.34	2.34	326.00	2.33	.55	.00
19950725	2.32	2.32	305.00	2.32	.49	.00
19950726	2.35	2.34	324.00	2.33	.57	.00
19950727	2.61	2.57	719.00	2.56	.65	.00
19950728	2.77	2.70	1010.00	2.64	.82	205.35
19950729	2.63	2.54	1040.00	2.44	1.02	707.96
19950730	2.57	2.49	945.00	2.42	1.13	674.21
19950731	2.52	2.39	1080.00	2.24	1.41	1102.36
19950801	2.25	2.07 E	1290.00	1.87	1.57	1618.98
19950802	2.21 E	2.07 E	716.00	1.99	.98	828.34
19950803	2.53	2.45	520.00	2.43	.76	.00
19950804	2.78	2.70	943.00	2.64	.92	403.62
19950805	2.75	2.64	1130.00	2.55	1.04	731.02
19950806	2.68	2.59	1050.00	2.51	1.07	711.33
19950807	2.57	2.49	882.00	2.42	1.04	696.51
19950808	2.54	2.51	743.00	2.48	.97	303.05
19950809	2.60	2.58	591.00	2.58	.97	.00
19950810	2.59	2.58	545.00	2.58	1.02	.00
19950811	2.62	2.61	547.00	2.60	1.01	.00
19950812	2.68	2.65	593.00	2.65	1.13	.00
19950813	2.65	2.63	503.00	2.63	1.20	.00
19950814	2.65	2.64	492.00	2.64	1.13	.00
19950815	2.65	2.64	487.00	2.65	1.17	.00
19950816	2.66	2.64	487.00	2.64	1.19	.00
19950817	2.61	2.60	446.00	2.60	1.09	.00
19950818	2.56 E	2.56	369.00	2.57	1.01	.00
19950819	2.55	2.55	361.00	2.58	1.14	.00
19950820	2.56	2.56	395.00	2.57	1.19	.00
19950821	2.56	2.56	388.00	2.57	1.31	.00
19950822	2.57 E	2.57	335.00	2.58	1.47	.00
19950823	2.63 E	2.62 E	410.00	2.62	1.36	.00
19950824	2.82	2.75	969.00	2.70	1.10	496.55
19950825	2.79	2.69	1070.00	2.62	1.07	740.18
19950826	2.73	2.64	1020.00	2.58	1.02	742.93
19950827	2.63	2.56	911.00	2.50	.88	756.63
19950828	2.62 E	2.59 E	764.00	2.57	.79	320.68
19950829	2.68 E	2.68	637.00	2.70	.68	.00
19950830	2.68 E	2.68 E	571.00	2.70	.76	.00 E
19950831	2.66 E	2.64 E	527.00	2.70	.88	.00 E
19950901	2.65	2.65	513.00	2.69	.92	.00 E
19950902	2.66	2.66	504.00	2.70	.89	.00
19950903	2.67	2.67	482.00	2.70	1.21	.00

TABLE J-1. Florida Bay, Mean Daily Stages (ft) and Flows (cfs) (continued).

DATE	S-18C	S-18C	S-18C	S-197	S-197	S-197
	(HW) 05776	(TW) 05787	(FLOW) 00718	(HW) 13093	(TW) 13094	(FLOW) 13092
19950904	2.68	2.68	440.00	2.71	1.31	.00
19950905	2.71	2.70	433.00	2.74	1.35	.00
19950906	2.75	2.75	447.00	2.77	1.43	.00
19950907	2.75	2.74	494.00	2.76	1.50	.00
19950908	2.73	2.73	515.00	2.75	1.59	.00
19950909	2.76	2.76	581.00	2.78	1.61	.00
19950910	2.77	2.74	585.00	2.76	1.55	.00
19950911	2.78	2.77	648.00	2.79	1.45	.00
19950912	2.75	2.71	706.00	2.69	1.41	346.40
19950913	2.64	2.59	798.00	2.55	1.46	620.55
19950914	2.60	2.55	763.00	2.52	1.48	603.51
19950915	2.53	2.49	712.00	2.46	1.42	603.05
19950916	2.50	2.47	567.00	2.48	1.37	303.42
19950917	2.59	2.59	423.00	2.62	1.45	.00
19950918	2.59	2.59	346.00	2.61	1.43	.00
19950919	2.56	2.55	333.00	2.58	1.46	.00
19950920	2.56	2.56	337.00	2.59	1.38	.00
19950921	2.60	2.60	450.00	2.62	1.49	.00
19950922	2.64	2.64	457.00	2.68	1.60	.00 E
19950923	2.68	2.67	477.00	2.69	1.54	.00 E
19950924	2.66	2.64	422.00	2.66	1.52	.00 E
19950925	2.64	2.63	385.00	2.63	1.51	.00 E
19950926	2.59	2.58	351.00	2.59	1.51	.00 E
19950927	2.57	2.56	354.00	2.57	1.47	.00 E
19950928	2.73	2.70	690.00	2.71	1.58	100.71 E
19950929	2.79	2.71	981.00	2.68	1.81	551.14
19950930	2.72	2.66	887.00	2.63	1.74	559.53
19951001	2.66	2.64	719.00	2.64	1.65	315.47
19951002	2.72	2.71	590.00	2.73	1.73	.00
19951003	2.75	2.73	534.00	2.72	1.76	.00
19951004	2.69	2.68	421.00	2.67	1.56	.00
19951005	2.65	2.64	386.00	2.65	1.28	.00
19951006	2.70	2.69	447.00	2.72	1.23	.00
19951007	2.74	2.73	458.00	2.74	1.34	.00
19951008	2.73	2.72	468.00	2.73	1.22	.00
19951009	2.76	2.75	548.00	2.77	1.11	.00
19951010	2.75	2.72	648.00	2.69	1.12	325.76
19951011	2.58	2.53	728.00	2.49	1.08	704.38
19951012	2.46	2.43	624.00	2.39	1.16	660.38
19951013	2.44	2.42	600.00	2.40	1.38	596.47
19951014	2.57	2.54	714.00	2.49	1.40	616.32
19951015	2.79	2.70	1060.00	2.64	.89	786.46
19951016	2.79	2.72	973.00	2.68	1.16	731.55
19951017	2.92	2.83	1160.00	2.77	1.47	677.45
19951018	3.09	2.88	1540.00	2.75	1.67	1266.88
19951019	2.95	2.75	1440.00	2.59	1.63	1509.36
19951020	2.86	2.69	1360.00	2.55	1.70	1418.75
19951021	2.77	2.64	1210.00	2.51	1.69	1389.31
19951022	2.85	2.73	1160.00	2.63	2.02	1189.34
19951023	2.97	2.83	1260.00	2.72	2.20	1105.93
19951024	2.95	2.80	1240.00	2.70	2.11	1171.36
19951025	2.87	2.73	1190.00	2.62	1.92	1286.47
19951026	2.77	2.63	1200.00	2.51	1.70	1378.59
19951027	2.62	2.51	1160.00	2.39	1.57	1390.28
19951028	2.56	2.47	973.00	2.42	1.31	987.06
19951029	2.61	2.55	803.00	2.52	1.29	670.09
19951030	2.56	2.51	679.00	2.48	1.49	600.79
19951031	2.50	2.46	634.00	2.41	1.39	612.76
19951101	2.51	2.49	535.00	2.48	1.15	248.33
19951102	2.59	2.58	397.00	2.59	.99	.00
19951103	2.58	2.56	375.00	2.58	.88	.00
19951104	2.58	2.57	358.00	2.59	.89	.00
19951105	2.58	2.57	362.00	2.59	1.17	.00
19951106	2.59	2.56	347.00	2.58	1.16	.00
19951107	2.58	2.55	367.00	2.57	1.07	.00

TABLE J-1. Florida Bay, Mean Daily Stages (ft) and Flows (cfs) (continued).

DATE	S-18C	S-18C	S-18C	S-197	S-197	S-197
	(HW) 05776	(TW) 05787	(FLOW) 00718	(HW) 13093	(TW) 13094	(FLOW) 13092
19951108	2.54	2.52	311.00	2.55	.93	.00
19951109	2.52	2.49	253.00	2.52	1.36	.00
19951110	2.50	2.48	252.00	2.49	1.28	.00
19951111	2.48	2.46	289.00	2.48	1.07	.00
19951112	2.46	2.45	249.00	2.48	.95	.00
19951113	2.45	2.43	245.00	2.46	1.14	.00
19951114	2.42	2.41	233.00	2.45	1.16	.00
19951115	2.41	2.39	218.00	2.42	1.30	.00
19951116	2.39	2.37	209.00	2.40	1.15	.00
19951117	2.38	2.36	205.00	2.38	1.11	.00
19951118	2.38	2.35	203.00	2.37	1.30	.00
19951119	2.36	2.34	203.00	2.36	1.23	.00
19951120	2.35	2.33	196.00	2.35	1.22	.00
19951121	2.35	2.32	202.00	2.35	1.24	.00
19951122	2.32	2.30	187.00	2.34	1.42	.00
19951123	2.31	2.29	184.00	2.31	1.40	.00
19951124	2.31	2.24	111.00	2.26	1.32	.00
19951125	2.33	2.18	91.00	2.23	1.34	.00
19951126	2.31	2.17	88.00	2.20	1.24	.00
19951127	2.32	2.14	97.00	2.16	1.09	.00
19951128	2.46	2.05	8.10	2.06	1.04	.00
19951129	2.55	2.02	32.00	2.05	.80	.00
19951130	2.48	2.11	138.00	2.15	.66	.00
19951201	2.46	2.12	137.00	2.16	.66	.00
19951202	2.43	2.12	133.00	2.15	.55	.00
19951203	2.41	2.12	140.00	2.15	.61	.00
19951204	2.41	2.11	139.00	2.15	.69	.00
19951205	2.40	2.11	121.00	2.14	.78	.00
19951206	2.40	2.11	124.00	2.13	.76	.00
19951207	2.39	2.09	141.00	2.13	.77	.00
19951208	2.37	2.08	126.00	2.12	.83	.00
19951209	2.36	2.08	161.00	2.12	.82	.00
19951210	2.36	2.07	122.00	2.12	.84	.00
19951211	2.35	2.05	72.00	2.09	1.13	.00
19951212	2.44	1.94	-7.00	1.96	1.32	.00
19951213	2.50	1.92	-13.00	1.94	1.27	.00
19951214	2.51	1.89	-2.80	1.91	1.07	.00
19951215	2.51	1.86	-3.20	1.89	.93	.00
19951216	2.52	1.84	6.10	1.87	.91	.00
19951217	2.51	1.82	18.00	1.85	1.10	.00
19951218	2.51	1.82	11.00	1.83	1.17	.00
19951219	2.52	1.80	12.00	1.83	.95	.00
19951220	2.56	1.78	4.80	1.84	.81	.00
19951221	2.55	1.77	-9.40	1.81	1.05	.00
19951222	2.54	1.76	-14.00	1.81	1.20	.00
19951223	2.56	1.75	-17.00	1.81	1.41	.00
19951224	2.54	1.75	-7.60	1.80	1.42	.00
19951225	2.52	1.73	12.00	1.78	1.24	.00
19951226	2.51	1.72	27.00	1.76	1.12	.00
19951227	2.50	1.72	34.00	1.75	1.11	.00
19951228	2.51	1.72	47.00	1.75	1.07	.00
19951229	2.54	1.73	13.00	1.75	.97	.00
19951230	2.53	1.73	26.00	1.74	1.05	.00
19951231	2.53	1.73	16.00	1.74	.88	.00

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APPENDIX K

**APPENDIX K
WATER CONTROL STRUCTURE OPERATION
DURING STORMS IN JUNE AND OCTOBER 1995**

Storm Event Of June 20

June 19

- 8:00 The District weather report stated, "Wet through the coming week with episodes of heavy rain, particularly June 20 and 21."
- Canal stages in the District were normal. Pumping station S-9 started to pump. Monitored water condition closely.

June 20

- 8:00 The District weather report stated, "A major rainfall event is developing over the District with rainfall amount of 6 inches over some areas between June 20 and 22."
- Pumping stations S-6, S-7, S-8, S-9, S-135, S-140 and S-331 started to pump to lower canal stages.
- 13:30 Scheduled night shifts at pumping station S-6, S-7, S-8, S-9 and S-331 to pump through the night in anticipation of heavy rainfall.
- 14:20 Heavy rainfall began and canal stages started to increase.
Lowered water level at S-29 to receive more water in the basin.
Closed gates at S-333 to stop releases from WCA 3A into L-29. L-29 was too high.
Closed gates at S-13A to prevent releases from C-11 western basin into eastern basin. S-9 should be used to control canal level in western C-11. S-13A is designed as basin divide structure.
- 15:30 More canal stages rose due to the rainfall.
Opened all gates to 8 feet at S-22, S-25B, S-26, S-27, S-28, S-29, and S-123 to make high releases into the tide.
- 16:40 Opened all gates to 8 feet at S-20F and S-21A to make high releases into the tide.
- 17:00 Opened gates full at S-25 to make maximum releases into the tide.
- 19:00 L-31N/L-31W/C-111 rose above their critical levels.
Opened gates full at S-194 and S-196 to make maximum releases.
Opened gates full at S-175 to make maximum releases.
Opened gates full at S-177 to make maximum releases.
- 20:00 Secured pumping at S-331 due to high downstream stage. Discharged water by gravity only through S-173/S-331.

June 21

- 7:20 Opened gates at S-148 full to increase releases from L-31N through S-338.
Pumps at S-332 were repaired. Added more pumps in operation at S-332.

(June 21, continued)

- 8:00 The District weather report stated "Heavy rains averaging two inches will be developing southeast today."
- 8:20 Started pumping at S-13.
Scheduled night shift pumping at S-6, S-7, S-8, S-9, S-13 and S-140.
- 9:30 Lowered operating level of computer control at S-99 to facilitate secondary drainage.
- 10:00 The Corps of Engineers increased releases from S-10, S-11, and S-12. WCA 1, and 2A were above their schedules and rising.
- 12:10 Dispatched crew to open three gates at S-197.
- 12:30 Increased releases from S-21A and S-20F to maximum. Took those two sites off computer control to avoid gate yo-yo during high tide.
Opened all gates at ridge structures S-165, S-166, S-167 and S-179 full to drain interior reaches.
- 15:20 Lowered operating level of computer control at G-54, G-56, S-36, S-37A, and S-37B to facilitate secondary drainage in Ft. Lauderdale area.
- 15:50 Dispatched crew to open seven gates at S-197 according to operational guidelines.
Opened gates at G-124 full to provide additional drainage for C-51 western basin.
- 17:10 S-18C headwater rose above 2.8 feet.
Seven gates at S-197 were opened. Requested field crew to stand by until water level started to decline.
- 17:50 High canal stages in Miami area would limit salinity intrusion under high tide condition.
Opened all gates at S-21, S-22, S-25B, S-26, S-27, S-28, S-29, and S-123 to maximum and locked open regardless of tide. Based on past experience, S-22, S-28, and S-29 had problems when gates opened to maximum. Dispatched field person to open gates at those sites. Gates at rest of sites were opened by telemetry.
- 21:00 Raised operating level of computer control at S-36 and S-37A to prevent over draining. Inflows started to decline.
- 22:40 Dispatched crew to open all thirteen gates at S-197 according to operational guidelines.
Started pumping at S-4.

June 22

- 1:10 Twelve gates opened at S-197. Number 3 gate was out of service.
- 7:00 Stopped gravity discharge at S-173/S-331. Downstream stage was too high.
- 8:00 The District weather report stated, "Moderate to locally heavy rains will focus east of Lake Okeechobee this afternoon. The main branch of deep tropical moisture and energy has weakened and shifted east of Florida."

(June 22, continued)

- 8:10 Opened gates full at S-47D to facilitate secondary drainage by lowering canal level.
- 8:20 Increased releases at S-124 to facilitate secondary drainage.
- 8:40 Returned S-37A, S-37B, G-54, and G-56 to normal computer control operating levels. Canal stages were too low.
Increased releases at G-155 to maximum. Canal stages in L-1/L-2/L-3 were high.
- 9:00 Closed all gates at S-151. WCA 3B was high. Stopped releases from WCA 3A into 3B.
Opened all gates at G-211 full. Tailwater was higher than headwater at G-211.
- 10:30 Scheduled night shift pumping at S-4, S-6, S-7, S-8, S-9, S-13, and S-140.
- 10:40 The Corps of Engineers increased releases at S-10 and S-11. WCA 1 and 2A were above their schedules and rising.
- 14:20 Opened gates at S-47B full to facilitate secondary drainage by lowering canal level.

Storm Event of October 17

October 15

- 0:00 S-6, S-8, and S-140 were pumping through the night.
- 1:00 Stages in C-11 were high and rising fast. Called S-9 to start pump as soon as possible.
Took automatic control off at S-25. During high tide and high flow, gate will yo-yo. Opened gates at S-25 full.
- 3:00 S-9 started pumping.
- 6:00 S-25 returned to automatic control.
- 9:40 Called S-13 to pump. Canal stage was high.
Took off computer control at S-25B, S-26, S-27, and S-29. Opened all gates to 8 feet to maximize flood releases. Number 4 gate at S-29 could not be opened by telemetry. Requested field person to open.
Closed all gates at S-5AE. C-51 western end was high. C-51 did not have capacity to receive water from L-8.
- 10:00 The District weather report stated, "Moderate to heavy rains south through the 16th."
- 10:30 S-13 started to pump.
- 11:00 Scheduled night shift pumping at S-4, S-5A, S-6, S-7, S-8, S-9, S-13, S-127, S-133, S-135, and S-140. Pumping at S-129 and S-131 was secured at 16:00.
Secured pumping at S-331. Tailwater was too high.
- 11:45 Opened gate at S-173.

October 16

- 5:00 Stage at Lake Ida was rising. Heavy rainfall occurred in the area. Lowered computer operating levels at S-40 and S-41 to increase releases.
- 7:00 S-28 gate 1 could not be opened by computer. Requested field person to open.
- 8:00 Started pumping at S-129 and S-131.
Requested all pump stations to operate at their maximum capacity.
The District weather report stated, "Moderate to heavy rains south today."
- 8:00 Increased releases from L-8 into L-12 through S-5AW to be pumped by S-5A into WCA 1. S-5A had excess pumping capacity.
- 9:30 Lowered computer operating level at S-36 to increase releases.
Increased regulatory releases from Lake Kissimmee through S-65.
The Corps of Engineers began to make releases from WCA 1 into WCA 2A through S-10.
Stopped regulatory releases from WCA 2A into C-14 through S-38. C-14 was high.

October 16 , continued

- 10:00 Lake Worth Drainage District reported their structure operating status.
- 13:30 Scheduled night shift pumping at S-4, S-5A, S-6, S-7, S-8, S-9, S-13, S-127, S-135, and S-140.
Increased regulatory releases from Lake Tohopekaliga through S-61.
Lowered computer control operating level at G-56 to increase releases.
- 14:00 The District weather report stated, "Rains becoming heavy east overnight."
- 14:30 Lake Worth Drainage District reported that high releases were discharging into C-15 and C-16.
Lowered computer control operating levels at S-37A, S-40, and S-41 to increase releases.
- 15:00 Stopped regulatory releases from WCA 3A into the North New River through S-34 and S-142.
Stage in the North New River was high.
- 16:40 Started pumping at S-2 and S-3. Canal stages rose to 13 feet.
- 19:10 Increased regulatory releases from Lake Istokpoga through S-68.
- 21:00 Notified Belle Glade Water Plant of pumping at S-2 and S-3. The plant may need to adjust their treatment of water from Lake Okeechobee.

October 17

- 2:30 Heavy rainfall occurred in the West Palm Beach area. Canals in the area rose.
Lake Worth Drainage District opened all their structures to maximum.
- 3:00 West end of C-51 was high. Increased releases from C-51 through S-155 to the tide.
- 3:45 Increased releases from C-15 and C-16 to the tide. Canal stages were high.

(October 17, continued)

- 4:00 Requested Lake Worth Drainage District to divert inflows of C-15 and C-16 to Hillsboro canal. Hillsboro canal still had excess capacity.
- 4:15 Gave instructions that when weeds at S-5A were removed, operate S-5A at full capacity. Opened S-5AW to divert water from L-8 to L-12 to be pumped out by S-5A.
- 4:30 Increased releases to maximum from C-15, C-16, and C-51 through S-40, S-41, and S-155 .
- 5:00 Increased releases to maximum gradually from C-18 through S-46 into the tide.
- 5:45 City of WPB requested to make additional water releases into C-51. Asked the city to hold off. C-51 was too high.
- 5:50 ACME reported that they were pumping and road was flooding in their area.
- 6:00 Opened S-5AE to release water from C-51 into L-12 to be pumped out by S-5A.
- 6:30 Opened G-92 to allow releases from west branch of the Loxahatchee River into C-18 to be released to the tide.
- 8:00 Closed gates at S-235. Needed to lower C-20 to facilitate drainage of S-169 basin. The District weather report stated, "Heavy to excessive rains to 5" are likely east."
- 8:40 Opened gates at S-97 to its maximum allowable according to design.
- 9:00 Took off computer control at S-169 and locked gate full open.
- 9:30 Increased regulatory releases from Lake Kissimmee. The Corps of Engineers increased releases from WCA 1 into WCA 2A through S-10A, S-10C and S-10D to maximum.
- 10:30 Opened gates at S-41 to maximum.
- 11:20 L-10/L-12 rose. S-5A did not have excess capacity. Stopped diverting water from C-51 and L-8 into L-12 by closing gates at S-5AE and S-5AW.
- 11:25 Increased pumping at S-2 to three pumps.
- 12:45 Opened gates at S-149 full.
- 13:20 C-23 continued to rise. Opened S-97 to 4.5 feet which was above its design limitation.
- 13:50 Scheduled night shift pumping at S-2, S-3, S-4, S-5A, S-6, S-7, S-8, S-9 S-13, S-127, S-129, S-131, S-133, S-135, and S-140. Operated all four pumps at S-2 according to operational guidelines. The District weather report stated, "Excessive rains to 12" northeast."
- 14:30 Took computer control off at S-49 and opened gates to 8 feet. Took computer control off at S-99 and opened gates to 6 feet.

(October 17, continued)

- 16:15 Removed all boards at G-78 and G-79 to divert water from C-23 to C-24. C-23 rose to danger level. C-24 had excess capacity.
- 1800 The District weather report stated, "excessive rains to 20" northeast by midnight."
- 18:30 C-23 continued to rise. Opened gates at S-97 to 5 feet.
- 18:40 Lake Istokpoga was near its schedule. Increased regulatory releases through S-68. Adjust downstream structures accordingly.
- 19:50 Stage at S-18C was high. Notified Homestead F.S. of preparation to open S-197 tomorrow morning.
- 20:30 Okeechobee F.S. started to cut bypass channel at G-78 to divert water from C-23 to C-24.
- 22:00 Canal stages continued to rise. Opened gates at S-49 and S-99 to their maximum due to emergency condition.

October 18

- 00:20 Started to cut bypass channel at G-79 to divert water from C-23 to C-24.
- 2:00 Gave message to increase number of opened gates at S-197 from 3 to 7 in the morning. Gave message to latch top and bottom gate together at S-153 in the morning. L-65 was high. The latched gate has larger discharge capacity.
- 3:25 Okeechobee F.S. completed cut of bypass channel at G-79 to divert water from C-23 to C-24.
- 8:00 Opened gates at S-5AS to release water from L-8 into WCA 1. The District weather report stated, "Moderate rains north and interior south."
- 9:00 Increased regulatory releases from Lake Kissimmee.
- 11:20 Scheduled night shift pumping at S-2, S-3, S-4, S-5A S-6, S-7, S-8, S-9, S-13, S-127, S-129, S-131, S-133, S-135, and S-140.
- 10:55 The Corps of Engineers opened Culvert 16 to release water from the EAA into Lake Okeechobee. Because the lake was over 18 feet, COE monitored the conditions to prevent water from the lake flowing back into the land.
- 14:30 Closed gates at S-343A, S-343B, and S-344 to stop release water from WCA 3A into Big Cypress National Preserve.
- 15:30 Adjusted limit switches at S-49 and S-99 to increase gate opening.
- 18:15 Increased releases from L-8 into WCA 1 through S-5AS.
- 21:00 Returned to computer control at S-40 to prevent stages dropping too low.
- 23:00 Returned to computer control at S-41 to prevent stages dropping too low.

October 19

- 8:00 The District weather report stated, "Rains focusing north today, increasing north through east tomorrow."
- 8:40 Closed gates at S-76. L-8 was too high between S-76 and Lake Okeechobee.
- 8:50 Lake Worth Drainage District reduced releases in the southern part of Palm Beach County.
- 11:20 Lake Worth Drainage District reduced releases into C-51.
- 13:20 Returned to computer control at S-155 to prevent stages dropping too low.
Increased releases from L-8 into WCA 1. L-8 was very high.
Scheduled night shift pumping at S-2, S-3, S-4, S-5A S-6, S-7, S-8, S-9, S-13, S-127, S-129, S-131, S-133, S-135, and S-140.
- 15:30 The Corps of Engineers opened Culvert 11, 14, and 16 to release water from the EAA into Lake Okeechobee. Due to the high lake stage, COE monitored conditions closely.

