

STATE OF FLORIDA
DEPARTMENT OF NATURAL RESOURCES
Harmon Shields, Executive Director

DIVISION OF RESOURCE MANAGEMENT
Charles M. Sanders, Director

BUREAU OF GEOLOGY
Charles W. Hendry, Jr., Chief

REPORT OF INVESTIGATIONS NO. 79

**SUMMARY OF HYDROLOGIC CONDITIONS AND EFFECTS OF
WALT DISNEY WORLD DEVELOPMENT IN THE REEDY
CREEK IMPROVEMENT DISTRICT, 1966-73**

By
A.L. Putnam

Prepared by
UNITED STATES GEOLOGICAL SURVEY
in cooperation with the
BUREAU OF GEOLOGY
FLORIDA DEPARTMENT OF NATURAL RESOURCES
and the
REEDY CREEK IMPROVEMENT DISTRICT

Tallahassee, Florida

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OF
NATURAL RESOURCES**

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LETTER OF TRANSMITTAL



The Honorable Reubin O'D. Askew, Chairman
Department of Natural Resources
Tallahassee, Florida

Dear Governor Askew:

The Bureau of Geology, Division of Resource Management, Department of Natural Resources, is publishing as its Report of Investigations No. 79, the "Summary of Hydrologic Conditions and Effects of Walt Disney World Development in the Reedy Creek Improvement District, 1966-73". This report is the result of a cooperative program of water resource investigations between the U.S. Geological Survey and the Reedy Creek Improvement District, initiated in 1966. The purpose of the program was to monitor the quantity and quality of surface and ground water in and adjacent to the Reedy Creek Improvement District as an aid in the continuing management of the water resources of this area and in evaluating the effects of urban activities on the hydrologic system. This first report describes the hydrologic setting and documents the interpretations of urban related changes in the area's hydrology that can be made from existing data.

We believe this report, along with subsequent reports, will provide the data base upon which proper water management programs can be developed to protect the water resources of this most important area of Florida.

Sincerely,

C. W. Hendry, Jr., *Chief*

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Tallahassee
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CONVERSION TABLE

ENGLISH	to	METRIC
1 acre	=	0.4047 hectare
1 cubic foot per second	=	.0283 cubic metre per second
1 foot	=	.3048 metre
1 gallon	=	3.785 litres
1 inch	=	25.4 millimetres
1 mile	=	1.609 kilometres
1 million gallons per day	=	.0438 cubic metre per second
1 square mile	=	2.59 square kilometres
Temperature, degrees Fahrenheit	=	5/9 (F°-32) degrees Celsius

SUMMARY OF HYDROLOGIC CONDITIONS AND EFFECTS OF WALT DISNEY WORLD DEVELOPMENT IN THE REEDY CREEK IMPROVEMENT DISTRICT, 1966-73

By Arthur L. Putnam

ABSTRACT

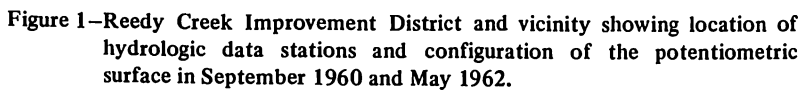
The Reedy Creek Improvement District (hereinafter called the RCID) is an area of about 43 square miles (111 square kilometres) in southwest Orange and northwest Osceola Counties. Before development of Walt Disney World began (mid-1967), all of this tract of land was scrubby flatlands and swamp. Walt Disney World facilities now (1974) occupy slightly less than 10 percent of the area. Hydrologic data are available for most of the area for the 6-year period July 1967-June 1973, with some records starting before July 1967.

The potentiometric surface of the Floridan aquifer near Bay Lake has declined 8 feet (2 metres) on the average. Seventy-five percent of the decline is attributed to water use in the RCID; the remaining decline is attributed to deficient rainfall since the records began in March 1966. The discharge of streams in the RCID has apparently increased. However, the hydrologic conditions were changing locally as the development of the area progressed. Because of this change, the magnitude and seasonal distribution of any eventual change in streamflow cannot be accurately appraised until additional data are obtained after the development has stabilized. Some changes in water quality have occurred, but none can be attributed to urbanization.

INTRODUCTION

The RCID (Reedy Creek Improvement District) is an area of about 43 square miles (111 square kilometres) in southwestern Orange and northwestern Osceola Counties (fig. 1). Construction of Walt Disney World facilities in the RCID and of commercial facilities on adjacent land is rapidly changing uninhabited swamplands and scrubby flatlands to urbanized recreational land. Increased demands on the water resources in these parts of the two counties are commensurate with this growth, particularly since October 1971 when Walt Disney World opened.

Many of the activities in the RCID are water-related. Canals, levees, water-control structures, and culverts provide surface drainage. The constant-head structures in the canals and streams automatically maintain a predetermined upstream water level, to keep lowlands from being inundated during storms and to curtail excessive drainage of the shallow aquifer during dry periods. Bay Lake, a natural shallow depression containing an island, was drained, cleared of organic bottom deposits, diked opposite several swamps, and refilled with water from the Floridan aquifer. A lagoon was excavated,



connected to Bay Lake, and several water-course attractions were built in the Theme Park to complete the lake complex. The aggregate area of Bay Lake, the lagoon, and the Theme Park water course is about 650 acres (263 hectares).

The level and clarity of water in the Theme Park water courses are maintained by water pumped into them from wells tapping the Floridan aquifer and by diverting surface runoff away from them and substituting water from the Theme Park water course to maintain the lake level. Water used to irrigate a golf course, lawns and other landscaped areas essential to maintain the aesthetic value of 2,500 acres (1,012 hectares) of modern recreational area, is also obtained from the Floridan aquifer. The Floridan aquifer also supplies water for the daily needs of employees, visitors and residents.

PURPOSE AND SCOPE

In 1966, the U.S. Geological Survey began a cooperative program of water-resource investigations with the RCID. The purpose of the program is to monitor the quantity and quality of surface and ground water in and adjacent to the RCID as an aid in the continuing management of the RCID's water resources, and in evaluating the effects of urban activities on the hydrologic system.

This report summarizes hydrologic conditions in the RCID to July 1973 and presents the hydrologic data from the monitoring sites in tabular and graphic form. The basic data presented are largely those for July 1972-June 1973, but hydrologic conditions are summarized for 1966 through June 1973. The hydrologic setting is described, and interpretations of urban-related changes in the area's hydrology that can be made from existing data are presented.

The report was prepared under the direct supervision of Joel O. Kimrey, Subdistrict Chief, Winter Park, and under the general supervision of C. S. Conover, District Chief, Tallahassee, both of the Water Resources Division, U. S. Geological Survey.

HYDROLOGIC SETTING

The RCID is in the Osceola Plain between the Lake Wales Ridge to the west and the Mount Dora Ridge to the east, as designated by Puri and Vernon (1964, fig. 6). The topography within the RCID consists of relatively flat, swampy terrain interspersed with higher areas or "islands" of greater topographic relief. Altitudes range from 65 to 105 feet (20 to 32 metres) above mean sea level but are mostly between 75 and 95 feet (23 and 29 metres); the islands commonly are about 100 feet (30 metres). Natural gradients are too slight to permit rapid runoff, even after heavy rainfall. Consequently, large swamps and marshlands abound in which stream channels are not well defined.

The climate is humid subtropical, characterized by long warm summers,

short mild winters, and high humidity throughout the year. Rainfall averages about 50 inches (1270 millimetres) per year. The rainfall pattern is such that the year can be divided into a rainy season and a long dry season. On the average, more than half of the rain falls during June through September. The mean annual temperature is about 72°F (22°C); the summer mean is about 82°F (28°C); and the winter mean is about 61°F (16°C).

Although killing frosts do occur and are severe from the standpoint of agriculture, the mild temperature and abundance of rainfall support lush, subtropical growth in several different environments. Within the RCID, there are two predominant environments and two lesser environments. The two predominant environments, swamp forest and prairies, cover the majority of the RCID and are interspersed with the two lesser environments, cypress heads and pine islands.

Swamp forest with a dense understory and comprised of such species as swamp maple, water oak, live oak, bay and cypress, covers the largest part of the RCID. Topographic relief within the forest is such that some low areas are inundated during most of the year, whereas other higher areas are seldom inundated.

Prairies or savannahs cover most of the RCID not occupied by swamp forest. The prairies support mixed grasses and palmetto, with few trees. Some may be inundated for months, whereas others may be seldom inundated, depending on their altitude, which may be only a few inches or as much as several feet above the surrounding forest. Mixed grasses are characteristic of the lower prairies, whereas palmetto is characteristic of the higher prairies.

Circular or elliptical cypress heads, dome-shaped in profile, are scattered throughout the RCID. Because these heads remain inundated much of the year, few trees other than cypress grow in them. Pines predominate where localized islands of low relief provide sufficient drainage, enough soil depth, and protection from inundation.

DRAINAGE

The RCID is in the Reedy Creek drainage basin which is tributary to the Kissimmee River (beyond map area) in the south. Major tributaries to Reedy Creek are Whittenhorse, Davenport, and Bonnet Creeks. Cypress Creek is tributary to Bonnet Creek. (See fig. 1 for locations).

Low undulating hills and flat, wide swampy valleys are characteristic features of the Reedy Creek basin. The various lakes and swamps retain large quantities of water, overflowing across wide, shallow marshes during the normally wet summer months and other periods of heavy rainfall. The flatness of the swampy valleys, the mantle of relatively permeable sands, the underlying soluble rock, and the lush growth of vegetation play important roles in inhibiting surface flow.

The subsurface drainage of the RCID is generally poor. Heavy rainfall recharges the surficial sands to full capacity and causes water to stand over a large part of the RCID. Owing to the almost complete lack of well-defined tributary stream channels in these swamps and marshlands, surplus water remains in the basin for long periods before finding its way to the creeks that drain to the south. In the ridges that form the eastern and western boundaries of the basin, ground-water levels fluctuate through a greater range than in the RCID. This wider range of fluctuation indicates better subsurface drainage in the water-table aquifer outside the RCID than in the RCID.

Lichtler, Anderson and Joyner (1968, p. 32) estimated that about 70 percent of the rain that falls on Orange County returns to the atmosphere by evaporation and transpiration. In the RCID these losses to the atmosphere may be greater than 70 percent because of the high proportion of land area that is perennially wet. Thus, as Langbein (Parker, Ferguson, Love and others 1955, p. 513) states, "The atmosphere is by far the most effective agent of land drainage, disposing of several times as much as the waterway systems."

Since 1967, the drainage within the RCID has been altered. Canals, dikes, and automatic flow-control structures now replace the previous ill-defined swampy stream valleys. This somewhat reduces detention and shortens the time within which seasonal surface storage is high. However, the drainage is still characterized by its relatively slow runoff rate and high proportion of surface storage. The evaporation from surface-water bodies in the RCID is nearly equal to the average annual rainfall (Visser and Hughes, 1969). Thus, evaporation and transpiration are still the most effective agents of land drainage.

CHEMICAL QUALITY OF WATER

The chemical characteristics of water are determined by both natural processes and human activities. Most of the dissolved solids in water are derived from earth materials as the water passes over and through them. Much of the organic content is derived from decayed vegetation on the surface. Man adds both mineral and organic constituents, primarily as waste products dissipated into the atmosphere and hydrosphere. Carbon dioxide, dissolved from the atmosphere or decaying organic material on the earth's surface, reacts with the water to form a weak carbonic acid. The acid increases the ability of water to dissolve inorganic materials, especially the limestones that underlie the RCID.

The longer that water is in contact with soluble materials, the more highly mineralized it becomes. Even though the movement of surface water in the RCID is slow, it is far more rapid than that of ground water. Consequently, the time of contact with soils and rocks is much shorter for surface water than for ground water. Hence, surface water generally contains less than 90 mg/l (milligrams per litre) of dissolved solids and ground water generally more than 90 mg/l. Surface water is usually higher in color (generally greater than 100

color units) than ground water (generally less than 30 color units) because surface water dissolves some of the living and decaying organic materials that it contacts, while the soil tends to remove color from any surface water percolating through it to recharge the aquifer.

GEOHYDROLOGY

The uppermost ground-water aquifer in the RCID is the nonartesian or water-table aquifer. This aquifer consists of fine-to coarse-grained quartz sands, with interbedded clays whose extent and distribution are not well defined. It extends from the land surface to a depth of about 50 feet (15 metres). Water from this aquifer is generally soft, low in mineral content, slightly corrosive, and often high in color and iron. Water in the nonartesian aquifer is more highly mineralized in areas where the artesian pressure (potentiometric) surface of a deeper aquifer is above the water table and the confining layer is permeable enough so that water can move upward from the deeper aquifer to the nonartesian aquifer. Most recharge to the water-table aquifer is by direct downward infiltration of rainfall or of water stored on the land surface. The aquifer will yield small quantities of water to wells.

Underlying the nonartesian aquifer is the Hawthorn Formation of Miocene age, a sequence of limestone and marl, fine-to coarse-grained sand, and very fine micaceous clayey sand with some fine-grained black phosphatic material. In the RCID, this formation is generally 40 to 90 feet (12 to 27 metres) thick and generally acts as a confining bed for the underlying Floridan aquifer. The permeability of this formation varies throughout the RCID, providing varying degrees of hydraulic contact between the Floridan aquifer and the shallower aquifers.

Artesian conditions occur where the water in an aquifer is confined, so that water levels in the aquifer are not free to rise and fall with changes in pressure in the aquifer. The water level in a tightly cased well that penetrates an artesian aquifer will stand above the point at which the aquifer was first penetrated. The level at which the water stands in the well is a point on the potentiometric surface of the aquifer tapped by that well.

Secondary artesian aquifers (consisting primarily of thin limestone lenses or sand and shell zones) occur above or within the Hawthorn Formation. These secondary artesian aquifers are confined by overlying less permeable material and may locally yield moderate to large quantities of water to wells. The quality of water in the secondary artesian aquifer is controlled by the relation of the potentiometric surface of the Floridan aquifer to the water table. Where the potentiometric surface of the Floridan aquifer is below the water table, some downward leakage or recharge occurs and the quality of the water in the secondary artesian aquifer will more closely resemble that of water in the nonartesian aquifer than that of water in the Floridan aquifer. Where the

potentiometric surface of the Floridan aquifer is above the water table, some water from the Floridan aquifer leaks or discharges upward and water in the secondary artesian aquifer tends to be similar to water in the Floridan aquifer.

The principal aquifer in the RCID is the Floridan aquifer, which underlies all of Florida. In general, this aquifer consists of about 2,000 feet (610 metres) of limestone and dolomite or dolomitic limestone of Eocene age. In some parts of the RCID, basal limestones in the Hawthorn Formation are in hydraulic contact with the Eocene limestones and are included in the Floridan aquifer. The aquifer not only stores enormous quantities of water, but it transmits water so efficiently that large diameter wells may yield several thousand gallons of water per minute. Water from this aquifer is a calcium bicarbonate type, low in color, moderately hard to very hard, and relatively high in dissolved-mineral content.

The Floridan aquifer can accept recharge only when the potentiometric surface of the nonartesian or water-table aquifer is higher than the potentiometric surface of the Floridan aquifer. However, the rate at which recharge will occur depends upon the thickness and permeability of the materials (confining beds) that separate the nonartesian and the Floridan aquifer and the hydraulic gradient through these materials. Where the potentiometric surface of the Floridan aquifer is near or above the land surface, there is little or no head difference to induce water to move downward to the Floridan. In addition, upward leakage from the Floridan aquifer may occur in these areas, thus, adding water to the nonartesian aquifer and reducing its ability to capture surface water.

RECHARGE AND DISCHARGE AREAS

The part of the RCID where the potentiometric surface of the Floridan aquifer was above land surface in May 1962 is shown on figure 2. The potentiometric surface for May 1962 was used for portrayal because this was a period of low water conditions that occurred prior to the development of Walt Disney World, and it gives a basis for future comparisons of the extent and distribution of the area for potential discharge from the Floridan aquifer. The extent and distribution of this area varies with the fluctuation of the potentiometric surface, the potential discharge area being more extensive during periods when the potentiometric surface is high than during periods when it is low. The effect of urbanization on the potential discharge and recharge areas can be evaluated in relation to a condition prior to development by comparing a low-water condition after development, with the potentiometric surface for May 1962.

As indicated by figure 2, the potentiometric surface of the Floridan aquifer was above land surface in the broad valleys of Reedy and Bonnet Creeks, which constitute most of the RCID. The area is generally swampy and is one in

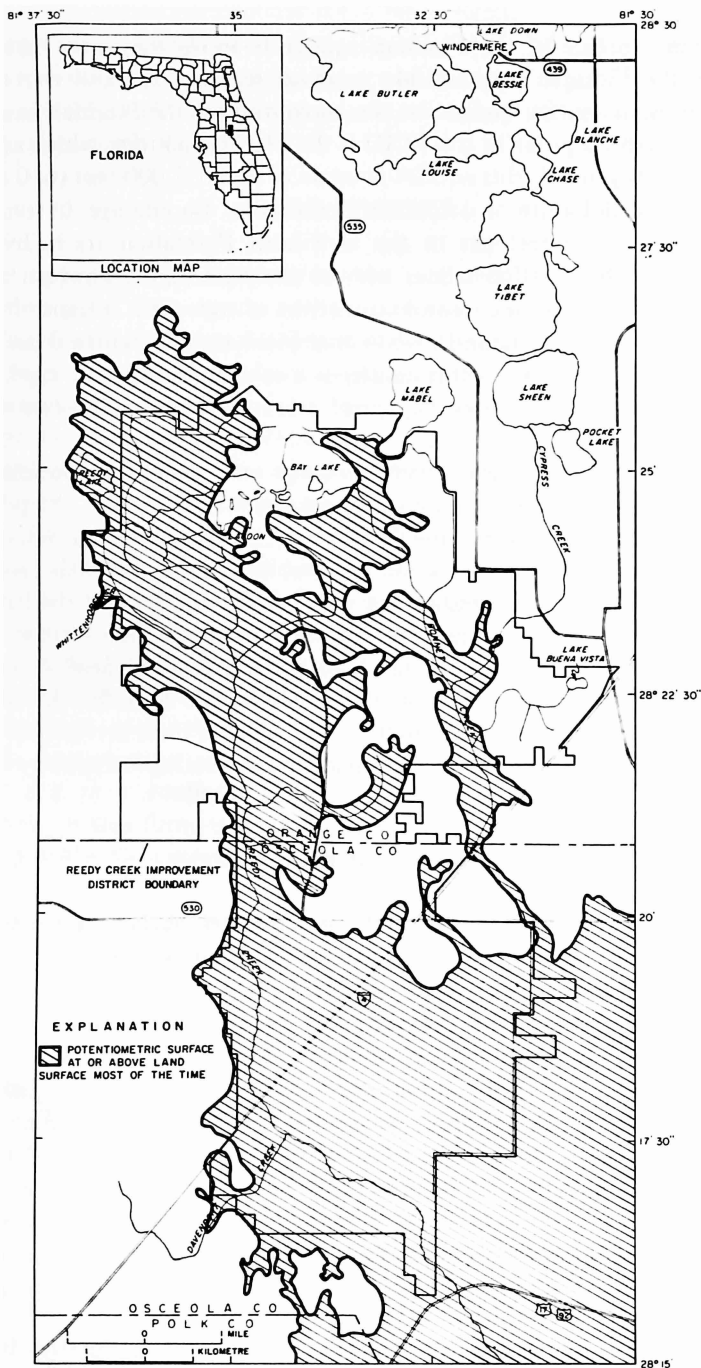


Figure 2—Area of potential artesian flow for the Floridan aquifer, May 1962.

which the base flow of the streams and water from the nonartesian aquifer have chemical characteristics similar to those of water from the Floridan aquifer.

The most favorable recharge areas for the Floridan aquifer are west, north, and east of the RCID, in the Cypress and Whittenhorse Creek basins and in the higher part of Davenport Creek basin. In these areas the potentiometric surface is always well below land surface, and the small amount of surface runoff seems to indicate that recharge, to at least the shallow aquifer, is appreciable.

DEVELOPMENT ACTIVITY

Ground water and surface water in the RCID are so closely associated that any change, whether natural or imposed by man, may affect the entire hydrologic system. Several alterations in the physiography resulting from the development of Walt Disney World affect the water resources of the RCID and merit discussion here.

Construction of buildings, streets, and other impervious surfaces prevents infiltration of rainfall into the ground and causes water to run off rapidly. A system of canals has been constructed to protect the RCID from floods resulting from a 50-year frequency rainfall. This system consists of 44 miles (71 kilometres) of well entrenched canals and 19 miles (31 kilometres) of dikes constructed in low-lying lands to control inflow from parts of the drainage basin lying upstream and outside the RCID. These dikes direct the inflow into the canals where gated structures or spillways control the quantity of flow at points of entrance to the RCID. This drainage system was designed to protect lowlands from inundation during storms and to curtail excessive drainage of the shallow aquifer during dry periods. These facilities have provided adequate surface and subsurface drainage to thus far permit development of approximately 9,800 acres (3,960 hectares).

The modification of the 450-acre (182-hectare) Bay Lake began in December 1968. A dike constructed around the lake prevents inflow of colored swamp water. The lake was drained and kept dry until September 1970 by pumping seepage water out of the depression into Bonnet Creek through a gated spillway at the southeast part of the lake. While the bottom was dry, organic bottom sediments were removed to expose a relatively clean sand bottom. A connecting 175-acre (71-hectare) lagoon was excavated to the southwest of Bay Lake along with several water-course attractions in the Theme Park just north of the lagoon. A gated outlet structure or spillway was installed at the northwest part of the lagoon. From September 1970 to June 1971, the completed lake-lagoon complex was filled with water from wells in the Floridan aquifer. Since June 1971, the complex has been maintained at the design level of 94.5 feet (28.8 metres) by rainfall and water pumped from the Floridan aquifer to maintain the quality of the Theme Park water attractions.

Test boring indicates the absence of a definitive confining unit for the

Floridan aquifer in the Bay Lake-lagoon area; so, water may be interchanged between the aquifer and lake. During the drawdown of Bay Lake and the excavation of the lagoon, about 2 cubic feet per second (0.06 cubic metre per second) of ground-water discharge was observed in a boil that formed on the west side of the lake. The quality of the water from this boil indicated that it comes from the Floridan aquifer. The potential for interchange of water between the lake system and the aquifer is currently (1974) being further investigated.

About 6.3 Mgal/d (million gallons per day) (0.28 cubic metre per second) of water is required in the RCID. About 4.9 Mgal/d (0.18 cubic metre per second) is required for a potable supply. The remaining 2.3 Mgal/d (0.1 cubic metre per second) is used for quality control of the Theme Park water-course attractions. After passing through the water course, this water is used to maintain the quality and level of water of the lake and lagoon.

The location of six Floridan-aquifer wells, and the distribution of pumpage from these wells to provide the above water requirements, affect the potential for loss of water from the lake-lagoon to the aquifer and ultimately affect the amount of water required to maintain the lake-lagoon. Two wells about 0.8 mile (1.3 kilometres) northwest of the north shore of Bay Lake provide about 85 percent of the potable water, and three wells—3.3, 4.4, and 5.1 miles (5.3, 7.1, and 8.2 kilometres) southeast of the north shore of Bay Lake—furnish the remaining 15 percent of the potable water. One well about 0.25 mile (0.40 kilometre) north of the north shore of Bay Lake provides the water for the lake-lagoon and Theme Park water attractions. The distribution of wells is thus such that most of the ground-water withdrawals, and the resulting decline of potentiometric levels, occur near Bay Lake.

Waste water receives partial-tertiary treatment at the sewage treatment plant in the RCID and is then stored in a holding pond until used for irrigation of the tree farm about 4 miles (6 kilometres) southwest of Bay Lake.

HYDROLOGIC-DATA NUMBERING SYSTEM

The observation wells cited in this report are assigned identification numbers based on the latitude and the longitude of the well location. By describing a well site to the nearest second of latitude and longitude, its location is defined to within a one-second quadrangle, which is approximately 100 feet (30.5 metres) square. For example, a well located at 28°25'28" north latitude and 81°34'09" west longitude would be numbered 282528N0813409.1. The .1 at the end of this number is called the sequential number and indicates this well was the first well to be inventoried within the 100-foot square quadrangle. For convenience and rapid recognition, this number has been shortened to the last digit of the degree and the two digits of the minutes for both latitude and longitude. There is, in addition, another sequential number. This sequential

number indicates this was the first well inventoried within a 1-minute quadrangle. The shortened form of the example well then becomes 825-134-1.

For surface-water data, the identification numbers are assigned in ascending order in a downstream direction along the main stream. Gaps are left in the numbers to allow for new stations that may be established; hence, the numbers are not consecutive. The numbers for surface-water stations used in this report are 6-digit identification numbers such as "2663.00". Latitude and longitude for surface-water stations are given as additional identification data.

Water-quality data are assigned identification numbers corresponding to the source of water. For quality data of ground water, the identification number is the same as that described above for wells. Similarly, the identification number for quality data of surface water is the same as described above for surface-water stations.

Weather stations in this report have not been assigned identification numbers. Identity is established by means of a structure or landmark at the point of collection. For example, the weather station at Bay Lake is identified as Bay Lake West Shore Weather Station. Latitude and longitude are given for further location.

Locations of collection sites of data used in this report are shown in figure 1. Table 1 lists all the sites by map reference number shown on figure 1. Table 1 also gives the U. S. Geological Survey site number, name, location, latitude, and longitude, period of record, and type of data collected for each site.

SUMMARY OF HYDROLOGIC CONDITIONS

In the RCID, the distribution of monthly runoff during the year corresponds in a general way to the distribution of rainfall, but both streamflow and rainfall are more variable and intermittent than evaporation (fig. 3). Thus, evaporation affects the RCID's water resources more during a short-record period (less than 10 years) of lower-than-average rainfall than during a long-record period (greater than 20 years) representing average conditions. Keeping this in mind, considerable judgment is required to determine the extent to which short-record hydrologic data represent long-record average conditions. Because the data network for the study area was established in May 1966, the data shown in figure 3 represent trends for a short-record of hydrologic conditions. The data also represent a time when the hydrologic conditions were changing locally as a result of successive stages of development in the RCID. The effects of such development are not readily distinguishable against a background of natural, high variations in hydrologic conditions.

RAINFALL AND TEMPERATURE

Rainfall during January 1967-June 1973 in the RCID was below long-term

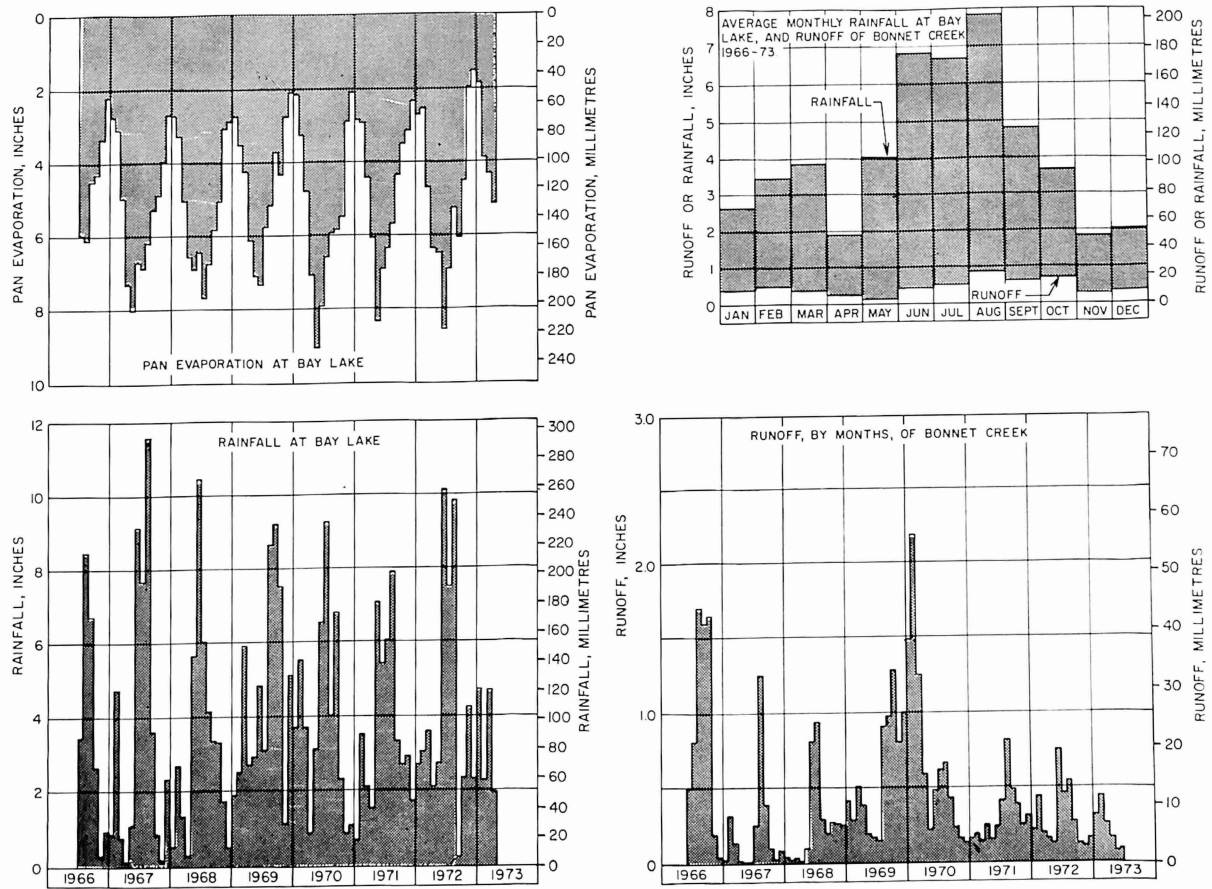


Figure 3—Monthly rainfall and evaporation at Bay Lake and monthly runoff for Bonnet Creek.

Table 1.--List of hydrologic data stations.

Map reference number	U.S. Geological Survey number	Name and location	Latitude and longitude	Period of record	Type of data
1	2640.00	Cypress Creek at Vineland, Florida	28°23'25" 81°31'11"	1945 to current year	Streamflow
2	2662.00	Whittenhorse Creek nr. Vineland, Florida	28°23'05" 81°37'00"	1966 to current year	Streamflow
3	2663.00	Reedy Creek nr. Vineland, Florida	28°19'57" 81°34'48"	1966 to current year	Streamflow
4	2641.00	Bonnet Creek nr. Vineland, Florida	28°19'58" 81°31'20"	1966 to current year	Streamflow
5	2664.80	Davenport Creek nr. Loughman, Florida	28°16'15" 81°35'28"	1969 to current year	Streamflow
6	2665.00	Reedy Creek nr. Loughman, Florida	28°15'48" 81°32'12"	1939 - 59 1968 to current year	Streamflow
7	2662.91	Lateral 405 above S-405A nr. Doctor Phillips, Fla.	28°25'37" 81°36'19"		Water quality
8	2662.92	Lateral 405 below S-405A nr. Doctor Phillips, Fla.	28°25'37" 81°36'19"	1969 - 72	Water quality
9	2638.64	Lake Mabel nr. Doctor Phillips, Fla.	28°25'11" 81°32'58"	1969, 71	Water quality
10	2638.50	Bay Lake nr. Vineland, Florida	28°25'28" 81°34'09"	1966 - 71	Water quality

Table 1.--List of hydrologic data stations (continued).

Map reference number	U.S. Geological Survey number	Name and location	Latitude and longitude	Period of record	Type of data
11	2638.52	Bay Lake Outlet below S-105A nr. Vineland, Fla.	28°24'45" 81°33'30"	1968 to current year	Water quality
12	2638.69	South Lake Outlet above S-15 nr. Vineland, Fla.	28°24'45" 81°32'17"	1968 to current year	Water quality
13	2638.70	South Lake Outlet below S-15 nr. Vineland, Fla.	28°29'26" 81°32'17"	1970, 71	Water quality
14	2660.25	Reedy Creek above S-46 nr. Vineland, Fla.	28°24'14" 81°36'42"	1970 - 72	Water quality
15	2660.26	Reedy Creek below S-46 nr. Vineland, Fla.	28°24'14" 81°36'42"	1968 - 71	Water quality
16	2662.94	Lateral 405 below S-405 nr. Vineland, Fla.		1971 - 72	Water quality
17	2640.00	Cypress Creek at Vineland, Fla.	28°23'25" 81°31'11"	1963 to current year	Water quality
18	2662.00	Whittenhorse Creek nr. Vineland, Fla.	28°23'05" 81°37'00"	1966 to current year	Water quality
19		Lake Buena Vista			Water quality
20	2662.95	Lateral 410 at S-410		1971	Water quality

Table 1.--List of hydrologic data stations (continued).

Map reference number	U.S. Geological Survey number	Name and location	Latitude and longitude	Period of record	Type of data
21	2662.96	Lateral 410 below S-410		1971	Water quality
22	2663.00	Reedy Creek near Vineland, Florida	28°19'57" 81°34'48"	1962 to current year	Water quality
23	2641.00	Bonnet Creek near Vineland, Florida	28°19'58" 81°31'20"	1963 to current year	Water quality
24	2664.80	Davenport Creek near Loughman, Florida	28°16'15" 81°35'28"	1965 to current year	Water quality
25	2665.00	Reedy Creek near Loughman, Florida	28°15'48" 81°32'12"	1959, 1965, 1968 to current year	Water quality
26	825-134-4	Floridan aquifer well at RCID Tree Farm	28°25'50" 81°34'46"	1967 - 68	Water quality
27	825-135-3	Shallow well at RCID Tree Farm	28°25'32" 81°35'04"	1968	Water quality
28	825-134-12	Floridan aquifer RCID Well No. 8	28°25'29" 81°34'30"	1970	Water quality
29	825-134-2	Floridan aquifer well at Bay Lake	28°25'28" 81°34'09"	1966 to current year	Water level and quality
30	825-134-3	Shallow well at Bay Lake	28°25'28" 81°34'09"	1966 to current year	Water level and quality

Table 1.--List of hydrologic data stations (continued).

Map reference number	U.S. Geological Survey number	Name and location	Latitude and longitude	Period of record	Type of data
31	825-134-5	Shallow well, Reedy Creek Improvement Dist.	28°25'16" 81°34'25"	1968	Water quality
32	823-131-7	Floridan aquifer well RCID Well No. 5	28°23'48" 81°31'31"	1970 - 72	Water quality
33	822-135-1	Shallow well at RCID Sewage Treatment Plant	28°22'10" 81°35'26"	1971	Water level and quality
34	815-134-2	Shallow well near Loughman, Florida	28°15'32" 81°34'50"		Water level and quality
35	-	Bay Lake North Shore Weather Station	28°25'28" 81°34'09"	1966 - 70	Rainfall, evaporation, wind speed, relative humidity, temperature
36	-	Bay Lake West Shore Weather Station	28°25'13" 81°34'25"	1969 to current year	Rainfall, evaporation, wind speed, relative humidity, temperature
37	-	S-405 Rainfall	-	1970 to current year	Rainfall
38	-	RCID Gate No. 1 Rainfall	28°33'54" 81°31'45"	1969 - 72	Rainfall
39	-	RCID New Tree Farm Rainfall	28°22'10" 81°35'26"	1972 to current year	Rainfall
40	-	RCID Gate No. 3 Rainfall	28°19'59" 81°34'12"	1969 to current year	Rainfall

average. The annual rainfall at Bay Lake, 1967-72, averaged 47.15 inches (1200 millimetres), or 5.53 inches (140 millimetres) less than the 60-year average measured by the National Weather Service at Windermere, Florida, about 5.6 miles (9.0 kilometres) north of Bay Lake. The deficit at Bay Lake was maximum in 1968, 12.47 inches (317 millimetres) below the 60-year average at Windermere. In only one year, 1969, was the rainfall at Bay Lake above the 60-year average at Windermere, and then only by 2.70 inches (68 millimetres). The total rainfall at Bay Lake for 1967-72 was 282.88 inches (7185 millimetres), while the total at Windermere was 299.17 inches (7599 millimetres). While the 6-year average at Windermere was 49.70 inches (1262 millimetres) or 2.98 (76 millimetres) below the 60-year average.

The average temperature for the RCID (measured at Bay Lake), 1967-72, was 71.1°F (21.7°C). This was 1.3°F (0.7°C) below the long-term average for Kissimmee No. 2 National Weather Service Station, about 13 miles (21 kilometres) southeast of Bay Lake. At Bay Lake, the maximum average-monthly temperature was 84°F (28.9°C), during September of 1971 and 1972. The average-monthly temperature was least, 54°F (12.2°C) in February 1968. The maximum temperature was 101°F (38.3°C) on July 28, 1968, and the minimum temperature was 24°F (-4.4°C) on January 10, 1970.

Weather observations made in the District from July 1972 through June 1973 are presented in table 2.

GROUND WATER

NONARTESIAN AQUIFER

The 7-year trend of ground-water levels in the RCID area is shown in figure 4 by graphs of the month-end water level. The water level in Bay Lake shallow well, 825-134-3 — a well tapping the nonartesian aquifer — declined about 3 feet (0.9 metre) between 1966 and about mid-1970. Shallow wells, 822-138-2 about 6 miles (10 kilometres) southwest of Bay Lake and 815-134-2 about 12 miles (19 kilometres) south of Bay Lake, show a pattern in water-level fluctuation between 1966 and mid-1970 similar to that of Bay Lake shallow well. However, water levels in wells 822-138-2 and 815-134-2 recovered in late 1969 and early 1970 to levels slightly higher than they were in 1966, whereas in late 1969 the water level in Bay Lake shallow well, 825-134-3, remained about 1.5 feet (0.4 metre) below its 1966 level. This apparent discrepancy in water-level fluctuation for wells 822-138-2 and 815-134-2, as compared to Bay Lake shallow well, is explained as follows: water levels in wells 822-138-2 and 815-134-2 are not known to be affected by pumpage or drainage; so, their fluctuations during 1969-70 related directly to rainfall. However, water levels in Bay Lake shallow well were kept lower from December 1968 to May 1971 by drainage and reclamation of Bay Lake. Since May 1971, the water level in Bay

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Table 2.--Reedy Creek Improvement District weather observations for July 1972 through June 1973.

Bay Lake (West Shore)										Tree Farm	Gate No 3	S-405
July Day	Time of Obs.	Air Temperature		Relative Humidity		Precipitation (inches)	24-hour wind movement (miles)	Pan evaporation (inches)	Max. wind speed (mph)	Precipitation (inches)	Precipitation (inches)	Precipitation (inches)
		Max. °F	Min. °F	Max. %	Min. %							
1	1500	-	-	-	-	-	6.3	+ .08	22NW	-	-	-
2	1140	-	-	-	-	-	6.7	.51	10SW	-	-	-
3	0930	98	72	100	35	.12	1.4	.18	32W	.07	.09	.13
4	0900	94	70	100	41	0	5.2	.09	10SE	0	0	0
5	0950	92	71	100	56	.26	0	.24	18SE	0	.10	0
6	1545	92	69	100	40	1.30	4.7	.22	36W	1.09	1.25	2.11
7	0930	90	68	100	50	.08	4.4	.26	18NE	1.73	0	.56
8	0950	88	70	100	62	0	6.6	.26	22NE	0	-	0
9	0950	89	70	100	54	.22	16.5	.23	25NE	0	.12*	.15
10	1025	86	70	100	82	.12	15.0	.20	17NE	.13	0	0
11	0900	90	70	100	54	0	8.9	.21	10W	0	0	0
12	1245	93	72	100	45	0	3.9	.10	10NW	0	0	0
13	0916	93	70	100	52	3.13	0.5	.24	28NE	1.97	1.51	3.47
14	0910	88	70	100	73	0	1.6	.77	16E	0	0	0
15	0900	92	72	100	53	.05	0	.16	24NE	0	.28	.23
16	0930	88	72	100	74	0	3.5	.11	21E	0	0	0
17	0915	88	74	100	82	.85	21.5	.32	18E	.55	.44	.90
18	0850	86	73	100	70	.20	6.3	.36	20NE	.10	.05	.43
19	1045	85	72	100	91	.05	13.9	+ .12	22E	.13	.08	.05
20	0922	87	72	100	72	.08	20.0	.44	25E	0	0	0
21	0930	88	72	100	77	.04	33.7	.23	21E	.14	0	.17
22	1000	90	72	100	58	0	26.5	.26	12E	0	0	0
23	0835	91	70	100	51	0	17.4	.34	17NE	.13	0	.09
24	1330	93	71	100	44	0	8.7	.24	10E	0	0	0
25	1015	92	73	100	52	0	1.5	.20	14W	0	0	0
26	0911	90	72	100	56	0	2.8	.22	20W	0	0	0
27	0850	96	73	100	50	0	4.5	.17	7S	0	0	0
28	0930	96	72	100	42	0	1.6	.20	8S	0	0	0
29	1205	94	73	100	43	0	2.0	.19	10SE	0	0	0
30	1730	92	72	100	52	0	3.2	.32	16E	0	0	0
31	0930	90	70	100	62	1.02	2.6	+ .12	24E	.90	.57	.75
Total		2631	2067	2900	1673	7.52	251.4	6.95		6.94	4.49	9.04
Aver.		90.7	71.3	100	57.7		8.1	0.22				

REMARKS *-estimate

Data in the "wind movement" and "pan evaporation" columns are for the 24 hours ending at the time of the observation. All other data are for the 24 hours ending at midnight.

Provided in cooperation with the Reedy Creek Improvement District.

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Table 2.--Reedy Creek Improvement District weather observations for July 1972 through June 1973--continued.

August Day	Time of Obs.	Bay Lake (West Shore)								Tree Farm	Gate No. 3	S-405
		Air Temperature		Relative Humidity		Precipitation (inches)	24-hour wind movement (miles)	Pan evapora- tion (inches)	Max. wind speed (mph)	Precipitation (inches)	Precipitation (inches)	Precipitation (inches)
		Max. °F	Min. °F	Max. %	Min. %							
1	0950	92	72	100	53	0	7.6	+ .23	26E	0	0	.02
2	1735	94	74	100	32	0	6.8	.34	6E	0	0	0
3	0945	94	70	100	35	0	2.5	.36	10NW	0	0	0
4	0910	97	73	100	41	0	6.1	+ .01	17NE	0	0	0
5	0815	96	74	100	48	0	4.7	.26	14E	.55	.95	.57
6	0900	83	75	100	63	.52	5.8	.06	23W	0	0	.04
7	0915	93	74	100	82	.11	0	.22	20W	0	.05	.06
8	1745	92	73	100	88	.26	11.0	.42	29E	.26	.27	.30
9	0830	93	70	100	92	3.75	4.9	.12	26NE	1.76	.60	1.93
10	1300	93	71	100	60	0	1.8	.20*	14E	0	0	0
11	1040	96	75	100	100	0	0	.17	20E	0	0	0
12	1000	92	72	100	100	0	0.3	+ .26	19W	0	0	0
13	0830	92	71	100	100	0	8.1	.14	11N	0	0	0
14	1337	94	73	100	88	.07	10.4	.44	22E	0	.55	0
15	1220	94	74	100	91	0	7.0	.25*	28E	.70	.40	.16
16	0835	92	73	100	93	.20	3.3	.32	12E*	.75	.77	.17
17	1320	92	72	100	90	0	5.9	.15	27E	.55	0	.46
18	0945	92	72	100	58	0	1.9	.15	16E	0	0	0
19	0845	91	71	100	80	1.40	0	+ .01	12NW	2.15	.42	1.88
20	-	94	70	100	76	0	0.1	.24	24NW	0	0	0
21	0935	89	71	100	52	1.45	0.1	.16	19N	-	.52	1.45
22	0840	88	70	100	50	0	0.4	.32	12SE	-	0	0
23	1705	80	71	100	92	.90	1.2	.05	10SE	-	1.19	-
24	0910	85	70	100	63	.43	0	.02	25W	.52*	.88	-
25	0840	86	70	100	56	0	1.2	.07	8E	-	0	-
26	0930	77	71	100	100	.50	0.1	.12	9NW	.30*	.26	-
27	0930	88	69	100	45	0	0.1	.04	18E	0	.11	-
28	0905	93	77	100	43	0	0.3	.12	17NE	.62*	0	0
29	1600	93	74	100	48	.10	1.4	.23	12SE	-	.08	0
30	1630	91	74	100	46	.05	1.0	.15	29E	-	0	0
31	1030	90	75	100	52	.09	0.7	.09	16W	-	0	.05
Total		2816	2241	3100	2117	9.83	94.7	5.24		8.16	7.05	7.09
Aver.		90.8	72.3	100	68.3		3.0	.17		**		**

REMARKS *-estimate

**-missing record may affect monthly total

Data in the "wind movement" and "pan evaporation" columns are for the 24 hours ending at the time of the observation. All other data are for the 24 hours ending at midnight.

Provided in cooperation with the Reedy Creek Improvement District.

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Table 2.--Reedy Creek Improvement District weather observations for July 1972 through June 1973--continued.

September Day	Time of Obs.	Bay Lake (West Shore)								Tree Farm	Gate No. 1	S-405
		Air Temperature		Relative Humidity		Precipitation (inches)	24-hour wind movement (miles)	Pan evapora- tion (inches)	Max. wind speed (mph)	Precipitation (inches)	Precipitation (inches)	Precipitation (inches)
		Max. °F	Min. °F	Max. %	Min. %							
1	1630	89	73	100	48	0	0	.11	12NE	0	0	0
2	0905	91	73	100	40	0	0.1	.08	11NE	0	0	0
3	0840	94	70	100	18	0	0	.09	10E	0	0	0
4	0915	96	72	100	30	0	0	.33	14SE	0	0	0
5	0845	96	75	100	26	0	0	.22	10E	0	0	0
6	0910	96	73	100	32	0	0	.14	12NE	0	0	0
7	0915	92	74	100	46	0	0.4	.35	12NE	0	0	0
8	0845	89	72	100	32	0	0.3	.19	13NW	0	0	0
9	-	94	69	100	26	0	10.5	.16	10NE	0	0	0
10	0905	92	73	100	38	0	4.1	.38	17NE	0	0	0
11	0910	88	74	100	56	.03	18.2	.08	24NE	.05	.57	0
12	0930	95	73	100	32	0	20.0	.16	12E	.07	.03	0
13	1330	96	73	100	30	0	9.1	.25	20E	0	0	0
14	0915	96	75	100	26	0	7.2	.68*	15NE	0	0	0
15	0905	98	74	100	24	0	3.7	.21	10E	0	0	0
16	0910	98	76	100	24	0	1.5	.18	16E	0	0	0
17	0910	98	74	100	25	0	6.7	.22	14E	0	0	0
18	0930	97	74	100	32	0	6.0	.23	14NE	0	0	0
19	0910	97	75	100	29	0	4.5	.21	14N	0	0	0
20	0830	96	74	100	34	0	7.9	.31	16NE	0	0	0
21	-	92	70	100	36	.05	15.3	.07	14NE	0	.06	0
22	1105	90	66	100	28	0	7.2	.22	12NW	0	0	0
23	0855	93	66	100	25	0	11.5	.11	13E	0	0	0
24	0830	94	69	100	31	.02	9.1	.22	17SE	0	.02	0
25	1330	97	76	100	40	.14	13.9	.13	16SE	0	0	0
26	1025	97	77	100	44	0	3.2	.12	16NE	0	0	0
27	0910	98	75	100	38	0	3.2	.10	18NE	0	0	0
28	0900	96	74	100	36	0	13.0	.29	16NE	0	0	0
29	0900	96	75	100	38	0	13.5	.14	16NE	0	0	0
30	0910	92	75	100	40	0	3.4	.09	26NW	0	0	.15
31												
Total		2833	2189	3000	1004	.24	193.5	6.07		.12	.68	.15
Aver.		94.4	73.0	100	33.5		6.4	.22				

REMARKS *.High evaporation may be due to temperature build-up within the
 tank when the water level is allowed to drop below recommended levels.

Data in the "wind movement" and "pan evaporation" columns are for the 24 hours ending at the time of the observation. All other data are for the 24 hours ending at midnight.

Provided in cooperation with the Reedy Creek Improvement District.

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Table 2.--Reedy Creek Improvement District weather observations for July 1972 through June 1973--continued.

Bay Lake (West Shore)										Tree Farm	Gate No. 1	S-405
October Day	Time of Obs.	Air Temperature		Relative Humidity		Precipitation (inches)	24-hour wind movement (miles)	Pan evaporation (inches)	Max. wind speed (mph)	Precipitation (inches)	Precipitation (inches)	Precipitation (inches)
		Max. °F	Min. °F	Max. %	Min. %							
1	-	88	72	100	57	.95	↓	↓	9SW	.25	.10	.54
2	1030	94	72	100	52	.52	13.9	.58	24NW	1.95	1.73	1.65
3	0907	86	73	100	85	0	1.2	.23	12N	0	0	0
4	0910	87	73	100	79	0	0	.10	12NE	0	0	0
5	0900	87	72	100	72	0	0	.09	16NW	0	0	0
6	1140	85	68	100	51	0	4.4	.16	18W	0	0	0
7	0910	82	62	100	46	0	19.8	.17	17W	0	0	0
8	0945	84	61	100	34	0	27.7	.20	9W	0	0	0
9	0855	86	59	100	22	0	12.3	.07	8NE	0	0	0
10	0900	88	64	100	47	0	4.4	.22	26NE	0	0	0
11	0915	83	70	100	61	0	27.2	.15	22NE	0	0	.10
12	0905	86	68	100	38	0	32.3	.17	18NE	0	0	0
13	0845	88	66	100	34	0	22.7	.17	10NE	0	0	0
14	0915	88	62	100	28	0	10.9	.19	6E	0	0	0
15	0945	88	63	100	38	0	3.8	.05	12W	0	0	0
16	0905	87	66	100	40	0	7.5	.22	6NW	0	0	0
17	0930	88	67	100	34	0	3.7	.14	8W	0	0	0
18	0900	90	65	100	35	0	4.4	.13	10NE	0	0	0
19	0905	90	66	100	31	0	1.8	.05	8N	0	0	0
20	1030	72	66	100	82	0	16.2	.20	20N	.03	.05	.03
21	0920	84	62	100	31	0	18.9	.13	21E	0	0	0
22	0850	82	64	100	48	0	19.0	.15	18E	0	0	0
23	0920	86	62	100	35	0	12.4	.12	10E	0	0	0
24	0915	86	62	100	33	0	2.4	.14	8E	0	0	0
25	1020	85	64	100	40	0	1.0	.10	10W	0	0	0
26	0920	86	66	100	40	0	1.3	.17	8E	0	0	0
27	1015	85	69	100	50	0	0.8	.07	14SE	0	0	0
28	0938	81	69	100	83	.84	0.6	.11	32W	.45	.48	.55
29	0905	78	62	100	49	0	1.2	.06	8W	0	0	0
30	0920	86	60	100	50	0	0	.12	13NE	0	0	0
31	1025	86	66	100	50	0	0	.07	11NE	0	0	0
Total		2652	2041	3100	1475	2.38	271.8	4.53		2.68	2.36	2.87
Aver.		85.5	65.8	100	47.6		8.7	.15				

REMARKS ↓Total for the period in next value.

Data in the "wind movement" and "pan evaporation" columns are for the 24 hours ending at the time of the observation. All other data are for the 24 hours ending at midnight.

Provided in cooperation with the Reedy Creek Improvement District.

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Table 2.--Reedy Creek Improvement District weather observations for July 1972 through June 1973--continued.

Bay Lake (West Shore)										Tree Farm	Gate No. 3	S-405
November Day	Time of Obs.	Air Temperature		Relative Humidity		Precipitation (inches)	24-hour wind movement (miles)	Pan evaporation (inches)	Max. wind speed (mph)	Precipitation (inches)	Precipitation (inches)	Precipitation (inches)
		Max. °F	Min. °F	Max. %	Min. %							
1	0910	84	66	100	50	0	0	.14	18E	0	0	0
2	0925	88	63	100	40	0	0	.14	12E	0	0	0
3	1130	88	68	100	53	0	0	.08	7E	0	0	0
4	0930	87	68	100	45	0	0	.11	11N	0	.07	0
5	0900	85	68	100	63	0	0	.07	12NE	0	0	0
6	0955	82	70	100	78	.52	0	.09	15N	.13	0	0
7	0925	84	71	100	64	0	0.1	.06	12NE	0	0	0
8	0930	77	57	100	36	0	0	.05	14W	-	0	0
9	1030	81	51	100	32	0	0.4	.11*	9E	0	0	0
10	0910	82	59	100	58	0	0	.11	10NW	0	0	0
11	0835	86	65	100	42	0	0	.04	8W	0	0	0
12	1545	84	65	100	60	.57	1.3	.13	20NE	.06	0	.08
13	0930	86	69	100	61	0	0.7	.02	20E	0	0	0
14	1525	83	70	100	60	.49	0.8	.13	10SE	.25	.38	.33
15	0920	71	52	100	44	0	0.6	.09	12W	-	0	0
16	0940	75	50	100	46	0	1.7	.10	13SW	-	0	0
17	0934	67	49	100	44	0	1.6	.08*	8W	-	0	0
18	0840	74	44	100	48	0	3.9	.08*	10E	-	0	0
19	1000	74	58	100	88	.33	2.4	.01	14SE	.30*	.30	.32
20	-	71	53	100	100	0	↓	↓	6SW	0	0	0
21	1245	64	48	100	44	0	3.5	.09	12NW	0	0	0
22	-	61	47	100	48	0	**	.13	12NW	0	0	0
23	0915	58	44	100	69	0		.05	12W	0	0	0
24	0930	65	48	100	78	0		↓	8N	0	0	0
25	0900	73	59	100	87			↓	26W	1.04	.98	1.27
26	1010	-	-	-	-	.12		0	23SW	-	.07	.13
27	1545	-	-	-	-	0		.02	8E	0	0	0
28	1100	75	64	100	80	.26		.04	10SE	.26	.23	.28
29	0950	78	64	100	70	.50		.01	9E	.61	.25	.57
30	1540	71	57	100	92	.14		.12	22SW	.16	.42	.29
31												
Total		2154	1673	2800	1680	4.26	17.0	1.99		2.81	2.70	3.27
Aver.		76	59	100	60		.8	.09				

REMARKS *- estimated

**- equipment malfunction

↓ - Total for the period in next value.

Data in the "wind movement" and "pan evaporation" columns are for the 24 hours ending at the time of the observation. All other data are for the 24 hours ending at midnight.

Provided in cooperation with the Reedy Creek Improvement District.

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Table 2.--Reedy Creek Improvement District weather observations for July 1972 through June 1973--continued.

December Day	Time of Obs.	Bay Lake (West Shore)								Free Farm	Gate No. 3	S-405
		Air Temperature		Relative Humidity		Precipitation (inches)	24-hour wind movement (miles)	Pan evapora- tion (inches)	Max. wind speed (mph)	Precipitation (inches)	Precipitation (inches)	Precipitation (inches)
		Max. °F	Min. °F	Max. %	Min. %							
1	0925	68	40	100	39	0	-	+ .28	22W	0	0	0
2	0830	71	41	100	54	0	-	.01	8NE	0	0	0
3	0850	73	53	100	69	0	-	.13	8NW	0	0	0
4	1320	79	58	100	65	0	-	+ .02	6NW	0	0	0
5	0917	76	61	100	82	0	-	.08	18E	0	0	0
6	1445	84	64	100	60	0	-	.05	12SE	-	0	0
7	0907	80	64	100	69	0	-	.02	8N	-	0	0
8	0950	82	65	100	56	0	-	.04	12E	-	0	0
9	1405	82	63	100	58	0	-	.09	10E	-	0	0
10	0900	-	-	-	-	0	-	.04	6E	-	0	0
11	0940	84	68	100	50	0	-	.05	14E	0	0	0
12	0905	85	64	100	54	0	-	.09	14E	0	0	0
13	0926	87	66	100	56	0	-	.01	10E	0	0	0
14	0905	85	68	100	65	0	-	.03	12SE	0	0	0
15	0855	85	73	100	61	.32	-	.13	13NW	.35	.20	.25
16	-	73	43	100	24	.05	-	↓	32NW	-	.05	0
17	0830	53	38	93	42	0	-	.14	22N	-	0	0
18	1300	73	45	100	46	0	-	.09	†16NE	0	0	0
19	1015	74	54	100	61	0	0.1	.03	17E	0	0	0
20	1605	80	56	100	44	0	0	.03	5SE	0	0	0
21	0935	77	63	100	93	1.75	0.1	.03	25SW	1.50	1.45	1.76
22	0930	79	65	100	41	.10	0	.06	14SW	-	.15	.09
23	0911	70	50	100	48	0	0.5	.03	17W	-	0	0
24	0830	71	47	100	43	0	↓	.08	12W	-	0	0
25	-	63	48	100	54	.08	1.3	↓	22W	-	.12	.12
26	1025	60	50	100	73	0	0.8	↓	17NW	0	0	0
27	0915	57	39	100	58	0	0.7	↓	20NW	0	0	0
28	0950	65	36	100	31	0	0.2	↓	8N	0	0	0
29	0931	72	40	100	56	0	0.1	↓	18-E	0	0	0
30	0840	76	50	100	61	0	0	.30	18-E	0	0	0
31	0845	76	58	100	73	0	0	+ .18	15-E	0	0	0
Total		2240	1630	2993	1686	2.30	3.8*	1.56		1.85	1.97	2.22
Aver.		74	54	100	56		-	.05				

REMARKS *--low total due to malfunction of equipment.

†--probable maximum, 8 hrs. during a.m. equipment malfunction (out of ink)

↓--total for the period in next value.

Data in the "wind movement" and "pan evaporation" columns are for the 24 hours ending at the time of the observation. All other data are for the 24 hours ending at midnight.

Provided in cooperation with the Reedy Creek Improvement District.

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Table 2.--Reedy Creek Improvement District weather observations for July 1972 through June 1973--continued.

January Day	Time of Obs.	Bay Lake (West Shore)										Tree Farm	Gate #63	S-405
		Air Temperature		Relative Humidity		Precipitation (inches)	24-hour wind movement (miles)	Pan evapora- tion (inches)	Max. wind speed (mph)	Precipitation (inches)	Precipitation (inches)	Precipitation (inches)		
		Max. °F	Min. °F	Max. %	Min. %									
1	1000	81	61	100	72	0	0	†.03	7-SE	-	0	0	0	
2	0915	81	61	100	80	0	0	↓	8-E	0	0	0	0	
3	-	82	62	100	88	0	0	.16	13-E	0	0	0	0	
4	0945	80	63	100	94	0	0	.05	7-SW	0	0	0	0	
5	0950	80	62	100	85	0	.2	.03	6-NW	0	0	0	0	
6	0830	79	59	100	90	0	0	.03	10-W	-	0	0	0	
7	0845	74	61	100	92	0	1.1	.06	*5W	-	0	0	0	
8	1400	83	55	100	97	0	2.4	.07	*16-W	-	0	0	0	
9	0930	55	44	100	100	0	6.1	.07	14NW	0	0	0	0	
10	0830	55	45	100	100	.75	.1	0	17NW	.57	.70	.75		
11	1630	52	44	100	100	.67	.1	.07	16NW	.81	.91	.90		
12	0930	49	43	100	100	.57	1.2	.03	20NW	.52	.52	.35		
13	0845	53	34	100	45	0	1.4	.11	15NW	0	0	0	0	
14	1025	59	32	100	30	0	.9	.02	12NW	0	0	0	0	
15	0915	66	34	100	66	0	.8	.07	15W	0	0	0	0	
16	0930	70	44	100	63	0	1.1	↓	14E	0	0	0	0	
17	0935	71	49	100	72	0	.1	.08	18E	0	0	0	0	
18	1010	79	53	100	68	0	0	.06	10E	0	0	0	0	
19	0920	78	54	100	62	0	0	.07	19W	0	0	0	0	
20	0925	71	47	100	38	0	7.2	.09	5E	0	0	0	0	
21	0850	74	51	100	65	0	0	.08	19SE	0	0	0	0	
22	1430	72	64	100	100	.67	.1	.03	15-SE	.65	1.02	.75		
23	1735	60	52	100	100	1.45	.1	.08	11NW	1.67	1.13	1.30		
24	0925	68	53	100	52	0	0	.01	4NW	-	-	0		
25	0935	68	47	100	66	0	0	.05	-	-	-	0		
26	1010	75	55	100	69	.15	0	.04	*19SE	†.15	†.15	.15		
27	0950	76	60	100	53	0	.1	.10	7NW	† 0	† 0	.02		
28	-	72	54	100	100	.50	0	.05	22SW	†.50	†.50	.55		
29	1300	54	36	100	71	0	2.9	.16	30W	0	0	0	0	
30	1620	58	32	100	37	0	2.2	.12	10NW	0	0	0	0	
31	1015	70	39	100	59	0	0	.01	-	0	0	0	0	
Total		2145	1550	100	2314	4.76	28.1	1.83		4.8†	4.92†	4.77		
Aver.		69	50	100	74		.9	.05						

REMARKS *Max. recorded (supply roll exhausted evening 1-7-73).

†-Estimated.

I-Missing days, ↓-Total for the period in next value.

Data in the "wind movement" and "pan evaporation" columns are for the 24 hours ending at the time of the observation. All other data are for the 24 hours ending at midnight.

Provided in cooperation with the Reedy Creek Improvement District.

REPORT OF INVESTIGATIONS NO. 79

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Table 2.--Reedy Creek Improvement District weather observations for July 1972 through June 1973--continued.

February Day	Time of Obs.	Bay Lake (West Shore)								Tree Farm	Gate No. 1	S-405
		Air Temperature		Relative Humidity		Precipitation (inches)	24-hour wind movement (miles)	Pan evapora- tion (inches)	Max. wind speed (mph)	Precipitation (inches)	Precipitation (inches)	Precipitation (inches)
		Max. °F	Min. °F	Max. %	Min. %							
1	1000	72	57	100	100	.05	0	.05	21SE	.07	0	.05
2	1020	79	56	100	100	.45	0	↓	18SW	.37	.75	.37
3	0920	62	48	100	40	0	.8	.23	29W	0	0	0
4	0855	66	42	100	42	0	5.5	.27	15NW	0	0	0
5	0930	73	48	100	42	0	.2	.17	6SE	0	0	-
6		73	44	100	51	0	.5	.05	8W	0	0	-
7	1020	74	47	100	61	0	2.4	.01	9NW	0	0	-
8	0940	76	50	100	42	0	2.0	.15	11SW	0	0	-
9	0935	77	56	100	69	1.30	2.8	.10	16SE	1.63	1.33	1.40 ^e
10	0840	65	35	100	72	.03	9.5	.83	32W	.03	.02	-
11	0850	50	35	100	54	0	25.2	.11	21NW	0	0	-
12	0950	64	36	100	58	0	22.5	.09	11N	0	0	-
13	0925	70	45	100	73	0	4.6	.13	21E	0	0	0
14	0942	78	55	100	64	0	7.1	.03	22SE	0	0	0
15	0915	73	50	100	45	.15	1.9	.16	15W	.15	.18	.15
16	0940	58	42	100	36	0	32.1	.14	16W	0	0	0
17	0920	54	36	94	46	0	34.4	.15	15N	0	0	0
18	0850	52	42	100	96	.25	24.9	.12	8NW	.30	.34	.28
19	0900	63	49	100	86	.03	6.5	0	12NW	.02	.04	.03
20	0909	64	45	100	34	0	18.7	.10	20NW	0	0	0
21	0910	64	43	100	42	0	34.0	.16	13W	0	0	0
22	1740	66	40	100	25	0	24.0	.16	-	0	0	0
23	0925	64	44	100	34	0	2.5	.14	5W	0	0	0
24	0950	72	40	100	41	0	.7	↓	11E	0	0	0
25	0945	76	52	100	60	0	2.8	.15	15SE	0	0	0
26	0935	78	54	100	43	0	.3	.07	10SW	0	0	0
27	0935	72	52	100	48	0	12.1	.14	16NW	0	0	0
28	0935	71	49	100	55	0	31.7	.25	19NE	0	0	0
29												
30												
31												
Total		1906	1292	2794	1559	2.26	309.7	3.93		2.57	2.66	2.28 ²
Aver.		68	46	100	55		11.1	.14				

REMARKS *--Missing days.

e--Estimated

↓--Total for the period in next value.

Data in the "wind movement" and "pan evaporation" columns are for the 24 hours ending at the time of the observation. All other data are for the 24 hours ending at midnight.

Provided in cooperation with the Reedy Creek Improvement District.

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Table 2.--Reedy Creek Improvement District weather observations for July 1972 through June 1973--continued.

March Day	Time of Obs.	Bay Lake (West Shore)										Tree Farm	Gate No. 1	S-405
		Air Temperature		Relative Humidity		Precipitation (inches)	24-hour wind movement (miles)	Pan evapora- tion (inches)	Max. wind speed (mph)	Precipitation (inches)	Precipitation (inches)	Precipitation (inches)	Precipitation (inches)	Precipitation (inches)
		Max. °F	Min. °F	Max. %	Min. %									
1	1015	74	48	100	52	0	11.9	0.30	24NE	0	0	0	0	0
2	-	80	53	100	44	0	↓	↓	18SE	0	0	0	0	0
3	1045	82	56	100	44	0	2.0	↓	10SE	0	0	0	0	0
4	0825	82	57	100	53	0	.5	.07	15E	0	0	0	0	0
5	1000	83	59	100	56	0	1.9	.09	9SE	0	0	0	0	0
6	1005	86	64	100	55	0	.4	.12	15SE	0	0	0	0	0
7	1000	85	66	100	57	0	1.3	.16	14NE	0	0	0	0	0
8	0930	84	67	100	57	0	2.2	.05	18NE	0	0	0	0	0
9	0945	75	65	100	84	.40	3.3	.24	15SW	.40	.41	.36		
10	0850	84	63	100	65	0	.9	.09	14SE	0	0	0	0	0
11	1833	84	66	100	59	0	.2	0	19SE	0	0	0	0	0
12	1155	86	68	100	53	0	.1	↓	10SW	0	0	0	0	0
13	1005	88	66	100	60	0	1.6	.21	10E	0	0	0	0	0
14	0902	89	69	100	61	0	.8	.15	12SE	0	0	0	0	0
15	0930	88	71	100	60	0	.2	.14	14SE	0	0	0	0	0
16	1000	90	70	100	55	0	.2	.16	19SE	0	0	0	0	0
17	0906	75	53	100	47	.20	18.4	.26	31NW	.25	.25	.24		
18	0930	74	46	100	32	0	43.4	.14	22NW	0	0	0	0	0
19	0938	80	48	100	36	0	19.0	.26	13NW	0	0	0	0	0
20	0940	81	57	100	48	.17	4.1	.18	12SE	.11	.12	.15		
21	1315	82	58	100	44	0	13.4	.07	20SW	0	0	0	0	0
22	1040	75	51	100	46	0	33.8	.25	13E	0	0	0	0	0
23	1035	78	50	100	47	0	7.4	.18	14NE	0	0	0	0	0
24	0900	74	51	100	67	0	10.1	.17	22E	0	0	0	0	0
25	0915	73	64	100	99	2.98	37.8	↓	34SE	2.82	1.52	2.75		
26	-	78	63	100	50	.03	57.6	↓	26W	.15	0	.30		
27	1615	74	55	100	56	0	↓	↓	14NW	0	0	0	0	0
28	1000	78	57	100	64	0	1.3	.55	19E	0	0	0	0	0
29	1140	68	64	100	100	.95	↓	.26	32E	.35	.36	.53		
30	0930	81	66	100	86	0	↓	.25	15SE	0	0	0	0	0
31	0900	84	68	100	76	0	14.4	-	16SE	0	0	0	0	0
Total		2495	1859	3100	1813	4.73	288.2	4.35		4.08	2.66	4.33		
Aver.		80.5	60.0	100	58.5		9.3	.14						

REMARKS e - estimated

↓ - total for the period in next value.

Data in the "wind movement" and "pan evaporation" columns are for the 24 hours ending at the time of the observation. All other data are for the 24 hours ending at midnight.

Provided in cooperation with the Reedy Creek Improvement District.

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Table 2.--Reedy Creek Improvement District weather observations for July 1972 through June 1973--continued.

April Day	Time of Obs.	Bay Lake (West Shore)								Tree Farm	Gate No. 3	S-405
		Air Temperature		Relative Humidity		Precipitation (inches)	24-hour wind movement (miles)	Pan evapora- tion (inches)	Max. wind speed (mph)	Precipitation (inches)	Precipitation (inches)	Precipitation (inches)
		Max. °F	Min. °F	Max. %	Min. %							
1	0925	80	60	100	58	0.10	0.1	0.13	19SE	0.18	0.17	0.09
2	0940	89	59	100	42	0	6.2	.08	10N	0	0	0
3	1020	92	72	100	72	.04	1.8		21SE	.05	.04	.05
4	1145	82	67	100	95	.16	4.2	↓	14SE	.35	.52	.18
5	1010	79	59	100	46	0	17.0	.38	11W	0	0	0
6	0945	87	60	100	54	0	17.3	.25	12NE	0	0	0
7	0905	95	71	100	60	1.22	2.7	.10	31SE	.95	.48	.92
8	1000	84	64	100	58	0	17.8	.06	18SW	.05	.04	.05
9	1035	86	61	100	62	0	16.3	.44	12W	0	0	0
10	1700	73	54	100	50	0	65.3	.75	22W	0	0	0
11	1330	75	51	100	38	0	22.1	↓	16NW	0	0	0
12	1612	83	49	100	36	0	13.5	.33	8NE	0	0	0
13	0845	88	54	100	42	0	1.9	↓	13NW	0	0	0
14	0940	92	60	100	43	0	7.0	.36	20E	0	0	0
15	0950	83	66	100	65	0	15.7	.23	23E	0	0	0
16	0900	83	64	100	57	0	20.7	.15	23E	0	0	0
17	1110	84	64	100	61	0	18.4	.22	23E	0	0	0
18	1005	88	64	100	59	0	16.0	↓	26E	0	0	0
19	0958	88	65	100	64	0	13.2	.13	16E	0	0	0
20	1030	90	66	100	68	0	3.3	.11	22NE	0	0	0
21	1445	87	71	100	64	0	21.1	.18	24E	0	0	0
22	0840	91	67	100	60	0	8.1	↓	18SE	0	0	0
23	1415	94	65	100	57	0	9.2	.47	15SE	0	0	0
24	1050	92	66	100	58	0	1.0	.22	10SE	0	0	0
25	0845	92	73	100	56	0	.3	↓	12SW	0	0	0
26	0930	94	72	100	66	.47	2.0	.32	29SE	.42	.68	.45
27	0935	90	67	100	54	0	6.7	.09	25SW	0	0	0
28	0900	81	61	100	40	0	55.4	.15	19W	0	0	0
29	1730	88	56	100	37	0	26.8	0	15E	0	0	0
30	1002	84	58	100	70	0	2.9	.04	24E	0	0	0
31												
Total						1.99	414.0	5.19		2.00	1.93	1.74
Aver.		86.6	65.0				13.8	.17				

REMARKS ↓-Total for the period in next value.

Data in the "wind movement" and "pan evaporation" columns are for the 24 hours ending at the time of the observation. All other data are for the 24 hours ending at midnight.

Provided in cooperation with the Reedy Creek Improvement District.

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Table 2.--Reedy Creek Improvement District weather observations for July 1972 through June 1973--continued.

May Day	Time of Obs.	Bay Lake (West Shore)								Tree Farm	Gate No 3	S-405
		Air Temperature		Relative Humidity		Precipitation (inches)	24-hour wind movement (miles)	Pan evapora- tion (inches)	Max. wind speed (mph)	Precipitation (inches)	Precipitation (inches)	Precipitation (inches)
		Max. °F	Min. °F	Max. %	Min. %							
1	0937	82	62	100	78	0	7.9	0.20	20E	0	0	0
2	1105	86	63	100	84	0	1.0	.24	15E	0	0	0
3	1055	88	65	100	54	0	12.0	.23	10W	0	0	0
4	0906	85	63	100	57	0	3.7	.16	16E	0	0	0
5	0905	84	60	100	36	0	8.8	.37	15E	0	0	0
6	-	87	57	100	43	0	↓	↓	16E	0	0	0
7	0853	86	67	100	70	0	13.2	.35	21E	0	0	0
8	0850	87	68	100	70	.10	6.5	.26	18SE	-	0	.15
9	1055	80	71	100	100	1.32	.6	.17	29W	1.2 ^e	1.28	1.10
10	0858	89	71	100	57	0	2.7	0	14W	-	0	0
11	1030	94	66	100	49	0	9.9	.16	9W	-	0	0
12	0905	95	67	100	48	0	1.3	.29	10SW	-	0	0
13	0844	93	69	100	57	0	4.3	.25	12S	.60	1.39	.20
14	1430	85	69	100	72	0	5.2	.30	10E	0	0	0
15	0918	89	68	100	60	0	3.9	↓	13W	0	0	0
16	1030	77	59	100	53	.05	26.3	.24	26NE	.02	0	.05
17	1630	82	53	100	52	0	21.5	.23	12W	0	0	0
18	1142	87	61	100	57	0	9.1	.25	13W	0	0	0
19	0922	89	64	100	49	0	5.4	.19	10W	0	0	0
20	0930	88	63	100	45	0	7.4	.29	13SW	0	0	0
21	1435	92	67	100	43	0	19.8	.46	11W	0	0	.04
22	1015	93	61	100	45	0	7.7	.26	10W	.10	0	0
23	1545	94	68	100	49	0	11.6	.23	11W	0	0	0
24	1515	92	69	100	62	.25	7.8	.08	22W	0	0	.07
25	0900	84	70	100	90	1.14	10.7	.16	27NW	.68	.15	.39
26	0845	94	72	100	56	0	8.8	.21	11S	0	0	.07
27	0900	97	91	100	53	0	2.6	.27	21S	0	0	0
28	1835	96	75	100	.48	0	14.1	.26	20SE	.25	0	0
29	1000	96	75	100	50	0	1.1	.30	17E	0	0	0
30	1540	90	70	100	82	2.33	11.5	.28	33NW	.41	.21	.54
31	1000	93	68	100	64	.10	4.3	.26	22SW	.25	.05	.29
Total						5.29	250.7	6.95		3.51 [*]	3.08	2.90
Aver.		91.8	66.8	100	59.1		8.1	.22				

REMARKS e - estimated

* - missing days

↓ - total for the period in next value.

Data in the "wind movement" and "pan evaporation" columns are for the 24 hours ending at the time of the observation. All other data are for the 24 hours ending at midnight.

Provided in cooperation with the Reedy Creek Improvement District.

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Table 2.--Reedy Creek Improvement District weather observations for July 1972 through June 1973--continued.

June Day	Time of Obs.	Bay Lake (West Shore)								Tree Farm	Gate No. 3	S-405
		Air Temperature		Relative Humidity		Precipitation (inches)	24-hour wind movement (miles)	Pan evapora- tion (inches)	Max. wind speed (mph)	Precipitation (inches)	Precipitation (inches)	Precipitation (inches)
		Max. °F	Min. °F	Max. %	Min. %							
1	1030	92	70	100	66	0	3.0	.36	25N	0	0	0
2	1700	91	70	100	60	.23	6.0	.35	21E	.07	0	.02
3	2000	89	69	100	76	.04	4.9	.08	25E	.03	.14	.10
4	1530	93	71	100	66	0	2.9	.23	20E	0	0	0
5	1525	96	74	100	62	0	5.7	.28	20E	.10	0	0
6	0915	96	73	100	55	0	3.8	.24	17NE	.09	0	0
7	1110	93	69	100	56	0	3.6	.24	16NE	0	0	0
8	0920	89	72	100	84	.22	10.0	.19	31SE	.17	.18	.31
9	0905	93	72	100	66	0	.4	.10	14E	0	0	0
10	1010	96	74	100	63	0	.3	.19	21E	0	0	0
11	0950	93	74	100	71	0	.4	.27	14E	.40	0	.2 ^e
12	1330	95	75	100	59	0	.8	.13	11E	.25	0	.1 ^e
13	1030	96	73	100	57	1.80	2.2	.24	49E	1.85	.62	1.8 ^e
14	0937	95	74	100	63	0	.2	.39	20W	0	0	0
15	0920	96	73	100	56	.40	5.2	.20	22W	0	.15	.2 ^e
16	0830	90	74	100	78	.25	4.0	.26	15W	0	0	.1 ^e
17	0934	93	74	100	66	0	2.6	.20	15S	.02	0	0 ^e
18	0920	91	76	100	68	0	7.9	.31	14W	0	0	.19
19	1420	89	69	100	82	.66	8.1	.21	35W	1.60	.97	1.80
20	0923	91	69	100	71	0	2.6	.13	19SE	0	0	0
21	0857	86	72	100	80	.73	.2	.06	19E	.91	.45	.73
22	0815	85	73	100	84	.57	1.3	.26	22E	1.39	.27	.95
23	0850	88	71	100	72	.02	.5	.10	13W	0	0	0
24	0905	87	72	100	65	0	2.0	.16	9NW	0	0	0
25	0820	89	70	100	66	0	1.7	.16	7E	0	0	0
26	1111	93	72	100	51	.07	1.1	↓	17W	.05	.03	.06
27	1000	91	71	100	59	0	4.4	.42	6SE	0	0	0
28	0830	93	72	100	58	0	.6	.11	14SW	0	0	0
29	0830	94	73	100	57	0	5.0	.25	10SW	0	0	0
30	0925	98	72	100	53	1.00	5.0	.25	20N	.25	1.65	.15
31	-	-	-	-	-	-	-	-	-	-	-	-
Total		2761	2163	3000	1970	5.99	96.4	6.37		7.18	4.46	6.71*
Aver.		92.0	72.1	100	65.7		3.2	.21				

REMARKS e - estimated

* - missing days

↓ - total for the period in next value.

Data in the "wind movement" and "pan evaporation" columns are for the 24 hours ending at the time of the observation. All other data are for the 24 hours ending at midnight.

Provided in cooperation with the Reedy Creek Improvement District.

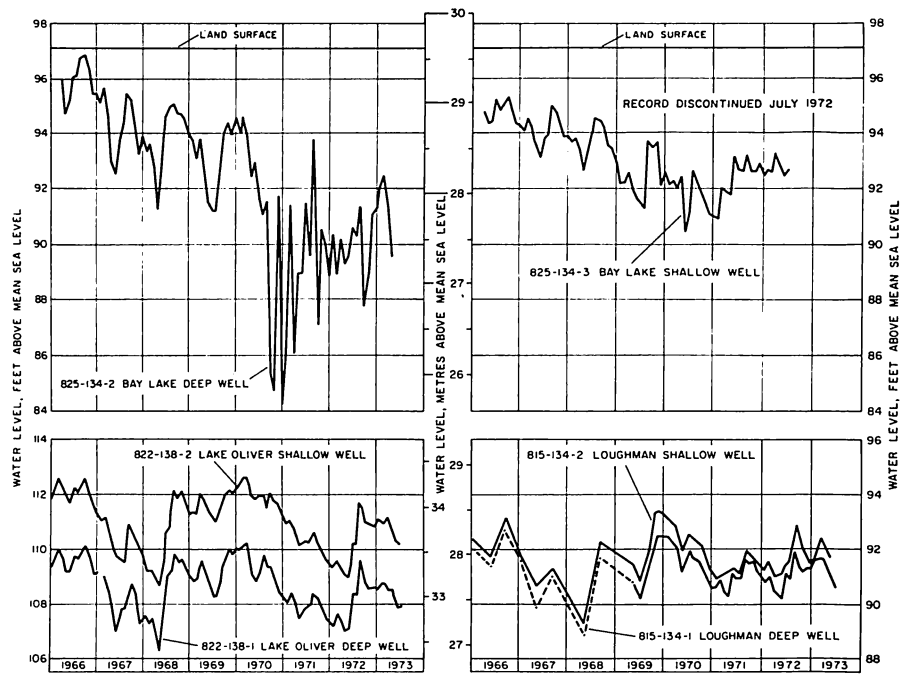


Figure 4—Water levels in wells in the Reedy Creek Improvement District area and vicinity.

Lake shallow well is affected by maintaining Bay Lake at a near constant level. When Bay Lake was refilled between September 1970 and June 1971, the water level of Bay Lake shallow well rose about 1 foot (0.3 metre), a rise not in evidence in the other shallow wells. Bay Lake is now maintained at 94.5 feet

(28.8 metres) above mean sea level, and the nonartesian-aquifer water level near the lake is now high and rather constant when compared to its previous fluctuations.

Daily water-level fluctuations for two nonartesian aquifer wells in the RCID are shown in figures 5, 6, and 7, and tables 3 and 4. Levels in both wells respond immediately to rainfall. The broad, rounded peaks in the hydrographs for the new tree farm shallow well, 822-135-1, indicate a more sluggish response to rainfall and ground-water discharge in that area than in the area represented by Bay Lake shallow well, 825-134-3.

FLORIDAN AQUIFER

The natural hydraulic gradient of the Floridan aquifer is such that the general movement of water in the aquifer under the RCID is from west to east. This hydraulic gradient and the attendant movement of water in the aquifer under the RCID are chiefly controlled by the inflow of ground water from the west and southwest, the high average annual recharge in the area to the east and northeast of the RCID, and the variations in recharge, discharge, and aquifer transmissivity within the RCID.

The general 7-year fluctuation trend of the water levels in the RCID vicinity is shown in figure 4 by the hydrographs for wells 825-134-2, 822-138-1, and 815-134-1. Between 1966 and mid-1970, the patterns of water-level fluctuation in the three Floridan-aquifer wells were very similar to each other and to those in shallow wells 825-134-3, 822-138-2, and 815-134-2. From mid-1970 through mid-1973, levels in the Bay Lake deep well, 825-134-2, show pronounced peaks and troughs caused by pumping from the Floridan aquifer. Including the effects of both rainfall and pumping, the level in the Bay Lake deep well, 825-134-2, declined a total of approximately 8 feet (2.4 metres) from 1966 through 1970. During this same period, levels in Floridan-aquifer wells 822-138-1 about 6 miles (10 kilometres) southwest of Bay Lake, and 815-134-1 about 12 miles (19 kilometres) south of Bay Lake, declined about 2 feet (0.6 metre) and 1 foot (0.3 metre), respectively. Levels in these two wells (822-138-1 and 815-134-1) are not known to be affected by any pumping, so their water-level decline is attributed to deficient rainfall over the period. Thus, the decline of 8 feet (2.4 metres) for Bay Lake deep well minus the decline of 2 feet (0.6 metre) for deficient rainfall equals a decline of 6 feet (2 metres) in the level of Bay Lake deep well, 825-134-2, is attributed to water use in the RCID. This pumping from the Floridan aquifer has kept the potentiometric surface at Bay Lake below the water table most of the time since mid-1970. Records show no measureable effects of that pumping on the levels of Floridan-aquifer wells in areas outside the RCID.

Daily water levels in Bay Lake deep well, 825-134-2, are shown in figure 8 and table 5.

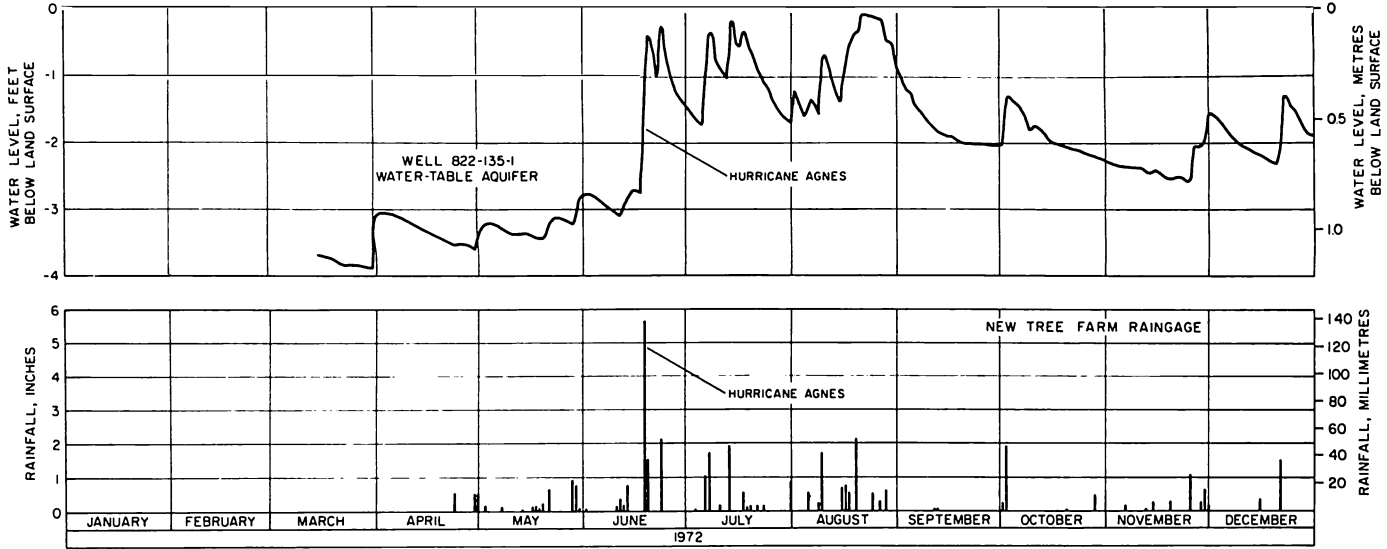


Figure 5—Water levels in well 822-135-1 and rainfall at the new tree farm in 1972.

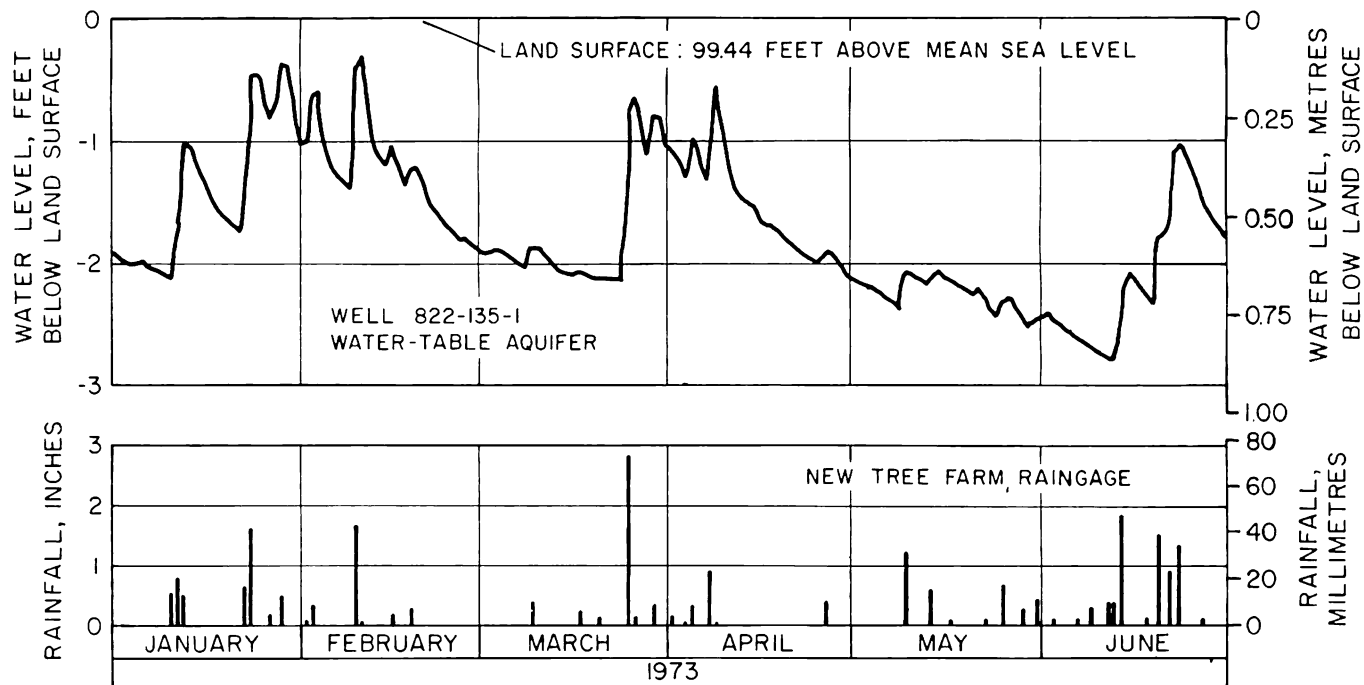


Figure 6—Water levels in well 822-135-1 and rainfall at the new tree farm in 1973.

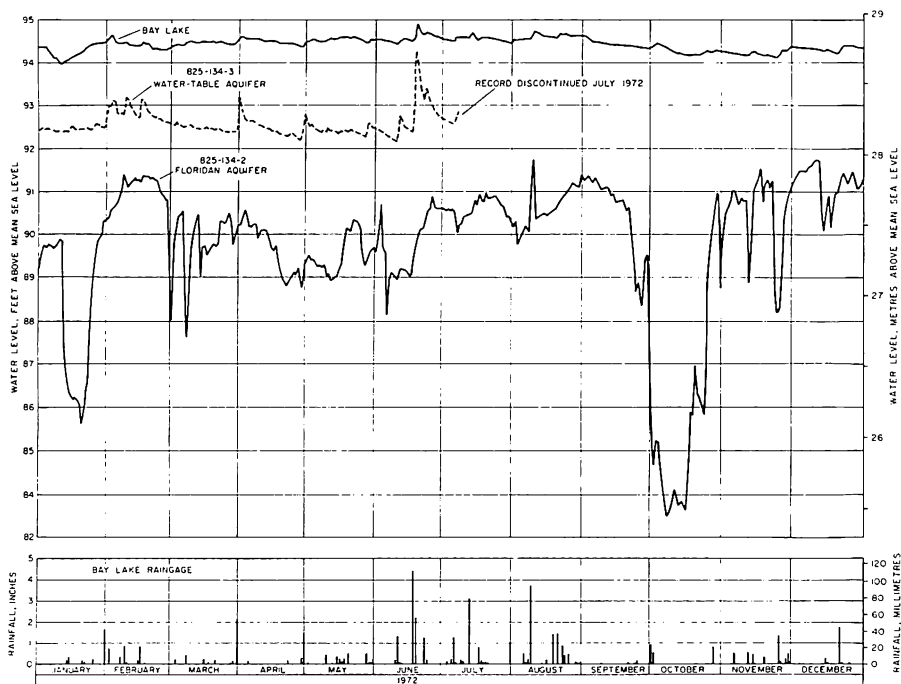


Figure 7—Daily water levels of Bay Lake and wells 825-134-2 and 825-134-3 and rainfall at Bay Lake in 1972.

SURFACE WATER

CYPRESS CREEK

Cypress Creek at Vineland, Florida (2640.00), drains 30.3 square miles (78.5 square kilometres) to the northeast of the RCID. The annual streamflow for the basin averaged 3.68 inches (9.35 centimetres) and ranged from 0.08 inch

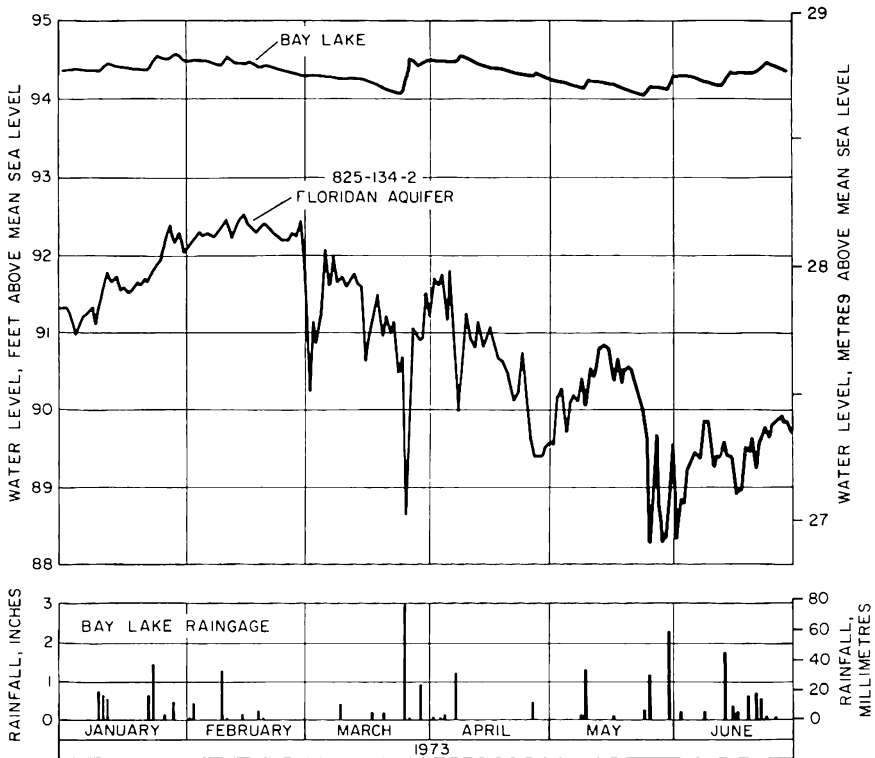


Figure 8—Daily water levels of Bay Lake and well 825-134-2 and rainfall at Bay Lake in 1973.

(0.20 centimetre) in 1956 to 18.26 inches (46.38 centimetres) in 1960. During the 26 complete years of record, flow ceased at least 1 day in each of 19 years. The longest period of no flow was 175 days in 1968.

BONNET CREEK

Bonnet Creek near Vineland, Florida (2641.00), drains 56.1 square miles (145 square kilometres) including the 30.3 square miles (78.5 square kilometres) of Cypress Creek at Vineland, Florida (2640.00). The average yearly flow from the basin is estimated to be 8.0 inches (20 centimetres) per year. Prorating this flow between the 30.3 square miles (78.5 square kilometres) of the Cypress

Table 3.--Daily maximum altitude of water level in Bay Lake water-table aquifer well 825-134-3 in 1972.

DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	92.45	92.99	92.58	92.97	92.58	92.43	92.68					
2	92.46	92.99	92.58	92.77	92.52	92.45	92.64					
3	92.44	93.12	92.67	92.68	92.55	92.40	92.61					
4	92.46	93.09	92.53	92.65	92.48	92.37	92.60					
5	92.45	92.85	92.52	92.64	92.45	92.34	92.58					
6	92.43	92.79	92.49	92.65	92.42	92.30	92.63					
7	92.41	92.81	92.50	92.63	92.40	92.28	92.80					
8	92.39	92.79	92.55	92.58	92.45	92.23						
9	92.40	93.19	92.55	92.53	92.40	92.20	Recorder discontinued. Periodic measurements will continue at six-week intervals.					
10	92.40	93.14	92.51	92.53	92.50	92.18						
11	92.40	92.97	92.47	92.50	92.45	92.75						
12	92.41	92.88	92.47	92.50	92.42	92.67						
13	92.40	92.82	92.47	92.47	92.40	92.51						
14	92.41	92.72	92.45	92.46	92.39	92.49						
15	92.51	92.71	92.45	92.41	92.35	92.46						
16	92.49	93.16	92.49	92.40	92.39	92.42						
17	92.43	93.13	92.48	92.39	92.40	92.40						
18	92.44	92.96	92.47	92.35	92.42	94.02						
19	92.45	92.84	92.44	92.33	92.40	94.25						
20	92.44	92.78	92.42	92.33	92.42	93.76						
21	92.44	92.73	92.43	92.31	92.46	93.41						
22	92.48	92.71	92.47	92.29	92.42	93.13						
23	92.45	92.70	92.43	92.30	92.38	93.41						
24	92.43	92.68	92.39	92.36	92.36	93.22						
25	92.46	92.65	92.39	92.32	92.34	93.12						
26	92.56	92.62	92.37	92.25	92.30	93.01						
27	92.56	92.61	92.37	92.21	92.27	92.87						
28	92.53	92.61	92.38	92.20	92.59	92.82						
29	92.50	92.60	92.38	92.38	92.60	92.75						
30	92.49		92.43	92.78	92.50	92.71						
31	92.70		93.22		92.48							

Creek basin, for which the long-term gaged flow is 3.68 inches (9.35 centimetres), and the remaining 25.8 square miles (66.8 square kilometres) of the western part of the basin gives an average flow of 13.1 inches (33.3 centimetres) from the western part, of which about 15 square miles (38.8 square kilometres) is within the RCID. During the 5 years of complete record, October 1, 1966, to September 30, 1971, flow ceased at least 1 day in both 1967 and 1968. The longest period of no flow was 28 days in 1967.

Table 4.--Daily minimum depth below land surface of water levels in Sewage Treatment Plant water-table aquifer well 822-135-1 in 1972 and 1973.

DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1				3.07	3.26	2.79	1.50	1.23	.96	2.02	2.28	1.55
2				3.05	3.24	2.79	1.57	1.33	1.07	1.55	2.30	1.62
3				3.05	3.23	2.80	1.63	1.48	1.20	1.30	2.31	1.70
4				3.05	3.23	2.84	1.66	1.60	1.21	1.37	2.33	1.77
5				3.06	3.24	2.88	1.71	1.49	1.40	1.40	2.35	1.83
6				3.08	3.26	2.91	1.08	1.35	1.47	1.46	2.36	1.88
7				3.10	3.29	2.95	.36	1.42	1.55	1.55	2.36	1.93
8				3.12	3.31	2.99	.33	1.57	1.63	1.68	2.36	1.98
9				3.15	3.34	3.02	.74	.73	1.68	1.78	2.36	2.02
10				3.20	3.37	3.06	.84	.66	1.74	1.75	2.37	2.05
11				3.22	3.37	3.10	.91	.85	1.80	1.75	2.41	2.08
12				3.25	3.36	3.00*	1.02	1.03	1.82	1.78	2.43	2.13
13				3.26	3.36	2.85*	.17	1.22	1.83	1.84	2.45	2.15
14			3.69	3.30	3.35	2.73*	.17	1.33	1.87	1.89	2.42	2.18
15			3.70	3.32	3.36	2.72	.48	1.37	1.88	1.96	2.42	2.20
16			3.71	3.35	3.39	2.72	.52	.84	1.90	1.99	2.48	2.23
17			3.72	3.38	3.42	2.74	.32	.52	1.94	2.00	2.51	2.26
18			3.75	3.40	3.44	1.41	0.32	.44	1.97	2.03	2.53	2.28
19			3.77	3.44	3.44	.38	.63	.33	1.99	2.05	2.54	2.30
20			3.80	3.46	3.42	.50	.68	.30	2.01	2.06	2.51	2.32
21			3.82	3.49	3.21	.85	.85	.05	2.02	2.08	2.51	2.07
22			3.83	3.51	3.15	1.00	.94	.05	2.02	2.10	2.52	1.30
23			3.83	3.55	3.12	.24	1.08	.07	2.02	2.12	2.56	1.32
24			3.83	3.53	3.13	.57	1.13	.07	2.02	2.13	2.59	1.46
25			3.84	3.52	3.14	.80	1.30	.10	2.02	2.15	2.52	1.52
26			3.85	3.52	3.17	.93	1.38	.12	2.02	2.17	2.05	1.58
27			3.86	3.54	3.20	1.11	1.47	.12	2.02	2.18	2.05	1.68
28			3.87	3.56	3.23	1.23	1.55	.45	2.02	2.20	2.04	1.77
29			3.87	3.60	3.05	1.33	1.60	.47	2.02	2.22	1.97	1.85
30			3.88	3.37	2.81	1.41	1.67	.50	2.02	2.24	1.55	1.88
31			3.21		2.79		1.69	.83		2.25		1.90

* - estimate

WHITTENHORSE CREEK

Whittenhorse Creek near Vineland, Florida (2662.00), drains 12.4 square miles (32.1 kilometres) to the west of the RCID. The average yearly flow from the basin is estimated to be 8 inches (20 centimetres). Flow ceased for more

Table 4.--Daily minimum depth below land surface of water levels in Sewage Treatment Plant water-table aquifer well 822-135-1 in 1972 and 1973--continued.
1973

DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	1.95	1.00	1.88	1.08	2.11	2.44						
2	1.99	.62	1.88	1.17	2.13	2.46						
3	1.99	.59	1.88	1.31	2.15	2.52						
4	1.99	1.00	1.90	.98	2.22	2.58						
5	1.99	1.21	1.93	1.02	2.24	2.60						
6	2.03	1.27	1.98	1.24	2.29	2.63						
7	2.06	1.33	2.00	1.31	2.35	2.66						
8	2.08	1.39	2.02	.59	2.37	2.68						
9	2.10	.40	1.86	.89	2.08	2.72						
10	2.11	.30	1.85	1.15	2.06	2.75						
11	1.65	.72	1.89	1.34	2.08	2.79						
12	1.03	1.01	1.98	1.45	2.14	2.80						
13	1.03	1.10	2.04	1.50	2.10	2.28						
14	1.19	1.18	2.07	1.51	2.07	2.12						
15	1.32	1.04	2.09	1.61	2.11	2.13						
16	1.40	1.22	2.09	1.67	2.13	2.19						
17	1.52	1.37	2.07	1.67	2.14	2.27						
18	1.58	1.21	2.09	1.71	2.16	2.32						
19	1.62	1.20	2.12	1.77	2.19	1.82						
20	1.67	1.29	2.12	1.81	2.25	1.82						
21	1.73	1.50	2.12	1.86	2.24	1.58						
22	1.25	1.57	2.12	1.91	2.39	1.59						
23	.47	1.62	2.12	1.93	2.42							
24	.47	1.68	2.12	1.95	2.43							
25	.72	1.73	.77	1.98	2.30							
26	.82	1.81	.64	1.92	2.29							
27	.68	1.80	.95	1.90	2.32							
28	.37	1.85	1.13	1.95	2.43							
29	.38		.80	2.05	2.51							
30	.80		.80	2.10	2.46							
31	1.03		1.03		2.45							

than 1 month in each of 5 complete years of record. The longest period of no flow was 235 days in 1968.

DAVENPORT CREEK

Davenport Creek near Loughman, Florida (2664.80), drains approximately 23 square miles (59.6 square kilometres) southwest of the RCID. The average yearly flow from the basin is estimated to be 10.7 inches (27.2 centimetres). Flow has been continuous since collection or record began in January 1969. The minimum daily flow was 1.9 cubic feet per second (0.05 cubic metre per second) in July 1969.

Table 5.--Daily maximum altitude of water levels in Bay Lake, Floridan aquifer well 825-134-2 in 1972 and 1973.

DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	89.38	90.37	88.05	90.25	89.41	89.62	90.62	90.18	91.27	85.32	89.98	91.20
2	89.65	90.54	89.79	90.44	89.50	90.04	90.57	90.30	91.30	84.70	90.46	91.32
3	89.74	90.63	90.17	90.57	89.40	90.68	90.59	89.77	91.36	85.25	90.65	91.43
4	89.70	90.65	90.42	90.47	89.41	89.76	90.55	89.97	91.27	85.20	90.78	91.49
5	89.75	90.74	90.46	90.20	89.33	89.63	90.60	90.02	91.21	84.60	91.03	91.48
6	89.72	90.92	90.55	90.19	89.25	88.19	90.55	90.14	91.33	84.22	91.03	91.47
7	89.65	91.09	88.42	90.24	89.27	88.95	90.03	90.16	91.23	83.72	90.77	91.51
8	89.72	91.38	87.64	90.23	89.23	89.10	90.23	90.06	91.11	83.53	90.71	91.60
9	89.77	91.27	89.10	89.94	89.28	89.07	90.26	91.21	91.05	83.61	90.86	91.63
10	89.87	91.11	89.66	90.06	89.05	88.97	90.41	91.72	91.08	83.84	90.79	91.73
11	89.81	91.15	90.00	90.10	89.07	89.03	90.44	90.36	91.10	84.12	90.81	91.75
12	87.49	91.22	90.29	90.11	88.93	89.19	90.46	90.42	91.07	83.91	88.93	91.74
13	86.75	91.31	90.46	90.05	88.97	89.18	90.48	90.47	90.92	83.79	90.26	90.70
14	86.40	91.27	89.06	89.92	89.00	89.16	90.57	90.49	90.94	83.84	90.95	90.13
15	86.27	91.27	89.71	89.71	89.11	89.12	90.82	90.50	90.75	83.76	91.17	90.68
16	86.15	91.22	89.73	89.64	89.22	89.06	90.70	90.44	90.80	83.68	91.30	90.88
17	86.25	91.36	89.53	89.73	89.49	89.08	90.93	90.50	90.81	84.43	91.53	90.18
18	86.17	91.37	89.62	89.47	89.96	89.50	90.78	90.52	90.82	85.88	90.76	90.81
19	86.02	91.35	89.71	89.15	90.13	89.78	90.78	90.58	90.68	85.83	91.20	90.98
20	85.67	91.29	89.77	88.98	90.08	89.97	90.97	90.62	90.56	86.97	91.27	91.00
21	85.94	91.31	89.72	88.91	90.12	90.14	90.85	90.72	90.63	86.34	91.11	91.28
22	86.40	91.31	89.80	88.81	90.36	90.15	90.86	90.82	90.10	86.24	91.24	91.43
23	86.66	91.27	90.32	88.90	90.31	90.30	90.88	90.86	89.52	86.17	88.83	91.30
24	88.11	91.12	90.27	88.97	90.25	90.53	90.90	90.93	88.68	85.84	88.22	91.19
25	88.96	90.97	90.27	89.13	90.13	90.62	90.83	91.01	88.84	88.68	88.27	91.34
26	89.48	90.88	90.37	89.05	89.50	90.89	90.72	91.08	88.52	89.39	89.10	91.45
27	89.82	90.82	90.49	89.18	89.29	90.65	90.68	91.20	88.39	89.94	90.27	91.32
28	89.92	90.82	90.29	88.90	89.38	90.63	90.61	91.16	89.39	90.41	90.66	91.05
29	89.98	88.87	89.77	88.77	89.54	90.62	90.41	91.14	89.53	90.72	90.88	91.12
30	90.31		89.97	89.26	89.65	90.62	90.43	91.12	87.79	90.96	91.06	91.23
31	90.34		90.18		89.67		90.31	91.36		88.77		91.32

REEDY CREEK

Reedy Creek near Vineland, Florida (2663.00), drains approximately 75 square miles (194 square kilometres) including the 12.4 square miles (32.1 square kilometres) drained by Whittenhorse Creek. Another 44 square miles (114 square kilometres) drained by Reedy Creek near Vineland (2663.00) lies outside the RCID to the west and in the headwaters of Reedy Creek near Reedy Lake. Average yearly streamflow from the entire basin above the gaging station

BUREAU OF GEOLOGY

Table 5.--Daily maximum altitude of water levels in Bay Lake, Floridan aquifer well 825-134-2 in 1972 and 1973--continued.

1973												
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	91.32	92.15	92.30	91.70	89.57	88.33						
2	91.33	92.23	91.11	91.63	90.18	88.85						
3	91.14	92.29	90.88	91.75	90.30	88.81						
4	90.97	92.25	91.23	91.16	89.70	89.27						
5	91.08	92.27	92.04	91.77	90.10	89.42						
6	91.22	92.25	91.68	90.50	90.19	89.48						
7	91.26	92.25	91.95	89.99	90.11	89.38						
8	91.32	92.30	91.65	90.73	90.41	89.85						
9	91.11	92.41	91.73	91.26	90.06	89.88						
10	91.38	92.47	91.60	90.92	90.52	89.30						
11	91.62	92.22	91.65	90.82	90.49	89.38						
12	91.77	92.34	91.75	91.12	90.79	89.41						
13	91.68	92.49	91.63	90.83	90.83	89.60						
14	91.72	92.54	91.60	90.88	90.85	89.43						
15	91.58	92.40	90.65	91.03	90.76	89.39						
16	91.58	92.35	91.02	90.79	90.40	88.94						
17	91.52	92.30	91.19	90.66	90.67	88.97						
18	91.56	92.33	91.47	90.65	90.36	89.52						
19	91.66	92.38	90.95	90.52	90.52	89.49						
20	91.64	92.32	91.16	90.31	90.57	89.66						
21	91.71	92.28	90.98	90.12	90.48	89.26						
22	91.67	92.25	91.13	90.25	90.22	89.62						
23	91.83	92.20	90.49	90.73	90.04	89.77						
24	91.92	92.19	90.65	90.25	89.73	89.65						
25	91.98	92.18	88.65	89.67	88.31	89.63						
26	92.25	92.30	90.28	89.42	89.00							
27	92.40	92.23	91.04	89.41	89.67							
28	92.16	92.44	90.92	89.42	88.33							
29	92.29		90.93	89.53	88.37							
30	92.05		91.52	89.60	89.04							
31	92.07		91.24		89.56							

is estimated to be 8.0 inches (20 centimetres). During the 5 complete years of record, the flow ceased at least 1 day in both 1967 and 1968. The longest period of no flow was 84 days in 1967.

Reedy Creek near Loughman, Florida (2665.00), drains an indeterminate area including the 75 square miles (194 square kilometres) above Reedy Creek near Vineland (2663.00), 23 square miles (59.6 square kilometres) above Davenport Creek near Loughman (2664.00), and an undetermined part of Reedy

Creek Swamp into which Bonnet Creek drains. Since October 1939, the drainage area of Reedy Creek near Loughman (2665.00) has been reported to be as much as 194 square miles (502 square kilometres). Presently (1974), the drainage area is reported as 110 square miles (285 square kilometres), approximately, including part of the watershed in Reedy Creek Swamp, which is indeterminate. Since 1951, flow past the gaging station (2665.00) near Loughman has been reported as affected by several canals above the station, which divert an undetermined amount of water into the Shingle Creek basin east of the RCID. Since May 1970, the flow has been regulated by dikes, culverts and automatic control structures in the RCID.

During the 19 complete years of record prior to October 1959, the average yearly flow past Reedy Creek Near Loughman (2665.00) was 5.81 inches (14.76 centimetres). Since July 1968, the average yearly flow has been 10.7 inches (27.2 centimetres). Prior to October 1959, the minimum daily flow for Reedy Creek near Loughman was 2.4 cfs (0.07 cubic metre per second). However, since August 1968, the flow ceased for 28 days in 1970 and 97 days in 1972.

LAKES

Water-surface altitudes for lakes in the vicinity of the RCID are shown by figure 9. Lake Butler at Windermere shows a slight declining trend, about 1 foot (0.3 metre), since 1960. However, 1960, the first year of record, was the wettest in central Florida. Lake Bryan shows no general trend, but its pattern of fluctuation is similar to that of Lake Butler over the same 12-year period to 1971.

Before December 1968 when draining of Bay Lake was started, fluctuations in stage appear to have been similar to those of Lake Butler. Draining the lake required 1 year to accomplish, December 1968 to December 1969. The lake was kept dry until September 1970 after which it was refilled by rainfall augmented with water pumped from the Floridan aquifer. Since mid-1971, the level of the lake has been maintained between 94 and 95 feet (28.6 and 29.0 metres) above mean sea level by rainfall and pumped ground water. The daily mean altitude of Bay Lake during 1972 and 1973 is shown in table 6.

Between July 1966 and December 1968, prior to dewatering, the water level of Bay Lake ranged between 92.6 to 95.3 feet (28.2 to 29.0 metres) above mean sea level. During this time, the potentiometric surface of the Floridan aquifer varied from about 1.7 feet (0.5 metre) above the lake surface to about 1.7 feet (0.5 metre) below the lake surface, and the water table near the lake varied from about 1 foot (0.3 metre) above to 0.3 foot (0.1 metre) below the lake level. Generally, both the potentiometric surface and the water table at wells near the lake were simultaneously above or below the lake level. Thus, water tended to move into the lake from both aquifers or out of the lake to both aquifers.

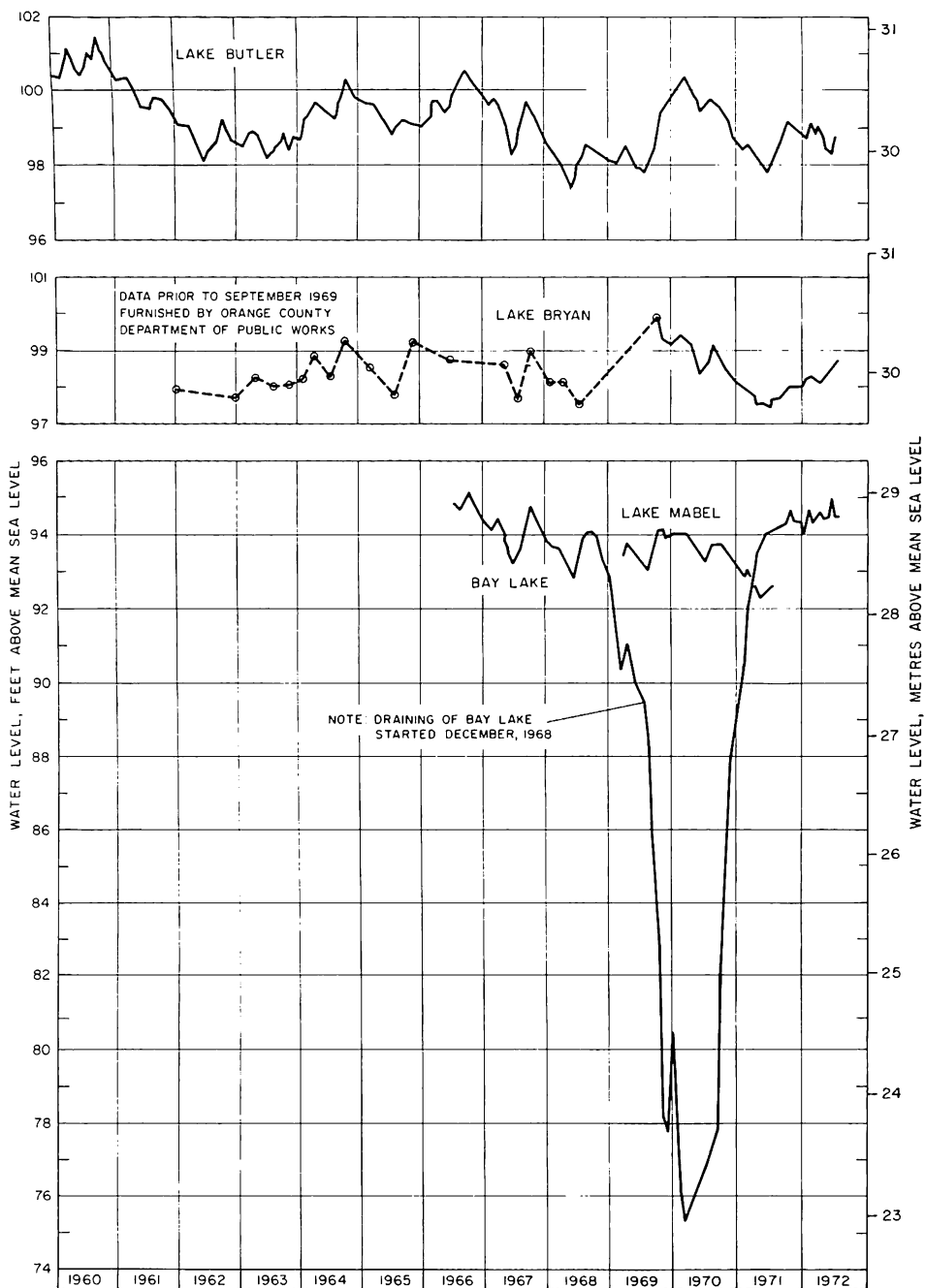


Figure 9—Water-levels of Reedy Creek Improvement District area lakes.

Table 6.--Daily mean altitude of Bay Lake near Vineland (2638.50) in 1972 and 1973.

DAY	1972											
	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	94.36	94.54	94.38	94.61	94.50	94.55	94.54	94.53	94.60	94.38	94.27	94.37
2	94.36	94.60	94.42	94.58	94.50	94.54	94.53	94.53	94.58	94.40	94.25	94.35
3	94.36	94.62	94.43	94.57	94.51	94.53	94.52	94.52	94.57	94.45	94.24	94.35
4	94.36	94.52	94.43	94.56	94.52	94.52	94.51	94.52	94.51	94.43	94.23	94.34
5	94.25	94.45	94.42	94.56	94.51	94.50	94.50	94.51	94.48	94.42	94.22	94.34
6	94.19	94.45	94.41	94.57	94.50	94.50	94.54	94.52	94.48	94.40	94.22	94.34
7	94.12	94.45	94.43	94.57	94.49	94.49	94.60	94.54	94.48	94.37	94.22	94.33
8	94.10	94.45	94.46	94.56	94.50	94.48	94.59	94.53	94.46	94.34	94.21	94.32
9	94.07	94.47	94.50	94.55	94.51	94.45	94.58	94.61	94.45	94.31	94.19	94.32
10	93.98	94.42	94.49	94.54	94.53	94.44	94.59	94.75	94.45	94.30	94.17	94.31
11	93.97	94.41	94.48	94.52	94.55	94.46	94.58	94.70	94.44	94.26	94.17	94.30
12	93.99	94.41	94.47	94.51	94.55	94.53	94.57	94.66	94.43	94.24	94.18	94.29
13	94.03	94.41	94.46	94.51	94.54	94.55	94.63	94.63	94.43	94.23	94.23	94.28
14	94.07	94.40	94.49	94.50	94.55	94.54	94.69	94.61	94.43	94.22	94.25	94.27
15	94.12	94.40	94.49	94.50	94.56	94.54	94.55	94.60	94.43	94.20	94.25	94.29
16	94.15	94.44	94.49	94.50	94.59	94.51	94.52	94.59	94.43	94.19	94.22	94.30
17	94.17	94.46	94.49	94.49	94.59	94.50	94.54	94.58	94.42	94.18	94.20	94.25
18	94.18	94.43	94.49	94.46	94.60	94.60	94.57	94.60	94.41	94.16	94.17	94.22
19	94.22	94.43	94.49	94.45	94.59	94.90	94.57	94.59	94.41	94.18	94.16	94.22
20	94.26	94.36	94.47	94.45	94.57	94.75	94.56	94.57	94.40	94.20	94.18	94.22
21	94.30	94.31	94.47	94.45	94.60	94.69	94.55	94.67	94.39	94.20	94.15	94.28
22	94.34	94.30	94.49	94.44	94.57	94.65	94.55	94.67	94.38	94.21	94.14	94.40
23	94.38	94.30	94.49	94.44	94.54	94.70	94.54	94.65	94.37	94.23	94.12	94.40
24	94.41	94.30	94.46	94.45	94.53	94.68	94.54	94.67	94.36	94.25	94.11	94.39
25	94.42	94.30	94.45	94.44	94.51	94.66	94.53	94.66	94.36	94.27	94.16	94.39
26	94.43	94.32	94.44	94.43	94.48	94.64	94.52	94.64	94.36	94.26	94.29	94.38
27	94.46	94.32	94.43	94.39	94.46	94.60	94.50	94.64	94.36	94.25	94.29	94.37
28	94.46	94.33	94.42	94.38	94.47	94.60	94.50	94.62	94.36	94.27	94.28	94.36
29	94.46	94.35	94.43	94.37	94.54	94.57	94.49	94.62	94.35	94.29	94.31	94.36
30	94.46		94.44	94.47	94.55	94.55	94.48	94.62	94.35	94.28	94.37	94.36
31	94.49		94.54		94.55		94.47	94.61		94.28		94.36

The level of Bay Lake has been continuously higher than the water table near the lake and the potentiometric surface of the Floridan aquifer since April 1971. The water levels in Floridan-aquifer wells near the lake have varied from about 0.3 foot (0.1 metre) below to 11 feet (3.4 metres) below the lake level, and the levels in water-table wells near the lake varied from about 0.3 foot (0.1 metre) below to 2.2 feet (0.7 metre) below the lake level. Thus, water now tends to move out of the lake to both aquifers continuously.

BUREAU OF GEOLOGY

Table 6.--Daily mean altitude of Bay Lake near Vineland (2638.50) in 1972 and 1973--continued.

1973												
DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
1	94.36	94.49	94.30	94.50	94.24	94.30						
2	94.37	94.50	94.30	94.50	94.22	94.30						
3	94.37	94.50	94.29	94.50	94.21	94.30						
4	94.38	94.49	94.29	94.50	94.20	94.29						
5	94.38	94.48	94.29	94.50	94.19	94.28						
6	94.38	94.46	94.28	94.49	94.17	94.27						
7	94.38	94.45	94.27	94.50	94.15	94.25						
8	94.38	94.44	94.25	94.55	94.14	94.24						
9	94.36	94.45	94.25	94.54	94.20	94.24						
10	94.36	94.55	94.26	94.52	94.25	94.23						
11	94.41	94.50	94.26	94.49	94.25	94.22						
12	94.47	94.46	94.26	94.46	94.24	94.20						
13	94.45	94.45	94.25	94.45	94.23	94.25						
14	94.43	94.45	94.25	94.44	94.22	94.34						
15	94.42	94.46	94.24	94.43	94.21	94.33						
16	94.41	94.45	94.23	94.41	94.19	94.35						
17	94.40	94.42	94.22	94.40	94.16	94.36						
18	94.39	94.41	94.18	94.39	94.14	94.35						
19	94.39	94.42	94.16	94.38	94.13	94.37						
20	94.38	94.41	94.15	94.37	94.12	94.38						
21	94.37	94.40	94.14	94.36	94.10	94.39						
22	94.40	94.39	94.12	94.35	94.09	94.43						
23	94.50	94.37	94.10	94.33	94.07	94.46						
24	94.54	94.35	94.09	94.32	94.06	94.45						
25	94.53	94.34	94.16	94.30	94.12	94.44						
26	94.52	94.33	94.50	94.30	94.18							
27	94.53	94.32	94.47	94.33	94.17							
28	94.55	94.30	94.45	94.30	94.15							
29	94.56		94.46	94.26	94.14							
30	94.51		94.50	94.25	94.20							
31	94.50		94.50		94.30							

RUNOFF CHARACTERISTICS

Figures 10 through 16 show hydrographs of discharge for streams in the Reedy Creek basin. Streamflow during the 6 water years October 1, 1965, through September 30, 1971, was 57 percent of average in the basin, based on 26 years of record (1945-71) for Cypress Creek at Vineland (2640.00). During the 6-year period, the annual average discharge at Cypress Creek at Vineland

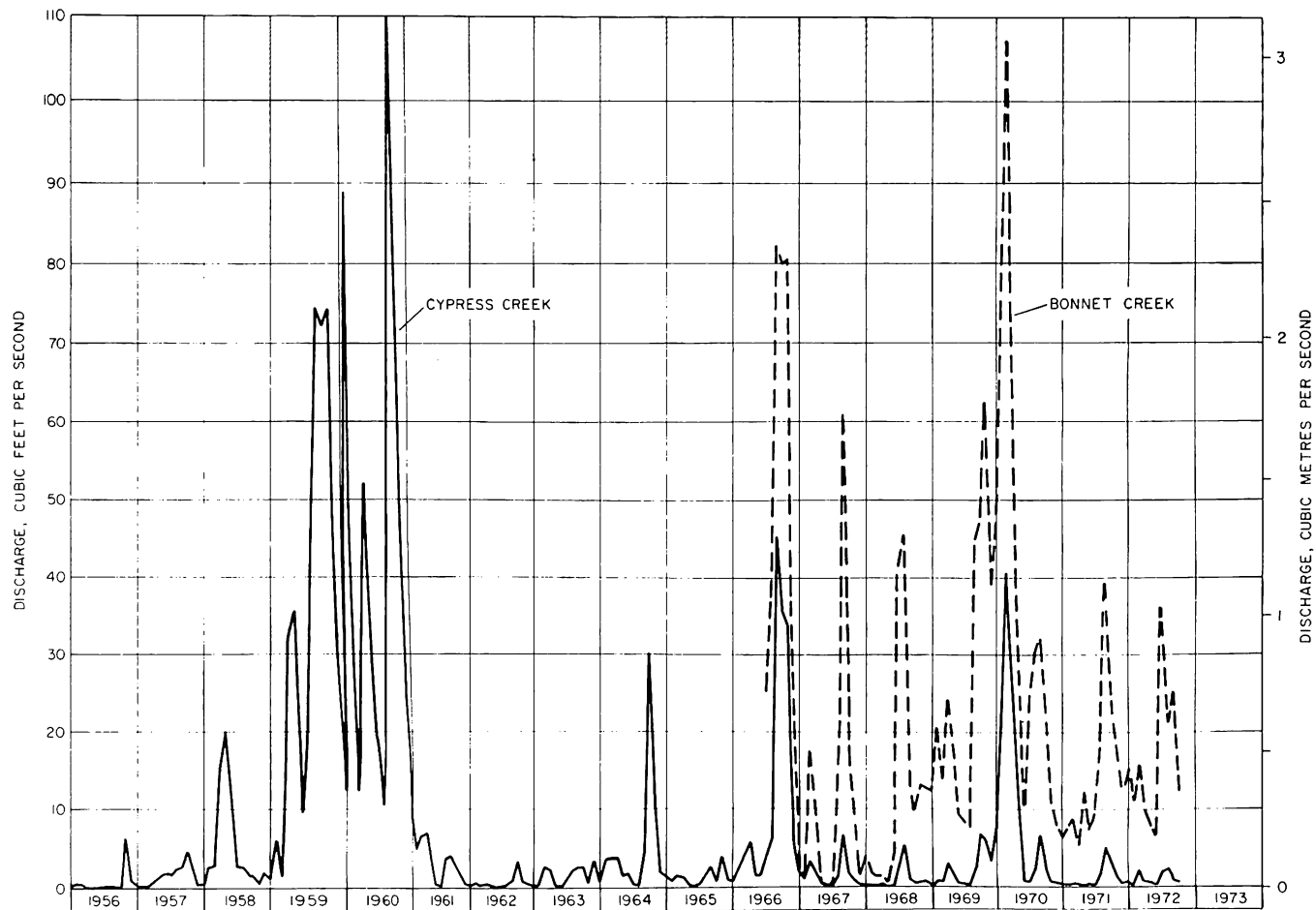


Figure 10—Monthly mean discharge for Cypress Creek near Vineland (2640.00), and Bonnet Creek near Vineland (2641.00).

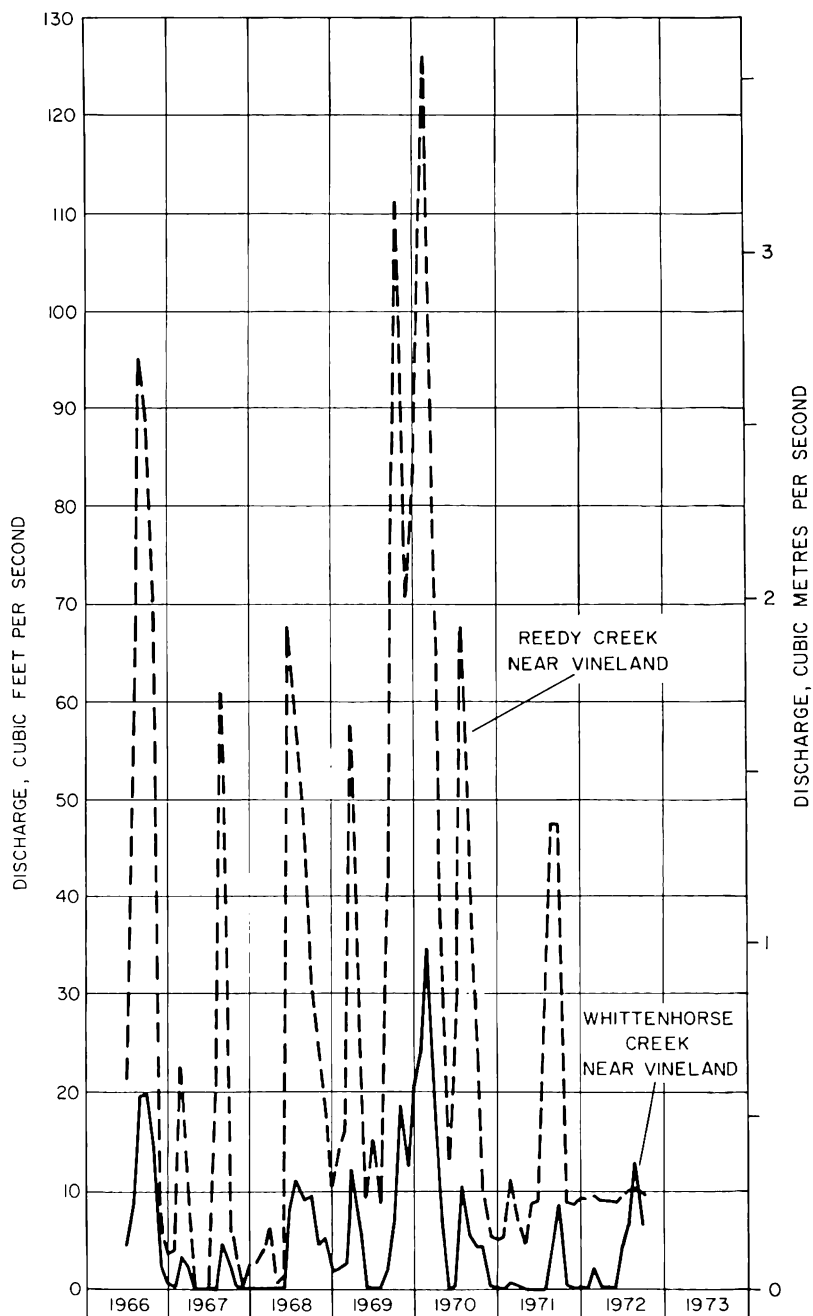


Figure 11—Monthly mean discharge for Whittenhorse Creek near Vineland (2662.00), and Reedy Creek near Vineland (2663.00).

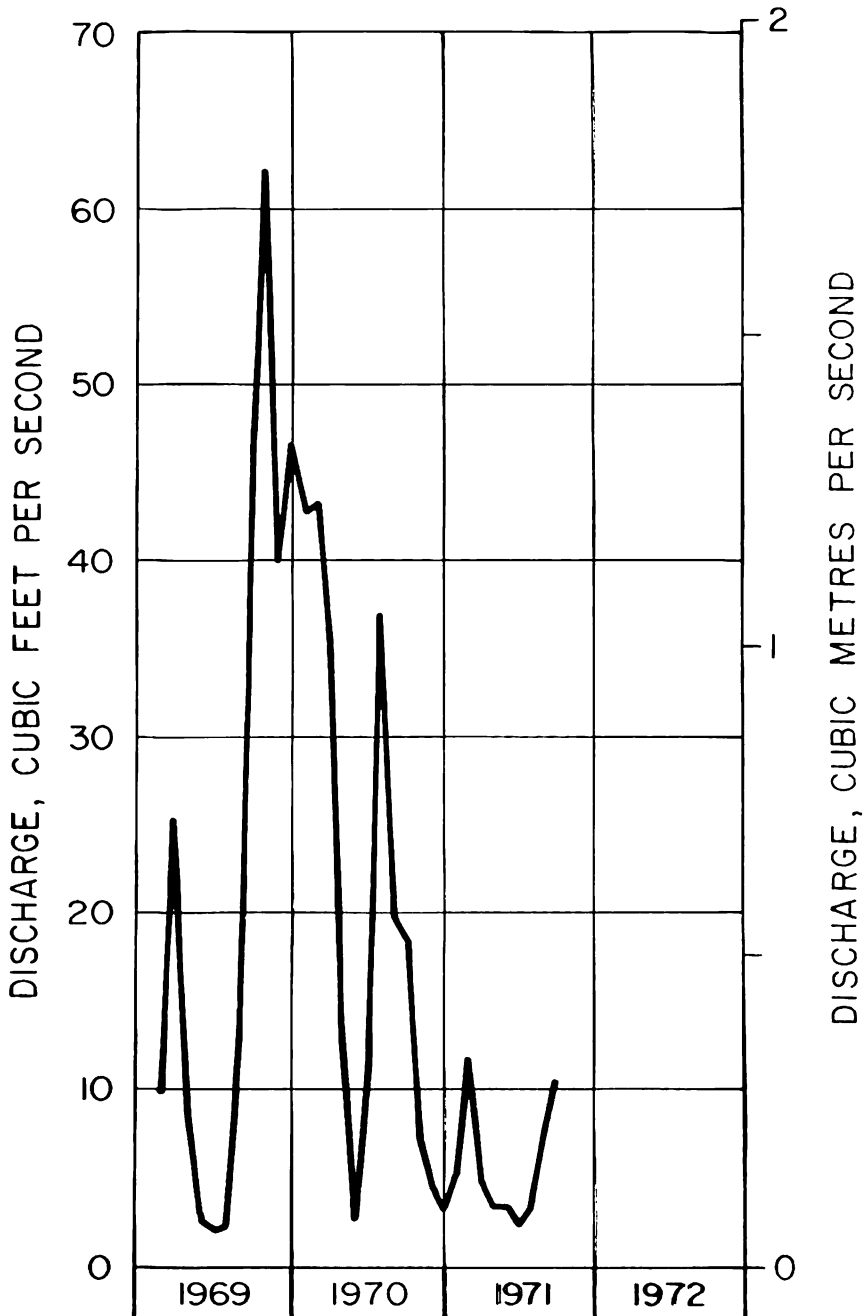


Figure 12—Monthly mean discharge for Davenport Creek near Loughman (2664.80).

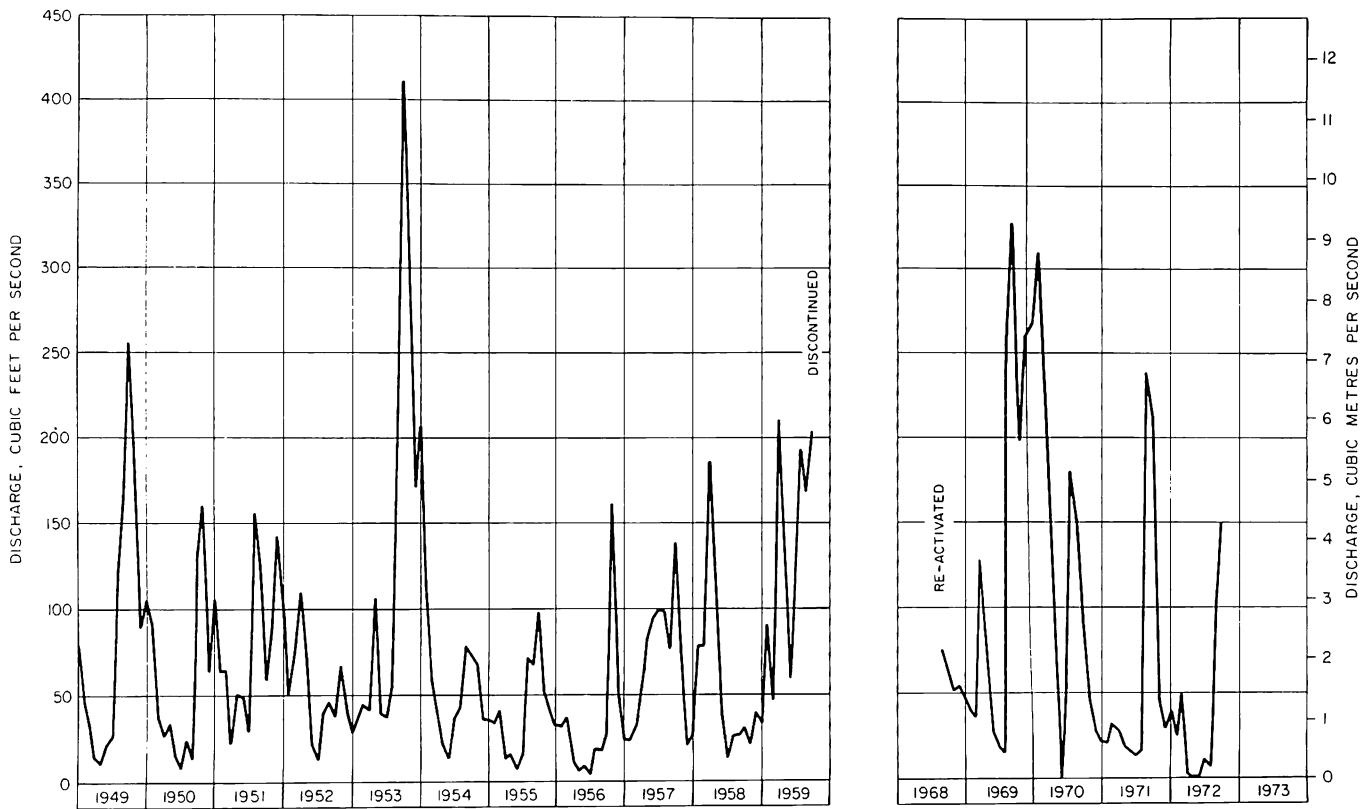


Figure 13—Monthly mean discharge for Reedy Creek near Loughman (2665.00).

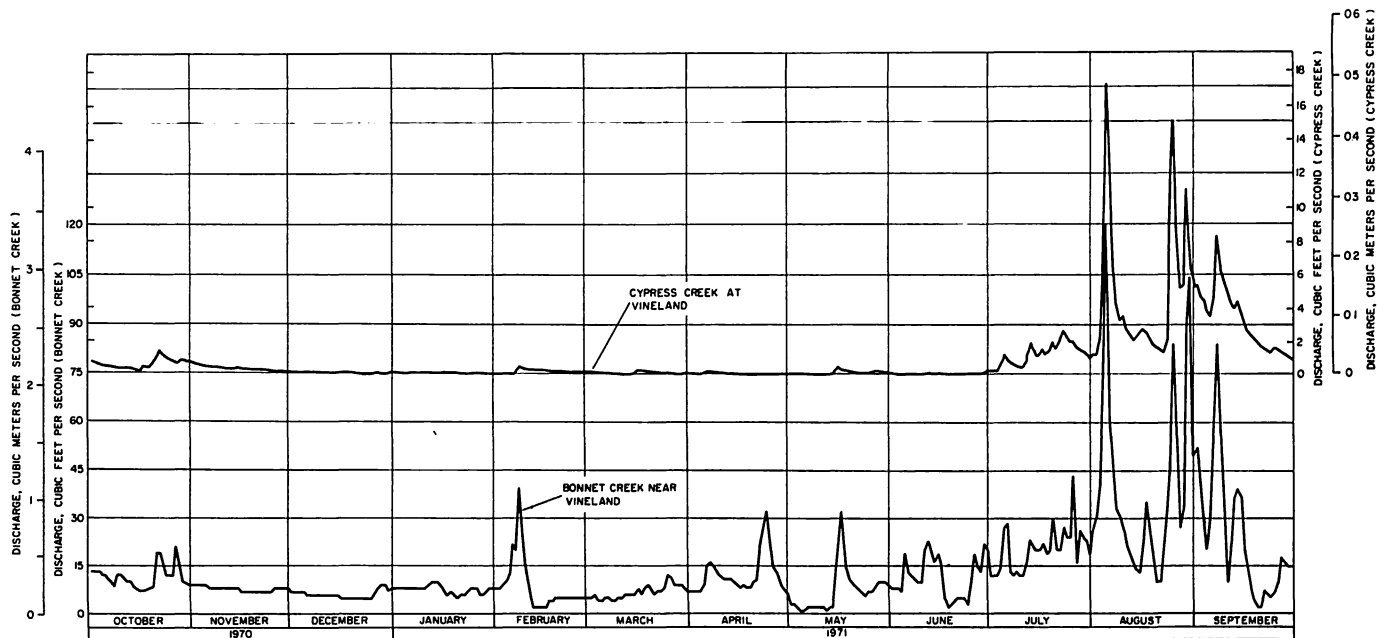


Figure 14—Daily mean discharge for Cypress Creek near Vineland (2640.00), and Bonnet Creek near Vineland (2641.00), October 1, 1970 to September 30, 1971.

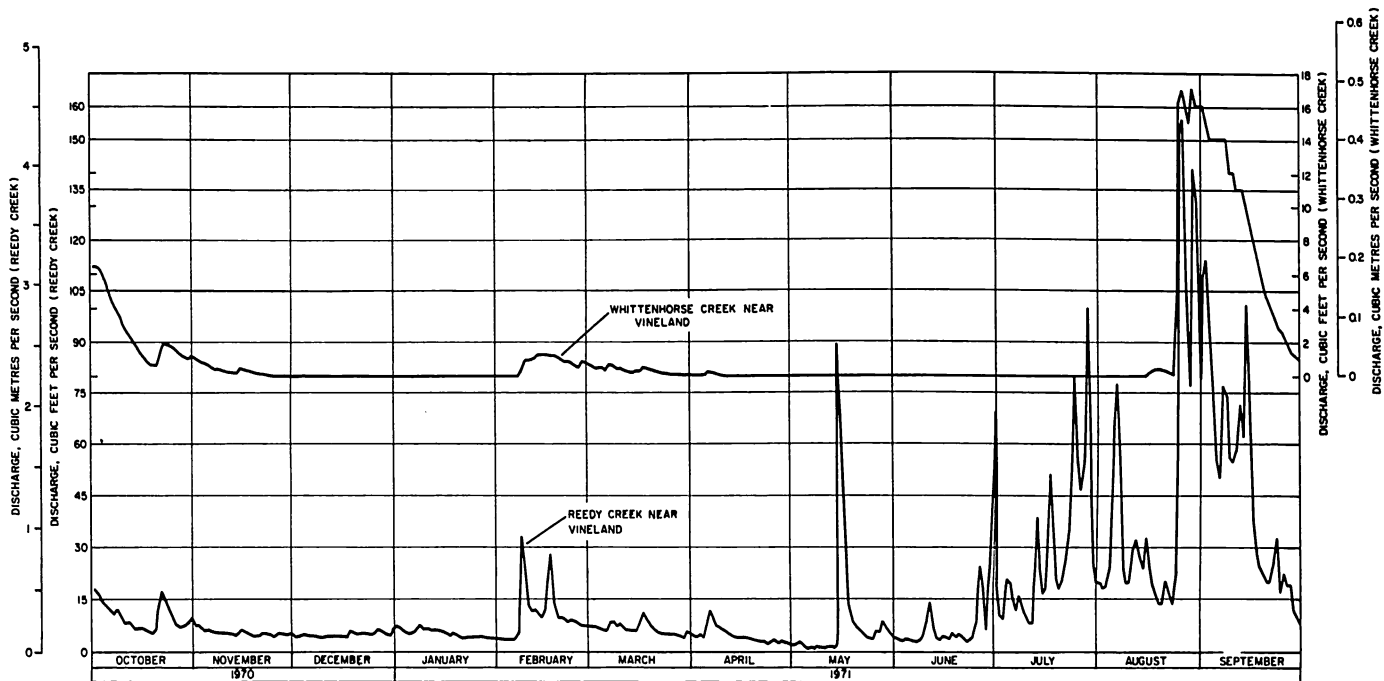


Figure 15—Daily mean discharge for Whittenhorse Creek near Vineland (2662.00), and Reedy Creek near Vineland (2663.00), October 1, 1970 to September 30, 1971.

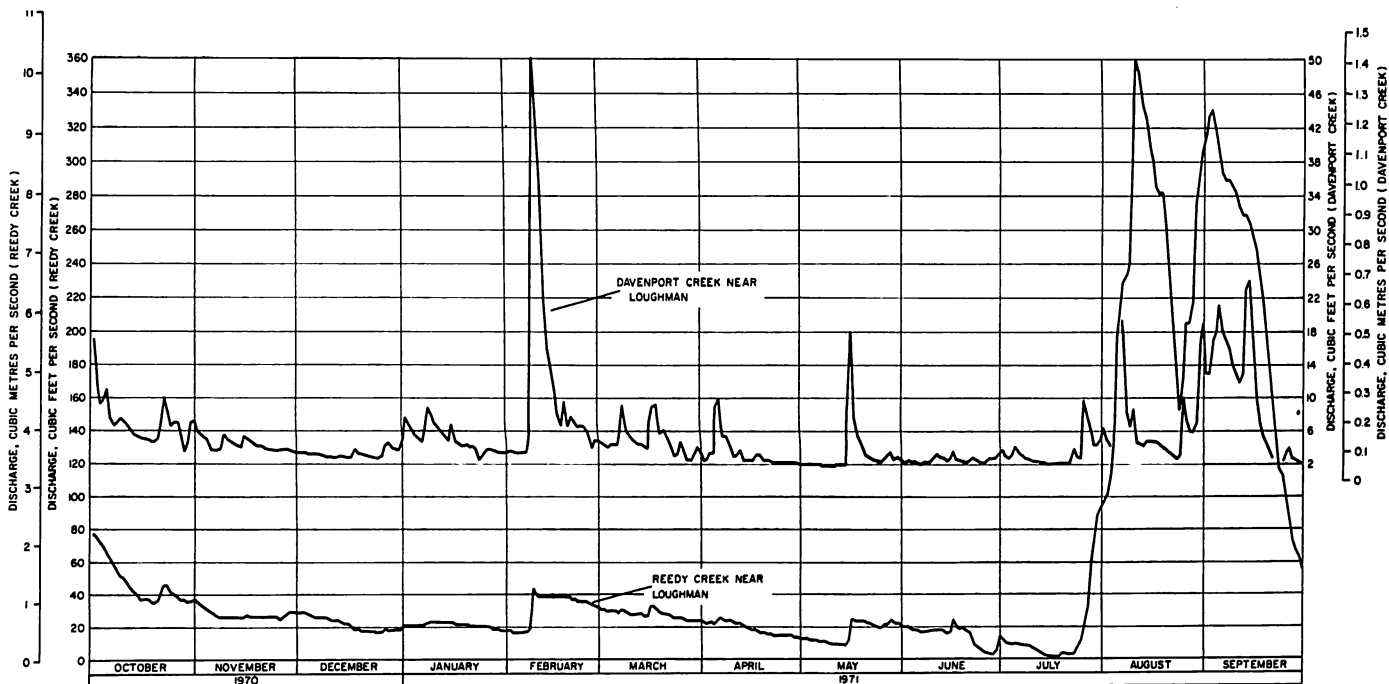


Figure 16—Daily mean discharge for Davenport Creek near Loughman (2664.80), and Reedy Creek near Loughman (2665.00), October 1, 1970 to September 30, 1971.

(2640.00) varied from 9 to 130 percent of the 26-year average. The average discharges for water years 1966-71 were 119, 58, 9, 15, 130, and 11 percent of average, respectively. The Cypress Creek basin may not be representative of the vicinity of the RCID for all comparison purposes because of very low runoff and intermittent flow. However, it demonstrates the short-term variability in the distribution of surface water and emphasizes that parts of larger drainage basins can be non-contributing at times and, thus, produce marked differences in runoff characteristics from site to site within the RCID.

The annual runoff data for Cypress Creek at Vineland (2640.00) were statistically analyzed to determine any change in the runoff pattern for streams tributary to the RCID. Thirteen streamflow stations in central Florida were used to determine the regional cumulative runoff pattern for central Florida. A double-mass curve of the streamflow data is presented in figure 17.

The flow of Cypress Creek is influenced by the relationship between the potentiometric surface of the Floridan aquifer and the lake level in the Butler Chain of lakes, lakes that form the headwaters of Cypress Creek. During normal to drier-than-normal years, very little outflow occurs from the Butler Chain because the amount of inflow (including rain) to the Chain is largely offset by evaporation and leakage from the lakes to the Floridan aquifer under a normal head difference of 10 to 16 feet. In wet years, the potentiometric surface of the Floridan aquifer rises more than do the lake levels, thereby reducing the amount of head difference and decreasing the amount of downward leakage. Evaporation is about the same for wet and dry years. Therefore, in wet years outflow increases sharply because of the increase in inflow (including rain) and the decrease in leakage to the Floridan aquifer. This pronounced variation in outflow between wet and dry years is shown in figure 17 which also shows that no demonstrable change in the surface-water relations has taken place during the period of analysis.

The interrupted record for Reedy Creek near Loughman (2665.00) was analyzed in a similar manner to determine whether there was any change in the runoff pattern for the RCID. A double-mass curve of the streamflow data for 1946-58 and 1969-72 at Reedy Creek near Loughman (2665.00) is presented in figure 18. The regional data are the same as used in figure 17. The 1969 to 1972 data when accumulated without regard for the missing period, 1959-68, indicate an apparent change in slope between 1958 and 1969. Several more years of records are probably necessary to determine the significance of and degree of the change in the slope.

The change in the slope of the curve in figure 18 indicates an increase in runoff for the Reedy Creek basin. However, the length of record reflecting the change is not great enough to attribute a permanent increase in runoff to urbanization in the RCID. Several factors that may have contributed to the increase in runoff are either nonrecurring or were not uniformly effective during the period of data involved. For instance, the draining of Bay Lake was a

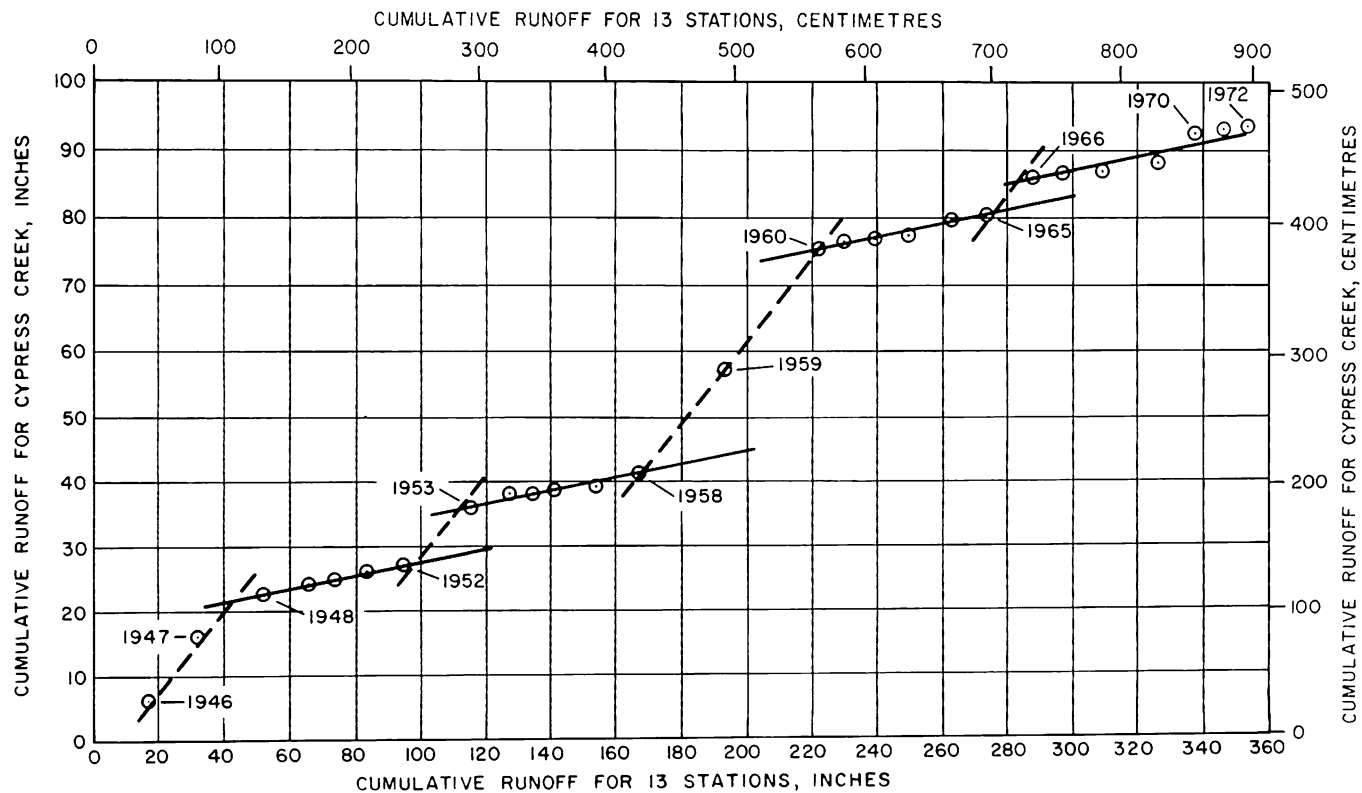


Figure 17—Double-mass curve of streamflow data for Cypress Creek near Vineland, and average of 13 other central Florida gaging stations.

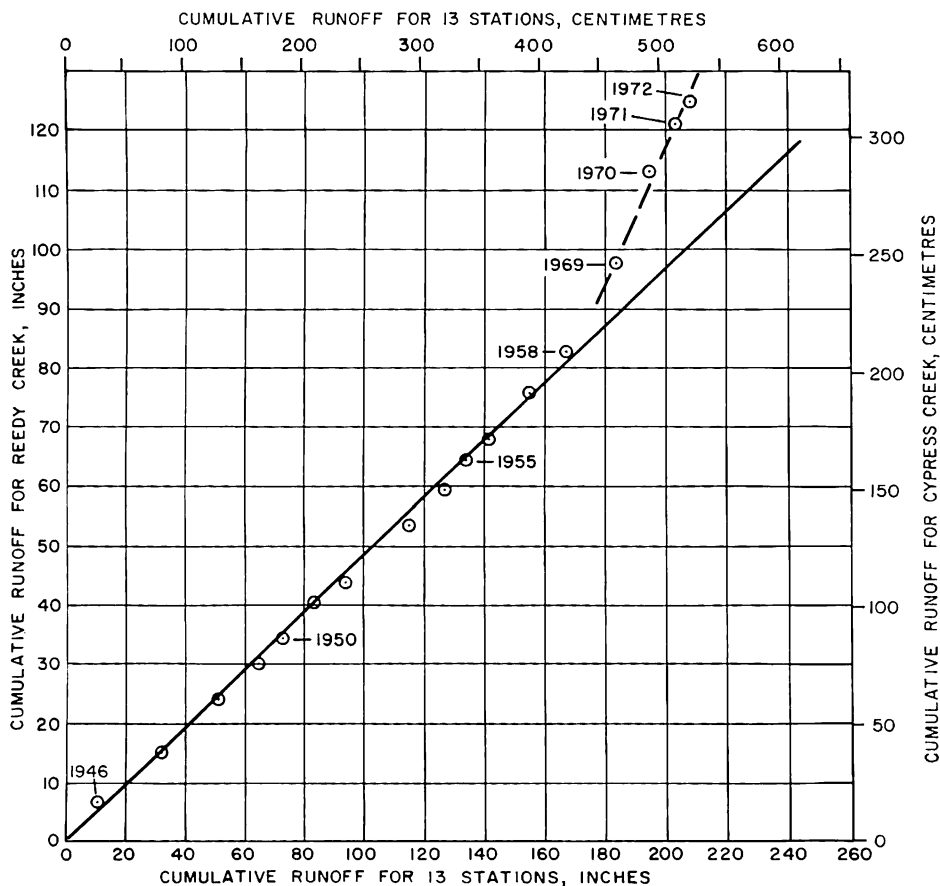


Figure 18—Double-mass curve of streamflow data for Reedy Creek near Loughman, and average of 13 other central Florida gaging stations.

nonrecurring factor that added flow to Reedy Creek at Loughman (2665.00) from July 1969 to March 1970. Although the volume of additional water can be easily determined, the routing downstream and disposition of that water in time and space were obscured by some of the following factors:

The progressive canalization and improvement of stream channels had a variable effect, sometimes curtailing and other times contributing flow, depending on the phase of construction. Gated control structures in the drainage system regulated natural flow and had a variable effect on streamflow from wet to dry conditions. Surface water naturally moved through Reedy Creek Swamp to both

Reedy Creek and Shingle Creek to the east of the RCID. Now, dikes, canals, and constant head structures in the channels may have altered the movement of surface water through Reedy Creek Swamp. Continuing construction of roads, parking lots and buildings progressively altered surface-runoff patterns. Based on data from available aquifer tests and logs of exploratory drilling, even the pumpage from the Floridan aquifer to refill the lake-lagoon, which began in September 1970, had a localized, nonrecurring, initial effect on the relation between ground water and surface water.

Both Bonnet Creek near Vineland (2641.00) and Reedy Creek near Vineland (2663.00) show increases in mean monthly flow in dry seasons since 1969 as compared to 1966-68 (figures 10 and 11). Part of the increased low flow in Bonnet Creek is attributed to water drained from Bay Lake in 1969, and to Floridan aquifer water that eventually is used to maintain the level of Bay Lake. The flow in Reedy Creek near Vineland (2663.00) is also affected by the pumping, because Bay Lake is connected to the lagoon excavated west of the lake and because the Theme Park water courses are constructed to permit diversions of pumped ground water to the east-west canal, which is tributary to Reedy Creek. During the dry seasons since 1970, the water level in the lake and lagoon has been higher than the water table was under natural conditions, thus maintaining seepage into the creeks. The water pumped from deep wells, which eventually goes to maintain Bay Lake-Lagoon-Theme Park water courses, is "new" water which should partly increase flows in the streams, because seepage from the lake back to the aquifer may be less than seepage from the lake into the creeks. Eventually, the pumpage from the aquifer, seepage to the aquifer, and seepage to stream channels should stabilize. Also, the several check or constant-head gates in both creeks have maintained water levels upstream from such control gates at about swamp levels, and evapotranspiration has probably increased. However, along the stream channels, the deeper canals are now more completely entrenched into the water-table aquifer than they were previously as natural streams. This canalization offers an increase in seepage in some reaches. As a result of all these factors, the minimum flows in the downstream part of the RCID have remained above 5 cubic feet per second (0.1 cubic metre per second) as compared to no flow on many days prior to development. Part of the increased minimum flows may be accounted for by the more uniformly distributed rainfall in 1969-71 as compared to 1966-68. However, the records for Whittenhorse Creek near Vineland (2662.00) and Cypress Creek at Vineland (2640.00) do not confirm that the distribution of rainfall accounted for the increase in low flow. The definite increase in minimum flow for both Bonnet Creek near Vineland (2641.00) and Reedy Creek near Vineland (2663.00) indicates that developments have changed the low-flow conditions in the lower reaches of the RCID, at least during 1970-72.

As the pumpage, recharge to the aquifer, and seepage to stream channels stabilize, the eventual increase in streamflow during the dry seasons will probably diminish from that noted for 1970-72. Only the water introduced from Floridan aquifer wells, less than 3.5 cubic feet per second (0.10 cubic metre per second), to maintain Bay Lake, Lagoon, and Theme Park water courses, and the water from rainfall less evapotranspiration impounded by constant head structures in the streams, will then be available to increase streamflow during dry seasons.

WATER QUALITY

GROUND WATER

Chemical analyses for 9 wells, 5 tapping the nonartesian or water-table aquifer and 4 tapping the Floridan aquifer, in the RCID and vicinity are available for interpretation of quality of ground water in the area. These analyses are tabulated in table 7.

Water from four of the five wells in the nonartesian aquifer is a calcium bicarbonate water. The fifth well, 825-134-3, on the north shore of Bay Lake, yields a sodium chloride water. These water compositions are illustrated in figures 19 and 20. The concentration of sodium chloride in well 825-134-3 has increased in recent years, as illustrated in figure 19. The dissolved-solids concentration in the water from this well may be building up partly as a result of the near constant surface elevation maintained in Bay Lake. Under predevelopment conditions, the water level in the nonartesian aquifer near the lake was higher than the lake level, and the aquifer tended to flush to the lake when the lake level was low. Now, after development, the lake level is always higher than the water level in the nonartesian aquifer; so, water moves only from the lake to the aquifer. This results in a higher, almost constant, water table near the lake and creates evapotranspiration conditions suitable for minimal concentrating of the mineral content of the water in the nonartesian aquifer near the lake.

The primary source of sodium chloride is probably tied up on the lake bottom in a reported cloud of flocculated materials that include the residual impurities from chemicals used to reduce the turbidity of the lake water during the refilling operation. Also, both the Floridan-aquifer water and rainfall contain sodium chloride in low concentrations. These low concentrations, the cloud of flocculated materials, and the previously mentioned relation between lake and aquifer water levels create the conditions suitable for the increase of the sodium-chloride concentrations. Presently (1974), the concentrations found in the water-table aquifer are well within acceptable levels.

The chemical analyses of water from the Floridan aquifer are shown in figures 21 through 23. These figures show that all of the wells contain a calcium bicarbonate water having nearly identical chemical characteristics.

Table 7.--Chemical analyses of water from wells in the Reedy Creek Improvement District (results in milligrams per liter except for color, pH, and specific conductance).

Date of Collection	Temperature (°C)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids	Hardness as CaCO ₃		Specific conductance (micromhos at 25°C)	pH	color
														Calcium magnesium	Non-carbonate			
<u>815-134-2 Shallow well near Loughman, Florida</u>																		
4-29-71	34	3.4	--	36	3.9	6.9	1.6	105	22	10	0.1	0.0	136	106	20	250	7.9	10
<u>822-135-1 Shallow well at Sewage Treatment Plant, RCID</u>																		
4-27-71	37	7.7	--	17	0.8	4.5	0.4	44	0.0	4.5	0.1	0.0	67	46	10	115	7.2	--
<u>823-131-7 Floridan aquifer well No. 5, RCID</u>																		
6-26-70	--	4.2	0.03	23	4.9	2.7	0.5	89	4.0	3.1	0.1	0.0	87	78	5	152	8.2	--
6-6-72	--	8.9	--	22	4.6	2.9	.5	88	3.6	5.0	.1	.0	90	75	3	163	8.3	5
<u>825-134-2 Floridan aquifer well at Bay Lake, RCID</u>																		
3-16-66	23	9.7	0.13	22	5.2	2.8	0.4	93	1.6	4.0	0.3	0.0	92	76	0	163	7.7	5
9-1-67	24	8.5	.00	20	4.4	3.6	1.3	73	2.4	3.8	.1	.1	88	68	8	152	8.7	0
5-17-68	23	8.7	.26	22	4.7	3.3	1.1	90	.2	4.5	.1	.9	90	74	0	162	7.8	5
7-22-69	23	9.4	--	23	4.5	3.0	1.0	93	.0	4.0	.0	.0	92	76	0	165	7.7	5
5-31-72	24	8.6	--	22	4.4	4.0	1.2	84	2.8	4.5	1.0	.0	94	74	5	163	8.7	10
<u>825-134-3 Shallow well at Bay Lake, RCID</u>																		
3-16-66	22	8.3	0.35	1.3	0.4	4.8	0.1	4	0.8	8.5	0.1	0.0	26	4	1	38	6.1	--
9-1-67	24	7.4	.03	6.1	.7	7.7	.4	18	2.0	14	.1	.0	47	18	3	84	6.0	5
5-17-68	25	10	1.6	3.8	.7	9.4	.3	10	2.2	17	.1	.3	49	12	4	83	6.0	5
7-22-69	25	8.0	--	2.0	1.0	11	.3	2	.0	20	.0	.0	43	9	8	91	5.0	10
5-31-72	24	8.1	--	4.0	2.1	32	6.0	10	24	42	.1	.0	120	19	11	231	5.6	30

Table 7.--Chemical analyses of water from wells in the Reedy Creek Improvement District (results in milligrams per liter except for color, pH, and specific conductance)--continued.

Date of Collection	Temperature (°C)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids	Hardness as CaCO ₃		Specific conductance (micromhos at 25°C)	pH	color
														Calcium magnesium	Non-carbonate			
<u>825-134-4 Floridan aquifer well at tree farm, RCID</u>																		
8-23-67	23	9.5	0.01	23	4.9	2.7	0.5	96	2.4	3.8	0.2	0.4	94	78	0	165	7.6	0
3-19-68	--	8.8	.12	25	5.4	2.7	.4	98	1.2	5.0	.0	.0	97	84	4	168	7.9	10
5-20-68	24	9.6	.09	24	5.0	2.6	.4	99	.2	6.5	.1	.9	96	80	0	170	7.5	5
11-7-68	--	9.0	.07	24	5.3	2.5	.4	97	1.2	5.5	.0	.0	96	82	2	161	7.4	5
<u>825-134-5 Shallow well, RCID</u>																		
4-11-68	--	9.8	--	40	2.4	7.2	0.5	134	0.4	10	0.2	0.4	137	110	0	240	6.4	40
<u>825-134-12 Floridan aquifer well No. 8, RCID</u>																		
6-26-70	--	9.2	0.02	23	5.2	2.7	0.4	95	3.2	3.8	0.2	0.2	95	79	1	160	7.7	--
<u>825-135-3 Shallow well at Tree Farm, RCID</u>																		
11-7-68	--	9.0	0.07	24	5.3	2.5	0.4	97	1.2	5.5	0.0	0.0	96	82	2	161	7.4	5

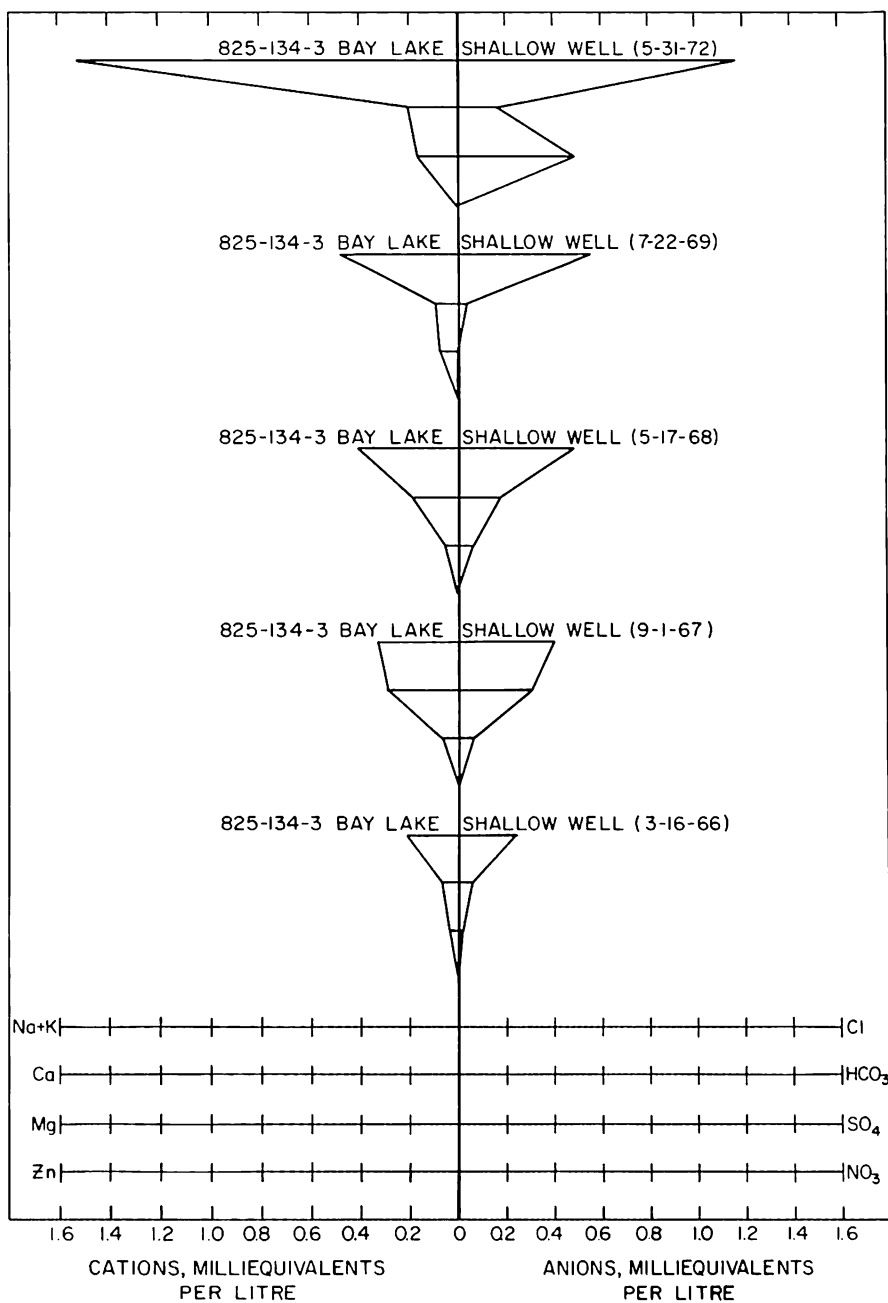


Figure 19—Concentration of chemical constituents in ground water from Bay Lake shallow well.

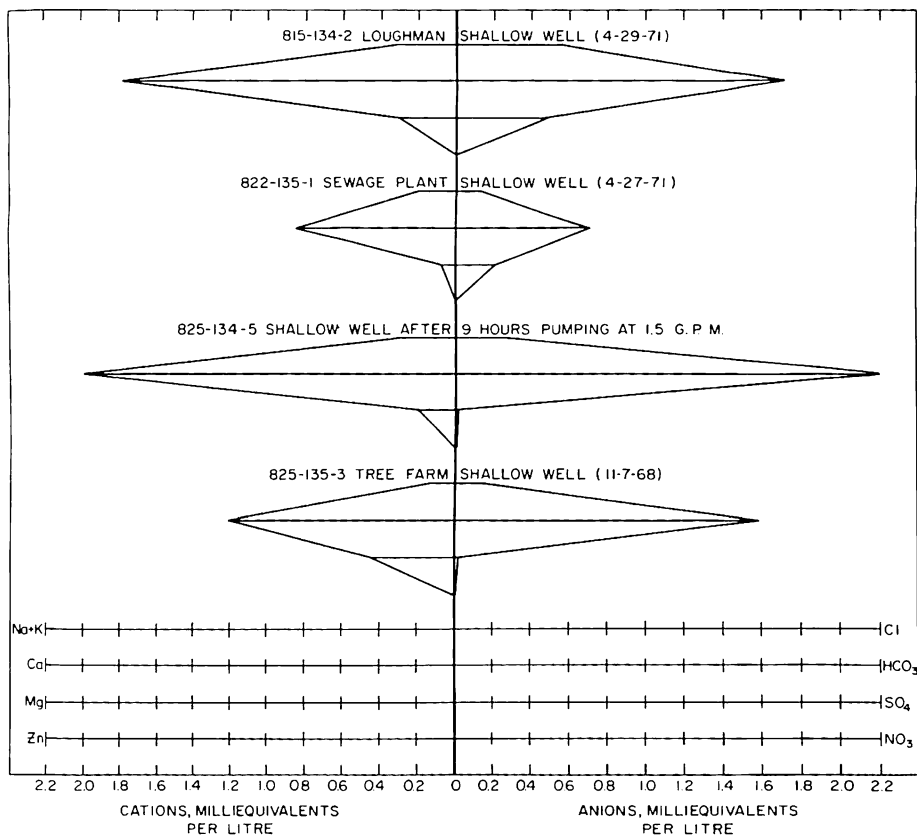


Figure 20—Concentration of chemical constituents in ground water from shallow wells in Reedy Creek Improvement District.

A comparison of figures 19 and 20 with figures 21, 22, and 23 reveals that with the exception of the shallow well at Bay Lake, 825-134-3, water from wells in the nonartesian aquifer is chemically similar to water from the Floridan aquifer. That is, both the Floridan aquifer and the nonartesian aquifer wells (except Bay Lake shallow well) yield calcium bicarbonate type water. However, Floridan aquifer water is generally higher in dissolved solids than nonartesian aquifer water. This tends to confirm that the materials between the water table and the Floridan aquifer are not totally effective as confining beds. Upward leakage influences the chemical characteristics of the nonartesian aquifer water where the potentiometric surface of the Floridan aquifer is higher than the water level in the nonartesian aquifer, and very little or no recharge to the Floridan aquifer takes place in the area.

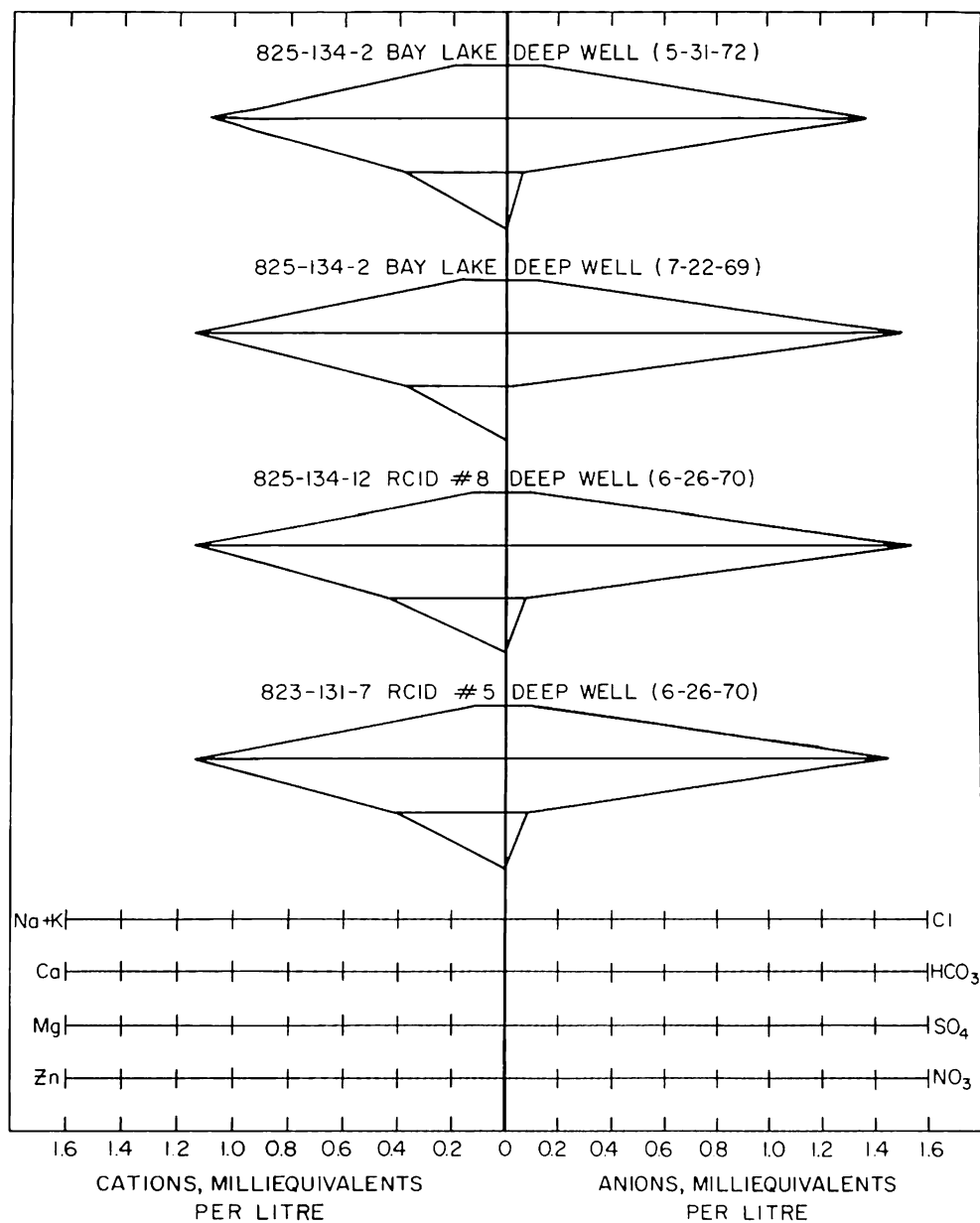


Figure 21—Concentration of chemical constituents in ground water from Floridan aquifer wells in Reedy Creek Improvement District.

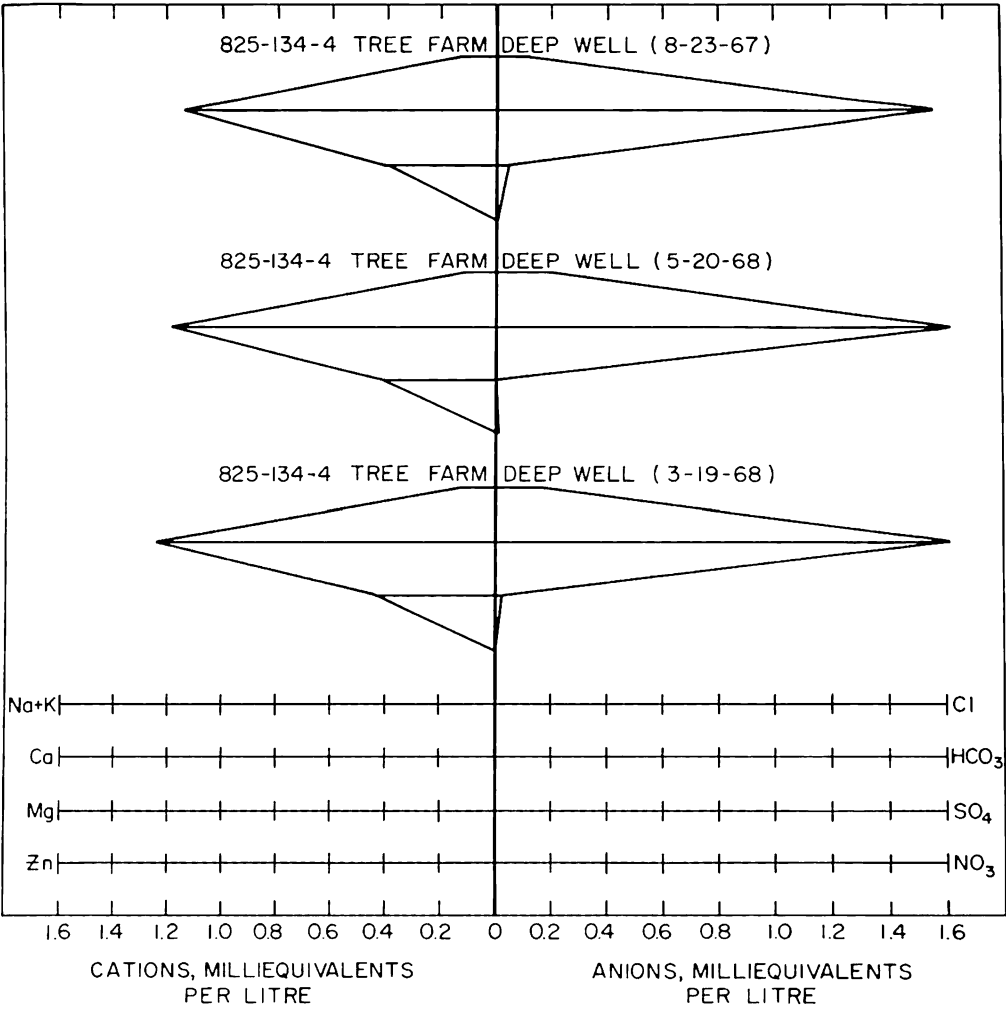


Figure 22—Concentration of chemical constituents in ground water from Floridan aquifer wells in Reedy Creek Improvement District.

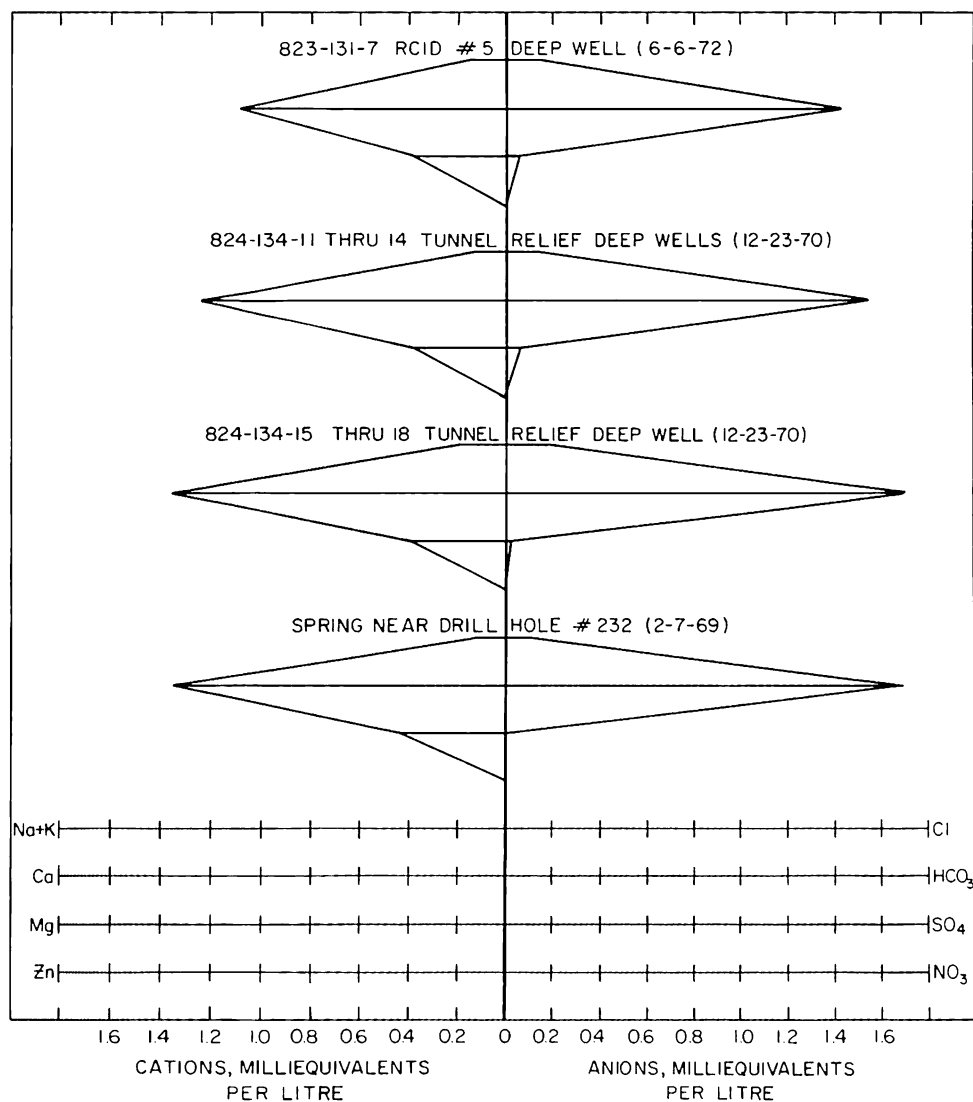


Figure 23—Concentration of chemical constituents in ground water from Floridan aquifer wells in Reedy Creek Improvement District.

SURFACE WATER

Results of chemical, nutrient, metals, biological, insecticide, and herbicide analyses of surface waters in the area are given in tables 8 through 13. No deteriorating effect of water quality from the influence of development in the RCID is indicated.

By changing several of the parameters tabulated in table 8 to millequivalents per litre and plotting the irregular polygonal patterns presented in figures 24 through 30, the differences and similarities of the water composition become apparent. These chemical characteristics separate the surface waters in the RCID into two broad groups, those similar to water from the nonartesian aquifer and those similar to water from the Floridan aquifer.

The waters of South Lake, Cypress Creek, Whittenhorse Creek, Reedy Creek above Structure 46, and Lateral 405 above Structure 405A, are similar to the water from the nonartesian aquifer represented by the shallow well at Bay Lake (825-134-3) before 1970. This comparison, along with the low streamflow and prolonged periods of no flow, confirms that where the potentiometric surface of the Floridan aquifer is as low or lower than the water level in the nonartesian aquifer in these basins, the Floridan aquifer contributes little or no water by upward leakage to the nonartesian aquifer. In fact, this comparison adds validity to the discussion that some recharge to the Floridan aquifer probably occurs in the areas draining to these water bodies.

The waters of Lateral 405 below Structure 405A, Lateral 405 below Structure 405, Reedy Creek below Structure 46, Reedy Creek near Vineland, Davenport Creek near Loughman, and Reedy Creek near Loughman are similar to the water from the Floridan aquifer. This comparison along with the higher and less intermittent streamflow confirms that at best the area delineated in figure 2 provides little or no recharge for the Floridan aquifer and that upward leakage is great enough to influence the chemical quality of the surface waters.

Figures 29 and 30 show the change in the chemical characteristics of water from Bay Lake for May 1966 to June 1972. Prior to draining the lake, the water was predominately a sodium chloride type, grossly similar to the nonartesian aquifer represented by Bay Lake shallow well. Prior to drainage, the water table at the lake was above the potentiometric surface of the Floridan aquifer part of the time and some recharge to the Floridan aquifer probably occurred in the Bay Lake area. Since May 1970, water from Bay Lake has been predominately a calcium bicarbonate type, grossly similar in quality to the water of the Floridan aquifer, because water from that aquifer was used to help refill the lake and has since been used to help stabilize the stage of the lake. The potentiometric surface is now (1974) lower than the water table and the lake level, and, thus, some recharge to the Floridan aquifer continues in the Bay Lake area. However, some of this recharge is the water pumped to the lake from the Floridan aquifer. The formation of springs during the excavation of the lagoon and the now

Table 8.--Chemical analyses of surface waters in the Reedy Creek Improvement District area (results in milligrams per liter except for color, pH, and specific conductance).

Date of Collection	Temperature (°C)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids	Hardness as CaCO ₃		Specific conductance (micromhos at 25°C)	pH	color
														Calcium magnesium	Non- carbonate			
Bay Lake near Vineland, Florida (2638.50)																		
Mar. 24, 1966	--	--	--	--	--	--	--	--	25	--	--	3.1	100	--	38	--	5.1	200
May 18, 1966	30	2.3	0.41	1.5	1.9	8.9	1.4	--	6.8	16	.2	.3	41	12	10	80	4.8	180
July 6, 1966	--	--	--	--	--	--	--	--	--	--	--	0	--	--	--	--	4.4	--
Aug. 31, 1966	30	5.1	.36	5.6	1.7	9.6	1.2	--	10	15	.1	.1	57	21	8	85	6.2	200
May 18, 1967	--	--	--	--	--	--	--	--	26	--	--	0	51	--	12	132	3.3	100
May 23, 1967	26	2.7	.15	2.0	1.9	10	1.8	--	6.4	19	.2	1.0	89	13	11	92	5.1	200
June 23, 1967	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5.4	95
Mar. 19, 1968	--	2.9	.28	3.2	2.9	11	1.5	--	13	19	.1	6.0	96	20	14	102	6.0	55
Apr. 9, 1968	--	3.5	.10	3.2	2.4	11	1.6	--	12	19	.2	1.7	70	18	14	110	5.1	50
May 7, 1968	25	5.1	.07	3.6	2.5	12	1.4	2	14	20	.2	1.9	92	20	18	110	5.0	15
Oct. 25, 1968	27	8.6	.05	8.6	3.1	11	1.7	--	17	20	.3	0	114	34	31	110	5.1	50
Feb. 5, 1969	18.5	--	--	--	--	--	--	--	21	21	--	1.0	--	32	--	120	5.2	30
Mar. 27, 1969	18.0	--	--	--	--	--	--	--	26	16	--	1.5	--	34	--	120	5.3	40
Apr. 30, 1969	27	--	--	--	--	--	--	--	26	17	--	1.4	--	40	--	120	5.1	10
June 16, 1969	36	--	--	--	--	--	--	--	33	18	--	1.9	--	40	--	154	5.1	20
July 22, 1969	36	18	.02	11	5.4	12	2.5	--	44	18	.1	2.5	148	50	49	185	4.7	20
Dec. 3, 1970	19	4.3	--	17	5.0	4.6	1.0	57	17	8	.2	0	90	63	17	152	7.8	10
May 18, 1971	28.5	1.9	--	18	5.9	4.6	.7	66	10	12	.2	.4	98	70	16	170	7.8	10
Bay Lake Outlet below S-105A near Vineland, Florida (2638.52)																		
Oct. 24, 1968	24	20	.2	20	4.6	25	8.5	60	39	26	.3	3.0	233	69	20	272	6.7	100
Feb. 3, 1969	19	--	--	--	--	--	--	--	20	21	--	1.0	--	32	--	119	5.2	30
Mar. 26, 1969	16	--	--	--	--	--	--	--	15	22	--	1.2	--	21	--	110	5.4	40
Apr. 28, 1969	24	--	--	--	--	--	--	--	25	16	--	1.1	--	36	--	120	6.0	5
June 8, 1969	27	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
June 17, 1969	33	--	--	--	--	--	--	--	20	20	--	1.2	--	33	--	131	5.3	20
July 18, 1969	33	15	.08	6.9	3.1	15	1.5	8	22	22	.2	.7	100	30	24	130	5.1	30

Table 8.--Chemical analyses of surface waters in the Reedy Creek Improvement District area (results in milligrams per liter except for color, pH, and specific conductance)--continued.

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BUREAU OF GEOLOGY

Date of Collection	Temperature (°C)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids	Hardness as CaCO ₃		Specific conductance (micromhos at 25°C)	pH	color
														Calcium magnesium	Non-carbonate			
<u>Bay Lake Outlet below S-105A near Vineland, Florida (2638.52) (Continued)</u>																		
May 21, 1970	29	13	.19	6.0	3.5	21	1.9	--	46	14	.4	1.1	117	30	13	158	6.3	--
May 6, 1971	30.0	2.6	--	14	3.8	5.7	1.1	45	15	9	.2	0	85	51	14	140	7.1	65
June 1, 1972	31.0	2.9	--	17	4.9	4.7	1.2	60	13	8.8	.2	0	102	63	14	159	7.7	10
<u>Lake Mabel near Doctor Phillips, Florida (2638.64)</u>																		
Mar. 27, 1969	19	--	--	--	--	--	--	--	10	14	--	.1	--	14	--	87	4.6	10
May 6, 1971	25.0	1.2	--	2.1	2.5	8.9	1.5	0	16	15	.1	0	52	16	16	102	4.5	0
<u>South Lake Outlet above S-15 near Vineland, Florida (2638.69)</u>																		
Oct. 24, 1968	25	5.6	.07	4.0	3.7	8.5	2.3	--	17	16	0.2	5.4	90	25	24	110	4.7	50
Jan. 31, 1969	18	--	--	--	--	--	--	--	23	16	--	.4	--	27	--	120	5.0	20
Mar. 27, 1969	18	--	--	--	--	--	--	--	26	14	--	.5	--	13	--	110	4.6	80
Apr. 28, 1969	25	--	--	--	--	--	--	--	13	16	--	.1	--	19	--	92	4.9	50
June 18, 1969	32	--	--	--	--	--	--	--	25	15	--	0	--	33	--	124	5.4	10
July 16, 1969	31	4.7	.07	4.1	3.9	9.6	2.5	--	19	16	0	.1	74	26	25	133	5.2	20
May 19, 1970	26	1.6	--	3.0	3.3	8.4	1.8	--	21	14	.2	.7	88	21	19	104	4.9	10
Aug. 27, 1970	31.0	2.3	.07	2.9	3.1	--	--	2.0	20	14	--	0	66	20	19	103	5.1	5
Dec. 2, 1970	22.0	2.8	.03	3.1	3.4	8.3	2.0	2.0	19	15	.2	0	60	22	20	109	5.2	5
Mar. 1, 1971	25.0	2.9	.05	3.5	3.7	--	--	1.0	23	14	--	0	60	24	23	115	5.1	5
May 3, 1971	27.0	2.5	.02	4.0	4.7	9.2	2.3	2.0	27	16	.1	0	74	30	28	130	5.2	5
Aug. 19, 1971	28.0	2.3	.03	4.0	4.2	7.6	2.3	2.0	26	14	0	0	70	28	26	120	5.0	5
Nov. 23, 1971	19.0	3.2	.04	3.5	4.0	8.4	2.5	2.0	28	14	.2	.2	75	25	24	115	5.0	80
Feb. 9, 1972	--	3.7	.06	3.7	4.1	9.4	2.8	2.0	25	14	.1	.1	86	26	25	119	5.0	70
May 8, 1972	22	3.3	.03	4.1	4.5	9.4	2.0	1.0	28	15	.1	0	91	29	28	125	6.0	45
Aug. 17, 1972	28	3.2	.03	4.8	4.2	9.5	2.7	1.0	30	16	.1	0	88	30	29	130	5.1	5

Table 8.--Chemical analyses of surface waters in the Reedy Creek Improvement District area (results in milligrams per liter except for color, pH, and specific conductance)--continued.

Date of Collection	Temperature (°C)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids	Hardness as CaCO ₃		Specific conductance (micromhos at 25°C)	pH	color
														Calcium magnesium	Non- carbonate			
South Lake Outlet below S-15 near Vineland, Florida (2638.70)																		
May 21, 1970	24.5	6.2	--	3.5	2.1	7.8	1.2	--	13	13	.1	0	87	54	54	85	4.9	40
May 3, 1971	24.0	5.9	--	4.2	4.7	9.1	1.9	0	33	18	.1	0	97	30	30	152	4.3	0
Cypress Creek at Vineland, Florida (2640.00)																		
July 24, 1963	--	8.1	0.47	--	--	7.1	0.4	--	1.6	7.8	0.1	0.2	--	18	18	58	4.4	450
May 20, 1966	--	12	.38	0.9	1.6	6.1	0	--	0	12	.4	.9	34	8	8	82	4.0	400
May 8, 1967	27	14	.16	6.5	7.4	12	.7	4	45	17	.2	2.4	108	46	43	180	4.9	140
Oct. 24, 1968	22	14	.26	2.0	2.7	6.6	.9	0	4.0	14	.5	.6	46	16	16	74	4.5	320
Feb. 3, 1969	16	--	--	--	--	--	--	--	1.2	14	--	0	--	18	--	78	4.4	240
Mar. 25, 1969	21	--	--	--	--	--	--	--	.8	17	--	0	--	13	--	75	4.4	240
Apr. 24, 1969	22	--	--	--	--	--	--	--	--	--	--	.9	--	--	--	--	--	--
June 12, 1969	26	--	--	--	--	--	--	--	.8	14	--	.1	--	28	--	82	5.7	320
July 7, 1969	28	16	.47	35	2.3	3.1	3.8	98	4.6	14	.4	.1	128	97	17	202	7.3	400
May 18, 1970	27	10	.42	1.9	2.7	9.7	1.9	0	.8	22	.2	.7	50	16	16	102	4.4	400
Aug. 27, 1970	26	3.7	.37	1.4	1.9	--	--	0	.8	15	--	0	--	12	12	76	4.5	400
Dec. 2, 1970	20	17	.27	1.4	2.3	7.2	.8	0	1.8	16	.3	0	47	13	13	82	4.5	200
Mar. 1, 1971	24	16	.23	1.8	2.8	--	--	0	9.5	16	--	0	--	--	--	104	4.3	200
Aug. 18, 1971	26.0	8.4	.46	2.2	2.0	5.5	.2	0	1.2	8.8	.3	0	149	14	14	69	4.5	560
Nov. 11, 1971	21.0	20	.42	3.1	1.9	6.3	.2	0	1.2	12	.3	0	146	16	16	75	4.1	420
Feb. 9, 1972	--	12	.25	1.7	2.0	6.2	1.8	0	13	11	.2	0	120	12	12	77	4.3	320
Aug. 16, 1972	24.0	20	.71	3.2	2.0	6.8	.2	0	4.8	18	.4	0	172	16	16	102	3.9	400
Feb. 22, 1973	10.5	13	.17	1.4	1.9	6.2	.8	0	4.0	13	.4	0	139	11	11	110	3.7	400

Table 8.--Chemical analyses of surface waters in the Reedy Creek Improvement District area (results in milligrams per liter except for color, pH, and specific conductance)--continued.

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Date of Collection	Temperature (°C)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids	Hardness as CaCO ₃		Specific conductance (micromhos at 25°C)	pH	color
														Calcium magnesium	Non- carbonate			
Bonnet Creek near Vineland, Florida (2641.00)																		
July 24, 1963	--	0	0.42	4.0	1.7	9.0	0.4	0	6.8	13	0.3	0	35	17	17	62	4.5	400
May 20, 1966	--	5.6	.39	5.3	2.2	7.1	.1	--	3.8	13	.3	.9	34	8	8	82	4.0	400
May 8, 1967	27	9.0	.01	21	4.6	3.0	.7	86	2.4	5.0	.2	1.5	90	72	1	161	7.1	10
Apr. 9, 1968	--	11	.24	13	3.4	6.3	.5	44	.8	13	.2	3.5	74	46	10	163	6.9	280
May 1, 1968	21	14	.25	11	3.1	6.5	.5	32	0	15	.2	2.1	69	40	14	106	6.5	400
Oct. 23, 1968	24	13	.27	7.6	1.9	6.8	.9	12	6.0	13	.3	.6	56	27	17	73	6.1	200
Feb. 4, 1969	16	--	--	--	--	--	--	--	15	16	--	.1	--	80	--	190	7.2	70
Mar. 25, 1969	20	--	--	--	--	--	--	--	9.6	17	--	0	--	30	--	87	6.2	200
Apr. 29, 1969	24	--	--	--	--	--	--	--	17	12	--	.1	--	30	--	100	6.1	120
June 23, 1969	27	--	--	--	--	--	--	--	14	10	--	.3	--	45	--	112	6.8	60
July 15, 1969	30	10	.06	14	3.9	5.9	1.1	46	11	7.5	.1	.2	77	51	14	127	7.0	50
Oct. 23, 1969	27	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
May 20, 1970	26	9.7	.10	10	3.7	8.3	1.3	37	13	11	.3	.7	76	40	10	121	7.6	50
Apr. 30, 1971	25.0	6.9	--	14	3.5	4.4	1.0	38	4.6	8.0	.1	0	85	50	10	127	6.7	50
Aug. 18, 1971	28.0	9.4	.51	6.5	3.4	5.1	1.2	12	19	8.0	.2	0	137	30	20	87	6.1	320
Nov. 22, 1971	16.0	7.8	.2	11	4.4	6.3	1.3	29	17	11	.2	.7	105	46	22	135	6.5	160
Feb. 8, 1972	--	7.3	.11	9.6	3.5	5.8	1.0	23	14	11	.1	.6	94	39	20	112	6.7	80
May 8, 1972	23.5	8.6	.19	12	3.8	1.5	.8	38	13	10	.2	0	99	46	15	123	7.7	90
Aug. 16, 1972	28.0	8.2	.13	9.2	3.8	7.6	1.2	20	18	14	.2	.1	87	39	22	120	6.6	200
Nov. 16, 1972	20.5	8.0	.29	14	3.9	5.3	.9	49	12	10	.2	0	98	51	11	135	7.7	120
Feb. 22, 1973	14.0	9.7	.28	10	3.9	6.4	1.0	16	18	12	.4	.9	127	41	28	121	6.6	320

Table 8.--Chemical analyses of surface waters in the Reedy Creek Improvement District area (results in milligrams per liter except for color, pH, and specific conductance)--continued.

Date of Collection	Temperature (°C)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids	Hardness as CaCO ₃		Specific conductance (micromhos at 25°C)	pH	color
														Calcium magnesium	Non-carbonate			
<u>Reedy Creek above S-46 near Vineland, Florida (2660.25)</u>																		
May 28, 1970	28.5	1.8	--	2.9	1.2	4.5	0.4	--	0.8	5.1	0.1	5.1	53	12	7	46	6.5	60
Apr. 19, 1971	25.0	2.6	--	--	--	--	--	--	--	--	--	9.0	--	--	--	66	--	--
June 1, 1972	27.5	.5	--	4.0	2.1	5.3	.6	16	2.2	6.8	.1	6.6	51	19	6	75	6.9	45
<u>Reedy Creek below S-46 near Vineland, Florida (2660.26)</u>																		
Nov. 7, 1968	22	9.1	0.07	16	3.9	14	8		34	7.5	0.1	0.7	114	56	20	174	6.8	50
Jan. 31, 1969	20	--	--	--	--	--	--	--	1.6	17	--	.1	--	26	--	88	5.8	240
Mar. 26, 1969	20	--	--	--	--	--	--	--	.8	17	--	0	--	18	--	84	4.7	24
Apr. 29, 1969	25	--	--	--	--	--	--	--	.8	17	--	0	--	18	--	84	4.6	320
June 17, 1969	24	--	--	--	--	--	--	--	0	12	--	.1	--	20	--	73	6.0	160
July 17, 1969	28	7.0	.03	7.9	1.6	4.7	.6	--	0	9.8	.1	2.2	55	26	10	79	7.2	80
May 28, 1970	24	4.9	.07	8.6	1.6	4.9	.6	22	.8	7.5	.2	2.0	81	28	10	76	7.1	--
Apr. 29, 1971	24.0	6.8	--	--	--	--	--	--	--	--	--	0	--	--	--	94	--	--
<u>Whittenhorse Creek near Vineland, Florida (2662.00)</u>																		
May 20, 1966	--	0.6	0.45	2.6	1.4	6.1	0.3	0	2.4	12	0.3	0.7	27	12	12	63	4.6	90
May 8, 1967	28	7.5	.61	7.2	2.4	9.4	9.7	120	0	22	.3	4.8	127	28	0	309	6.5	320
May 1, 1968	25	4.5	.17	9.8	3.5	12	6.1	38	.2	24	.2	7.2	87	39	8	162	6.0	100
Oct. 23, 1968	23	2.6	.65	3.2	1.6	6.1	.6	0	.4	14	.4	.4	30	14	14	74	4.5	400
Feb. 3, 1969	18	--	--	--	--	--	--	--	.8	18	--	0	--	22	--	81	4.6	240

Table 8.--Chemical analyses of surface waters in the Reedy Creek Improvement District area (results in milligrams per liter except for color, pH, and specific conductance)--continued.

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Date of Collection	Temperature (°C)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids	Hardness as CaCO ₃		Specific conductance (micromhos at 25°C)	pH	color
														Calcium magnesium	Non-carbonate			
Whittenhorse Creek near Vineland, Florida (2662.00) (Continued)																		
Mar. 24, 1969	20	--	--	--	--	--	--	--	.4	11	--	0	--	13	--	58	4.5	320
Apr. 24, 1969	21	--	--	--	--	--	--	--	--	--	--	0	--	--	--	--	--	--
June 17, 1969	27	--	--	--	--	--	--	--	0	13	--	.1	--	12	--	69	4.8	320
July 16, 1969	29	1.9	.78	4.4	1.6	8.4	6.7	10	0	18	.2	.1	47	18	10	103	5.6	400
May 25, 1970	26.5	1.7	--	4.7	2.0	7.2	1.9	1	8.9	15	.2	0	42	20	19	88	5.0	600
Aug. 31, 1970	27.0	3.8	.40	3.1	1.4	--	--	0	.8	12	--	0	--	14	14	73	4.4	480
Dec. 2, 1970	17.5	.8	.26	4.0	2.0	7.3	.5	0	4.6	17	.4	0	37	18	18	83	5.1	120
Mar. 1, 1971	26.5	.8	.19	4.1	1.7	--	--	0	0	17	--	0	--	--	--	85	4.7	240
Aug. 18, 1971	25.0	3.1	.32	5.0	2.1	5.5	.3	2	--	11	.2	0	149	21	20	80	4.5	400
Feb. 8, 1972	--	4.6	.18	4.9	1.6	7.3	.4	0	5.2	14	.2	0	122	19	19	80	4.5	280
Aug. 16, 1972	24.5	3.2	.39	4.0	1.4	5.5	.4	0	.4	16	.3	0	122	16	16	75	4.3	40
Feb. 21, 1973	11.0	5.7	.19	4.0	1.8	6.8	.1	0	7.6	15	.4	0	134	17	17	84	4.3	320
Lateral 405 above S-405A near Doctor Phillips, Florida (2662.91)																		
Apr. 30, 1969	26	26	0.24	3.8	2.2	13	1.8		1.4	19	0.1	0.2	85	19	10	105	6.1	130
May 26, 1970	25.5	1.3	.18	3.8	2.8	10	1.5		11	21	.3	0	143	21	21	108	4.3	280
May 3, 1971	--	1.6	--	--	--	--	--	--	--	--	--	0	--	--	--	125	4.2	--
Nov. 22, 1971	--	4.3	--	4.6	6.4	1.1	2.9	0	34	20	.2	0	158	38	38	196	4.4	400
Aug. 17, 1972	27.0	2.6	.41	6.6	5.3	10	1.7	0	30	18	.3	0	134	39	0	150	4.4	240

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Table 8.--Chemical analyses of surface waters in the Reedy Creek Improvement District area (results in milligrams per liter except for color, pH, and specific conductance)--continued.

Date of Collection	Temperature (°C)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids	Hardness as CaCO ₃		Specific conductance (micromhos at 25°C)	pH	color
														Calcium magnesium	Non- carbonate			
Lateral 405 below S-405A near Doctor Phillips, Florida (2662.92)																		
Oct. 24, 1968	24	7.9	0.38	7.0	4.2	11	3.2		14	21	0.5	0.6	174	35	25	128	5.7	320
Jan. 31, 1969	25	--	--	--	--	--	--	--	18	24	--	0	--	24	--	105	4.4	360
Mar. 25, 1969	21	--	--	--	--	--	--	--	.8	1.6	--	0	--	17	--	87	4.5	320
Apr. 30, 1969	24	23	.24	2.8	2.3	13	1.9		5.4	19	.1	.8	75	17	12	107	4.5	130
June 19, 1969	28	--	--	--	--	--	--	--	13	16	--	.8	--	28	--	110	5.0	80
July 18, 1969	30	22	.23	4.6	3.5	12	2.6	--	6.8	19	.2	7.5	118	26	26	131	4.7	80
May 26, 1970	30	11	--	4.0	3.3	1.1	1.9	--	21	15	.3	.4	--	24	24	110	--	--
Aug. 27, 1970	28.0	5.5	.64	3.3	2.2	--	--	0	.8	17	--	0	156	17	17	91	4.7	480
Dec. 2, 1970	17.0	14	.48	9.0	3.6	8.7	1.9	22	14	15	.4	.7	111	37	19	116	7.0	60
Mar. 1, 1971	22.5	12	.20	13	4.0	--	--	29	14	13	--	1.2	120	49	25	147	6.4	80
May 3, 1971	--	10	.22	10	3.6	9.0	1.5	29	14	14	.2	0	115	40	16	130	6.8	160
Aug. 19, 1971	32.5	12	.20	12	4.5	7.5	3.0	59	16	14	.1	0	155	71	23	192	6.7	100
Nov. 23, 1971	19.5	10	.19	10	5.0	7.4	2.0	66	16	15	.2	0	141	68	14	203	6.6	200
Feb. 9, 1972	--	8.2	.20	21	4.5	6.0	1.8	68	15	10	.2	0	119	71	16	175	6.7	60
May 8, 1972	23.0	1.8	.17	20	4.4	10	1.7	60	15	16	.3	0	131	68	19	181	7.4	80
Nov. 16, 1972	18.5	3.5	.86	4.8	3.9	11	2.3	0	8	27	.1	0	199	28	28	135	4.2	640
Feb. 22, 1973	12.0	5.7	.36	3.8	5.0	9.2	1.9	0	20	24	.4	0	194	30	30	171	3.9	400
Lateral 405 below S-405 near Vineland, Florida (2662.94)																		
Nov. 23, 1971	19.0	8.5	.15	19	6.5	6.5	1.9	66	15	14	.2	0	195	66	12	197	7.0	140
Aug. 19, 1971	27.5	9.5	.15	18	3.9	5.7	2.6	55	12	11	.2	.1	129	61	16	162	6.5	100
Feb. 9, 1972	--	5.0	.10	18	4.2	5.2	1.5	56	16	10	.2	.3	115	63	17	154	6.5	80
May 8, 1972	22	1.8	.13	17	4.0	7.3	1.3	48	13	14	.2	0	123	59	20	148	7.5	70
Lateral 410 at S-410 (2662.95)																		
Apr. 27, 1971	30	2.0	--	--	--	--	--	--	--	--	--	0	--	--	--	76	--	--

Table 8.--Chemical analyses of surface waters in the Reedy Creek Improvement District area (results in milligrams per liter except for color, pH, and specific conductance)--continued.

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Date of Collection	Temperature (°C)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids	Hardness as CaCO ₃		Specific conductance (micromhos at 25°C)	pH	color
														Calcium magnesium	Non-carbonate			
Lateral	410	below	S-410	(2662.96)														
Apr. 27, 1971	--	7.3	--	10	2.4	4.5	1.0	28	1.2	9.5	.2	0	76	35	12	92	6.9	110
Reedy Creek near Vineland, Florida	(2663.00)																	
Aug. 21, 1962	27	--	--	--	--	7.1	1.9	32	--	--	--	--	--	48	22	117	6.5	400
July 24, 1963	24	6.9	.39	6.4	2.9	6.3	.1	2	4.0	12	.2	0	40	28	26	77	6.0	570
May 3, 1965	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	75	--	--
May 20, 1966	--	6.5	.20	4.7	1.6	5.6	.1	6	3.0	11	.3	.5	37	18	13	59	5.3	400
May 8, 1967	27	1.3	.17	5.7	1.7	5.9	.1	7	4.4	12	.3	1.6	38	21	16	78	5.3	240
Apr. 9, 1968	--	6.5	.15	6.1	2.6	7.7	.9	4	4.4	16	.3	.7	47	22	3	90	5.3	320
May 1, 1968	28	2.1	.08	3.6	2.0	4.4	.9	0	15	6.8	.2	1.0	36	17	17	70	5.0	60
Oct. 23, 1968	23	7.0	.24	6.0	1.9	5.2	.2	2	.4	13	.6	.5	36	23	22	67	4.9	400
Feb. 4, 1969	14	--	--	--	--	--	--	--	.8	14	--	0	--	16	--	58	5.3	280
Mar. 25, 1969	21	--	--	--	--	--	--	--	.4	12	--	0	--	16	--	55	4.9	400
Apr. 21, 1969	20	8.2	.31	3.4	1.4	6.0	.4	4	0	12	.3	.1	34	15	11	58	4.9	400
Apr. 24, 1969	22	--	--	--	--	--	--	--	--	--	--	0	--	--	--	--	--	--
June 16, 1969	26	--	--	--	--	--	--	--	0	13	--	.2	--	10	--	59	5.1	320
July 15, 1969	25	10	.18	4.0	1.6	5.1	.1	6	0	11	.1	2.0	37	17	12	60	6.2	300
Oct. 23, 1969	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
May 20, 1970	24	10	.10	8.9	2.8	6.2	1.1	24	0	10	.2	.7	--	34	14	85	6.8	--
Aug. 27, 1970	27	12	.22	7.5	2.4	--	--	23	.8	9.8	--	.3	--	29	10	83	6.5	240
Dec. 2, 1970	20	11	.18	9.1	4.4	22	.9	20	18	41	.3	0	120	30	13	210	7.0	120
Mar. 1, 1971	24	10	--	8.8	2.8	--	--	19	20	11	--	.8	--	--	--	94	7.0	160
May 3, 1971	23.5	7.8	.08	9.8	3.4	4.7	.8	30	8.0	9.5	.2	.2	59	39	14	100	6.5	200
Aug. 18, 1971	25.5	12	.30	8.6	2.8	6.6	.6	40	2.4	10	.2	1.4	144	33	0	90	6.1	400

Table 8.--Chemical analyses of surface waters in the Reedy Creek Improvement District area (results in milligrams per liter except for color, pH, and specific conductance)--continued.

Date of Collection	Temperature (°C)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids	Hardness as CaCO ₃		Specific conductance (micromhos at 25°C)	pH	color
														Calcium magnesium	Non- carbonate			
Reedy Creek near Vineland, Florida (2663.00) (Continued)																		
Nov. 22, 1971	16.0	9.7	.24	13	3.7	8.1	1.8	34	10	18	.2	.3	130	48	18	158	6.3	100
Feb. 8, 1972	--	10	.23	11	3.1	9	1.5	20	8.8	16	.2	.4	142	41	24	120	6.2	280
May 9, 1972	2.4	9.2	.21	11	3	15	3.9	29	7.2	28	.4	.4	141	40	17	155	7.1	180
Aug. 16, 1972	24.5	9.1	.33	8.6	2.6	7.6	1.5	10	13	18	.4	.4	157	32	24	95	6.0	400
Nov. 15, 1972	21.0	11	.19	13	3.7	9.9	2.3	36	12	20	.3	1.5	143	48	18	150	7.6	200
Feb. 21, 1973	11.0	5.5	.21	8.8	3.0	8.9	1.4	15	14	15	.4	.9	140	38	27	112	6.4	320
May 5, 1973	19.0	8.1	.25	12	3.8	13	3.6	32	10	22	.4	1.8	150	46	20	150	6.8	240
Davenport Creek near Loughman, Florida (2664.80)																		
May 4, 1965	21	--	0.06	--	--	--	--	--	--	--	--	--	--	--	--	120	--	--
Apr. 9, 1968	--	7.5	.03	15	4.2	4.0	0.7	--	8.0	8.7	0.1	4.3	93	55	16	131	6.9	100
Apr. 30, 1968	23	6.9	2.7	16	4.2	4.3	1.0	--	9.6	10	.2	4.5	94	58	18	140	6.7	20
Oct. 23, 1968	22	10	--	13	3.1	5.3	.8	--	6.0	14	.7	1.3	175	46	24	88	6.4	400
Feb. 4, 1969	14	--	--	--	--	--	--	--	1.2	12	--	1.0	--	39	--	89	6.6	200
Mar. 24, 1969	20	--	--	--	--	--	--	--	.8	12	--	0	--	32	--	73	6.2	200
Apr. 29, 1969	24	--	--	--	--	--	--	--	1.6	15	--	1.5	--	43	--	87	6.4	200
June 18, 1969	26	--	.04	--	--	--	--	--	9.8	7.0	--	3.1	--	55	--	126	6.9	50
July 15, 1969	25	6.7	--	16	4.0	3.7	1.2	--	7.9	7.5	0	3.0	86	57	14	132	7.2	40
May 25, 1970	25.0	7.2	0	16	4.2	3.9	1.4	--	17	8.0	.2	2.5	112	58	27	134	7.7	50
Aug. 31, 1970	25.5	8.2	0	10	2.6	--	--	20	.8	10	--	.9	141	36	19	79	6.4	400
Dec. 2, 1970	19.5	8.6	.14	14	3.9	4.1	1.0	44	5.4	9.1	.4	2.8	97	51	15	119	7.5	100
Mar. 1, 1971	24.0	7.0	.04	12	3.3	--	--	32	1.6	10	--	2.2	99	44	18	105	7.3	160
May 3, 1971	21.0	4.8	.16	15	5.1	3.7	1.1	45	11	9.5	.1	3.9	86	59	22	140	7.0	40
Aug. 18, 1971	25.5	7.8	--	17	4.7	4.8	.6	38	22	11	.2	1.5	148	62	31	160	6.9	200

Table 8.--Chemical analyses of surface waters in the Reedy Creek Improvement District area (results in milligrams per liter except for color, pH, and specific conductance)--continued.

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Date of Collection	Temperature (°C)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids	Hardness as CaCO ₃		Specific conductance (micromhos at 25°C)	pH	color
														Calcium magnesium	Non-carbonate			
Davenport Creek near Loughman, Florida (2664.80)																		
Nov. 22, 1971	16.0	8.9	.12	15	3.3	4.8	1.3	43	15	11	.2	4.2	106	46	11	145	6.4	160
Feb. 8, 1972	--	9.7	.23	16	4.2	6.1	.9	31	15	14	.4	1.5	162	58	32	132	6.7	320
May 9, 1972	22	5.8	.02	16	4.5	4.3	.9	48	24	9.5	.2	3.0	92	59	19	128	7.8	35
Aug. 16, 1972	24.0	8.2	.19	19	4.8	5.5	1.0	40	23	12	.4	.1	151	67	38	160	7.3	200
Nov. 15, 1972	20.5	6.6	.09	15	4.4	4.5	1.4	47	9.6	11	.1	3.9	112	56	17	140	7.4	14
Feb. 21, 1973	11.0	7.1	.21	13	3.4	4.4	.5	22	11	13	.5	1.3	159	47	0	102	6.6	400
Reedy Creek near Loughman, Florida (2665.00)																		
Nov. 13, 1959	21	4.6	0.18	5.0	0.5	4.2	0.6		0.8	10	0.1	1.1	76	14	4	49	6.0	80
May 4, 1965	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	110	--	--
Apr. 9, 1968	--	6.2	.09	14	4.2	5.3	1.0	--	12	10	.3	2.8	98	52	20	129	6.7	120
Apr. 30, 1968	23	5.9	.03	16	4.5	4.5	.9	--	16	9.0	.2	2.5	94	58	18	143	6.6	20
Oct. 23, 1968	24	10	.28	11	2.9	5.1	.6	--	8.0	12	.6	.6	158	40	22	87	6.3	400
Feb. 5, 1969	11.5	--	--	--	--	--	--	--	1.6	13	--	.9	--	30	--	78	6.7	200
Mar. 24, 1969	19	--	--	--	--	--	--	--	.4	11	--	0	--	28	--	65	6.0	320
Apr. 21, 1969	21	6.2	.22	8.6	2.2	5.5	2.2		0	13	.4	.5	117	31	16	82	6.2	320
Apr. 24, 1969	19	--	--	--	--	--	--	--	--	--	--	.2	--	--	--	--	--	--
June 11, 1969	26	--	--	--	--	--	--	--	4.8	10	--	.7	--	33	--	86	6.3	220
July 15, 1969	27	9.3	.15	11	3.2	4.5	1.4	--	6.4	10	.1	2.6	95	41	18	110	6.9	80
May 25, 1970	23	11	--	11	2.7	4.4	1.5	--	12	7.9	.2	.1	115	39	22	94	6.5	240
Aug. 18, 1971	24.5	6.7	.42	10	3.1	4.8	1.2	29	1.2	16	.2	0	122	38	14	102	6.1	400
Nov. 22, 1971	16.0	7.6	.21	12	3.8	5.9	1.4	36	8.8	12	.2	1.8	116	45	16	138	5.8	200
Feb. 8, 1972	--	10	.23	11	3.4	7.3	1.2	19	10	16	.2	.4	147	42	26	112	6.2	280
Aug. 16, 1972	23.0	8.8	.37	11	2.8	6.7	1.3	16	14	16	.4	.1	158	39	26	99	6.2	400
Nov. 15, 1972	21.0	8.8	.15	14	4.2	7.3	2.1	36	14	15	.2	3.8	125	52	23	150	7.1	160
Feb. 21, 1973	10.5	4.2	.22	12	3.0	6.8	1.0	20	14	14	.4	4.0	112	42	26	106	6.4	320
May 2, 1973	19.0	7.2	.17	13	4.1	10	2.7	33	16	19	.4	2.2	146	49	22	105	6.7	200

Table 8.--Chemical analyses of surface waters in the Reedy Creek Improvement District area (results in milligrams per liter except for color, pH, and specific conductance)--continued.

Date of Collection	Temperature (°C)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids	Hardness as CaCO ₃		Specific conductance (micromhos at 25°C)	pH	color
														Calcium magnesium	Non-carbonate			
East-West Canal near Theme Park near Vineland, Florida																		
Feb. 5, 1969	14.5	18	0.19	7.0	3.2	9.7	1.5		1.6	17	0.3	1.6	122	30	22	97	6.0	120
Lake Buena Vista																		
May 18, 1971	27.0	2.8	--	8.3	2.3	4.1	1.6	20	14	8.5	.1	0	59	30	14	90	6.3	30
Little Lake Bryan																		
May 18, 1971	26.5	5.1	--	2.4	1.3	5.7	1.5	3	8.8	11	.1	0	57	12	9	70	5.6	20

Table 9.--Chemical and nutrient analyses of surface waters in the Reedy Creek Improvement District area (results in milligrams per liter except for pH and turbidity).

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Date	pH	Alkalinity as CaCO ₃	Bicarbonate (HCO ₃)	Free Carbon Dioxide, CO ₂	Carbonate (CO ₃)	Total Carbon	Organic Carbon	Inorganic Carbon	Turbidity (JTU)	Nutrients								
										Nitrate (NO ₃)	Nitrite (NO ₂)	Ammonia (NH ₄)	Organic Nitrogen (N)	Total Nitrogen (N)	Ortho- phosphate (PO ₄)	Total phosphate (PO ₄)	Total phosphorus (P)	
Bay Lake near Vineland, Florida (2638.50)																		
3-24-66	5.1	--	0	--	14	--	--	--	--	3.1	--	--	--	--	7.5	--	--	
5-18-66	4.8	--	--	--	--	--	--	--	--	.3	--	--	--	--	.08	--	--	
7-6-66	4.4	--	--	--	--	--	--	--	--	.01	--	--	--	--	.17	2.3	.75	
8-31-66	6.2	--	--	--	--	--	--	--	--	.1	--	--	--	--	--	--	--	
5-18-67	3.3	--	0	14.5	--	--	--	--	--	0	--	--	--	--	.04	.21	.07	
5-23-67	5.1	--	3	--	0	--	--	--	--	1.0	--	--	--	--	--	.10	.03	
3-19-68	6.0	--	8	--	--	--	--	--	--	6.0	--	--	--	--	--	.09	.03	
4-9-68	5.1	--	4	--	--	--	--	--	--	1.7	--	--	--	--	--	--	--	
5-7-68	5.0	2.0	2	--	--	--	--	--	--	1.9	--	--	--	--	--	.06	.02	
10-5-68	5.1	--	--	--	--	--	--	--	1800	0	--	--	--	--	--	--	--	
2-5-69	5.2	--	--	--	--	--	--	--	1220	1.0	.01	--	--	--	.02	.05	.02	
3-27-69	5.3	--	--	--	--	--	--	--	2420	1.5	.08	.51	.72	1.48	.02	.11	.04	
4-30-69	5.1	--	--	--	--	--	--	--	4550	1.4	.04	.17	.84	1.30	.09	.15	.05	
6-16-69	5.1	--	--	--	--	--	--	--	2000	1.9	.02	.14	1.0	1.54	--	.06	.02	
7-22-69	4.7	1	1	--	0	--	--	--	1300	2.5	.02	.07	.87	1.50	--	.07	.02	
12-3-70	7.8	47	57	--	0	--	--	--	10	0	.02	.10	.38	.57	.02	.05	.02	
5-18-71	7.8	54	66	--	0	41	35	6	2.0	.4	0	.01	.28	.38	.02	.05	.02	
Bay Lake Outlet below S-105A near Vineland, Florida (2638.52)																		
10-24-68	6.7	49	60	--	--	--	--	--	28	3.0	0	0.25	0.86	1.73	0.01	0.02	0.01	
2-3-69	5.2	--	--	--	--	--	--	--	2440	1.0	.03	0	.26	.50	.04	.08	.03	
3-26-69	5.4	--	--	--	--	--	--	--	750	1.2	.27	.03	.78	1.16	.04	.07	.02	
4-28-69	6.0	--	--	--	--	--	--	--	5000	1.1	.21	.19	2.2	2.66	.02	.05	.02	
6-17-69	5.3	--	--	--	--	--	--	--	1340	1.2	.08	.26	.80	1.30	--	.04	.01	
7-18-69	5.1	7	8	--	0	--	--	--	1150	.7	.03	.07	.93	1.15	--	.07	.02	
5-21-70	6.3	--	--	--	--	--	--	--	--	1.1	.51	.66	.34	1.26	--	.14	.05	
5-6-71	7.1	37	45	--	0	26	22	4	55	0	.12	.06	.61	.70	--	.18	.06	
6-1-72	7.7	49	60	--	0	--	--	--	2	0	.01	.02	.41	.43	.02	.04	.01	

Table 9.--Chemical and nutrient analyses of surface waters in the Reedy Creek Improvement District area (results in milligrams per liter except for pH and turbidity)--continued.

Date	pH	Alkalinity as CaCO ₃	Bicarbonate (HCO ₃)	Free Carbon Dioxide, CO ₂	Carbonate (CO ₃)	Total Carbon	Organic Carbon	Inorganic Carbon	Turbidity (JTU)	Nutrients							
										Nitrate (NO ₃)	Nitrite (NO ₂)	Ammonia (NH ₄)	Organic Nitrogen (N)	Total Nitrogen (N)	Ortho- phosphate (PO ₄)	Total phosphate (PO ₄)	Total phosphorus (P)
South Lake Outlet above S-15 near Vineland, Florida (2638.69)																	
10-24-68	4.7	2	2	--	--	--	--	--	69	5.4	0.03	0.02	0.38	1.62	0.03	0.04	0.01
1-31-69	5.0	--	--	--	--	--	--	--	5.8	.4	.01	--	--	--	.06	.09	.03
3-27-69	4.6	--	--	--	--	--	--	--	40	.5	.00	.02	.43	.56	.03	.04	.01
4-28-69	4.9	--	--	--	--	--	--	--	16	.1	.00	.05	.71	.77	.03	.04	.01
6-18-69	5.4	--	--	--	--	--	--	--	25	0	.01	.00	.05	.05	--	.01	.01
7-16-69	5.2	2	2	0	--	--	--	--	31	.1	.00	.11	.50	.61	.01	.03	.01
5-19-70	4.9	--	2	--	--	--	--	--	11	.7	.03	.70	.61	1.32	.07	.11	.04
8-27-70	5.1	2	2	--	--	--	--	--	7.8	0	.02	.07	.12	.18	.04	.06	.02
12-2-70	5.2	2	2	0	4	1	3	10	0	.05	.06	.09	.09	.15	0	.03	.01
3-1-71	5.1	1	1	--	2	1	1	8.0	0	.02	.02	.09	.11	.01	.05	.02	
5-3-71	5.2	2	2	0	3	1	2	15	0	.02	.55	.28	.71	.03	.04	.01	
8-19-71	5.0	2	2	0	3	3	0	9.0	0	--	.12	--	--	--	.02	.06	.02
11-23-71	5.0	2	2	0	3	3	0	20	.2	.04	.03	.59	.67	.06	.13	.04	
2-9-72	5.0	1.6	2	1	3	3	0	15	.1	.04	.04	.16	.90	.05	.09	.03	
5-8-72	6.0	1.0	1	.5	2	1	1	15	0	.03	.06	.35	.40	.06	.08	.02	
8-17-72	5.1	1.0	1	0	0	0	0	6.0	0	.16	.06	.44	.54	.06	.06	.02	
Cypress Creek at Vineland, Florida (2640.00)																	
7-24-63	4.4	--	--	--	--	--	--	--	--	0.2	--	--	--	--	--	--	--
5-20-66	4.0	--	--	--	--	--	--	--	--	.9	--	--	--	--	--	--	--
5-8-67	4.9	--	4	0	--	--	--	--	--	2.4	--	--	--	--	--	.95	0.31
10-24-68	4.5	--	0	--	--	--	--	--	1.3	.6	.01	.09	1.0	.01	.02	.01	
2-3-69	4.4	--	--	--	--	--	--	--	2.6	0	.04	--	--	.02	.06	.02	
3-25-69	4.4	--	--	--	--	--	--	--	5.4	0	.04	.10	.46	.02	.02	.01	
4-24-69	--	--	--	--	--	--	--	--	1.3	.9	.01	.07	1.1	.02	.03	.01	
6-12-69	5.7	--	--	--	--	--	--	--	12	.1	.06	.08	.91	--	.04	.01	

Table 9.--Chemical and nutrient analyses of surface waters in the Reedy Creek Improvement District area (results in milligrams per liter except for pH and turbidity)--continued.

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Date	pH	Alkalinity as CaCO ₃	Bicarbonate (HCO ₃)	Free Carbon Dioxide, CO ₂	Carbonate (CO ₃)	Total Carbon	Organic Carbon	Inorganic Carbon	Turbidity (JTU)	Nutrients								
										Nitrate (NO ₃)	Nitrite (NO ₂)	Ammonia (NH ₄)	Organic Nitrogen (N)	Total Nitrogen (N)	Ortho- phosphate (PO ₄)	Total phosphate (PO ₄)	Total phosphorus (P)	
Cypress Creek at Vineland, Florida (2640.00) (Continued)																		
7-7-69	7.3	80	98		0	--	--	--	36	.1	.04	.44	1.2		--	.06	.02	
5-18-70	4.4		0		--	--	--	--	12	.7	.04	.09	.86		.08	.07	.02	
8-27-70	4.5	0	0		--	--	--	--	.8	0	.06	.10	.32		.14	.14	.04	
12-2-70	4.5	0	0		0	40	36	4	2.0	0	.07	.08	.44		.22	.27	.09	
3-1-71	4.3	0	0		0	36	34	2	1.0	0	.05	.05	.39		.06	.04	.01	
8-18-71	4.5	0	0		0	69	67	2	1.0	0	.11	.19	4.5		.10	.08	.03	
11-22-71	4.1	0	0		0	53	48	5	2.0	0	.07	.05	1.2		.08	.10	.03	
2-9-72	4.3	0	0		0	40	39	1	1.0	0	.04	.06	.64		.03	.06	.02	
8-16-72	3.9	0	0		0	66	63	3	1.0	0	.06	.64	1.7		.05	.06	.02	
2-22-73	3.7	0	0		0	46	43	3	2.0	0	.04	.02	1.0		.06	.08	.02	
Bonnet Creek near Vineland, Florida (2641.00)																		
7-24-63	4.5	--	0		--	--	--	--	--	0	--	--	--	--	--	--	--	
5-20-66	4.0	--	--		--	--	--	--	--	.9	--	--	--	--	--	--	--	
5-8-67	7.1	--	86		0	--	--	--	--	1.5	--	--	--	--	--	0.26	0.08	
4-9-68	6.9	--	44		--	--	--	--	--	3.5	--	--	--	--	--	--	--	
5-1-68	6.5	--	32		--	--	--	--	--	2.1	--	--	--	--	--	.22	.07	
10-23-68	6.1	1	12		--	--	--	--	520	.6	.01	.09	.90	1.11	.03	.04	.01	
2-4-69	7.2	--	--		--	--	--	--	620	.1	.03	--	--	--	.02	.05	.02	
3-25-69	6.2	--	--		--	--	--	--	75	0	.03	.08	.79	.86	.02	.06	.02	
4-29-69	6.1	--	--		--	--	--	--	820	.1	.34	.15	2.0	2.24	.03	.06	.02	
6-23-69	6.8	--	--		0	--	--	--	500	.3	.05	.06	.34	.47	--	.03	.01	
7-15-69	7.0	38	46		0	--	--	--	1150	.2	.01	.00	.27	.32	--	.04	.01	
5-20-70	7.6	--	37		--	--	--	--	--	.7	.02	.05	.51	.71	.07	.08	.03	
4-30-71	6.7	--	48		--	--	--	--	--	0	--	--	--	--	--	--	--	
8-18-71	6.1	10	12		6	48	44	4	180	0	.34	.43	1.6	2.04	--	.24	.08	
11-22-71	6.5	24	29		14	15	9	6	45	.7	.06	.07	.62	.85	.10	.15	.05	

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Table 9.--Chemical and nutrient analyses of surface waters in the Reedy Creek Improvement District area (results in milligrams per liter except for pH and turbidity)--continued.

Date	pH	Alkalinity as CaCO ₃	Bicarbonate (HCO ₃)	Free Carbon Dioxide, CO ₂	Carbonate (CO ₃)	Total Carbon	Organic Carbon	Inorganic Carbon	Turbidity (JTU)	Nutrients							
										Nitrate (NO ₃)	Nitrite (NO ₂)	Ammonia (NH ₄)	Organic Nitrogen (N)	Total Nitrogen (N)	Ortho- phosphate (PO ₄)	Total phosphate (PO ₄)	Total phosphorus (P)
Bonnet Creek near Vineland, Florida (2641.00) (Continued)																	
2-8-72	6.7	19	23		11	14	9	5	61	.6	.12	.18	.02	.33	.20	.22	.07
5-8-72	7.7	31	38		10	17	8	9	100	0	.14	.13	.75	.89	.31	.31	.10
8-16-72	6.6	16	20		0	30	24	6	6	.1	.05	.12	.98	1.11	.07	.08	.03
11-16-72	7.7	40	49		0	18	8	10	10	0	.23	.05	.28	.40	.07	.14	.04
2-22-73	6.6	13	16		0	30	25	5	30	.9	.09	.05	.68	.95	.22	.24	.08
Reedy Creek above S-46 near Vineland, Florida (2660.25)																	
11-7-68	6.8	36	44		--	--	--	--	--	.7	--	.07	.75	--	.14	.15	0.05
1-31-69	--	--	--		--	--	--	--	--	.1	.03	--	--	--	.17	.20	.06
5-28-70	6.5	--	--		--	--	--	--	--	5.1	.07	.05	.66	1.87	.04	.09	.03
4-29-71	--	--	--		--	--	--	--	15	9.0	.08	.09	1.4	3.53	.06	.08	.03
6-1-72	6.9	13	16		0	--	--	--	4	6.6	.04	.05	.87	2.41	.04	.06	.02
Reedy Creek below S-46 near Vineland, Florida (2660.26)																	
11-7-68	6.8	36	44		--	--	--	--	440	0.7	--	.07	.75	--	.14	.15	0.05
1-31-69	5.8	--	--		--	--	--	--	23	.1	.03	--	--	--	.17	.20	.06
3-26-69	4.7	--	--		--	--	--	--	200	0	.09	.11	.12	.23	.14	.38	.12
4-29-69	4.6	--	--		--	--	--	--	5.5	0	.05	.04	.96	1.01	.16	.21	.07
6-17-69	6.0	--	--		--	--	--	--	25	.1	.03	.06	.61	.69	--	.11	.04
7-17-69	7.2	16	20		0	--	--	--	22	2.2	.00	.20	.84	1.49	.02	.04	.01
5-28-70	7.1	--	--		--	--	--	--	--	2.0	.05	.60	.59	1.52	.07	.14	.04
4-29-71	--	--	--		--	--	--	--	4.0	0	.04	.05	.11	.16	.08	.17	.06

Table 9.--Chemical and nutrient analyses of surface waters in the Reedy Creek Improvement District area (results in milligrams per liter except for pH and turbidity)--continued.

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Date	pH	Alkalinity as CaCO ₃	Bicarbonate (HCO ₃)	Free Carbon Dioxide, CO ₂	Carbonate (CO ₃)	Total Carbon	Organic Carbon	Inorganic Carbon	Turbidity (JTU)	Nutrients								
										Nitrate (NO ₃)	Nitrite (NO ₂)	Ammonia (NH ₄)	Organic Nitrogen (N)	Total Nitrogen (N)	Ortho- phosphate (PO ₄)	Total phosphate (PO ₄)	Total phosphorus (P)	
Whittenhorse Creek near Vineland, Florida (2662.00)																		
5-20-66	4.6	--	0		--	--	--	--	--	0.7	--	--	--	--	--	--	--	--
5-8-67	6.5	--	120		0	--	--	--	--	4.8	--	--	--	--	--	3.6	1.17	
5-1-68	6.0	--	38		--	--	--	--	--	7.2	--	--	--	--	--	.35	.11	
10-23-68	4.5	0	0		--	--	--	--	3.8	.4	.00	.09	.92	1.08	.01	.02	.01	
2-3-69	4.6	--	--		--	--	--	--	3.4	0	.05	--	--	--	.01	.04	.01	
3-24-69	4.5	--	--		--	--	--	--	5.4	0	.04	.06	.91	.97	.03	.05	.02	
4-24-69	--	--	--		--	--	--	--	1.2	0	.01	.10	1.3	1.38	.02	.03	.01	
6-17-69	4.8	--	--		--	--	--	--	4.0	.1	.04	.26	1.3	1.54	--	.06	.02	
7-16-69	5.6	--	10		0	--	--	--	28	.1	.04	.63	1.8	2.32	--	.26	.08	
5-25-70	5.0	--	1		--	--	--	--	12	0	.03	.62	.99	1.48	.28	.32	.10	
8-31-70	4.4	0	0		--	--	--	--	1.9	0	.05	.17	.60	.75	.16	.16	.05	
12-2-70	5.1	--	0		--	51	48	3	--	0	--	--	--	--	--	--	--	
3-1-71	4.7	0	0		0	46	45	1	1.0	0	.07	.08	.62	.70	.06	.06	.02	
8-18-71	4.5	2	2		1	70	66	4	1.0	0	.08	.19	.26	.43	.09	.09	.03	
2-8-72	4.5	0	0		0	42	40	2	1.0	0	.03	.04	.64	.68	.02	.06	.02	
8-16-72	4.3	0	0		0	29	24	5	1.0	0	.07	.08	1.4	1.48	.06	.13	.04	
2-21-73	4.3	0	0		0	42	39	3	1.0	0	.04	.06	1.2	1.26	.06	.08	.02	
Lateral 405 above S-405A near Doctor Phillips, Florida (2662.91)																		
4-30-69	6.1	9	11		0	--	--	--	--	0.2	0.02	--	--	--	--	0.22	0.07	
5-26-70	4.3	--	--		--	--	--	--	--	0	.05	0.02	1.2	1.23	0.04	.07	.02	
5-3-71	4.2	--	--		--	--	--	--	6.0	0	.12	.12	.21	.34	.20	.27	.09	
11-22-71	4.4	0	0		0	--	--	--	--	0	.03	--	--	--	--	--	--	
8-17-72	4.4	0	0		0	--	--	--	4.0	0	.06	.08	1.6	1.68	.07	.08	.02	

Table 9.--Chemical and nutrient analyses of surface waters in the Reedy Creek Improvement District area (results in milligrams per liter except for pH and turbidity)--continued.

Date	pH	Alkalinity as CaCO ₃	Bicarbonate (HCO ₃)	Free Carbon Dioxide, CO ₂	Carbonate (CO ₃)	Total Carbon	Organic Carbon	Inorganic Carbon	Turbidity (JTU)	Nutrients							
										Nitrate (NO ₃)	Nitrite (NO ₂)	Ammonia (NH ₄)	Organic Nitrogen (N)	Total Nitrogen (N)	Ortho- phosphate (PO ₄)	Total phosphate (PO ₄)	Total phosphorus (P)
	Lateral	405	below S-405A	near Doctor Phillips,	Florida	(2662.92)											
10-24-68	5.7	10	12	--	--	--	--	--	35	0.6	0.00	0.15	0.98	1.23	0.27	0.45	0.15
1-31-69	4.4	--	--	--	--	--	--	--	400	0	.11	--	--	--	.31	.47	.15
3-25-69	4.5	--	--	--	--	--	--	--	5.5	0	.04	.11	1.2	1.30	.04	.06	.02
4-30-69	4.5	5	6	0	--	--	--	--	1240	.8	.04	.46	1.1	1.65	--	.24	.08
6-19-69	5.0	--	--	--	--	--	--	--	1640	.8	.02	.28	.89	1.29	--	.06	.02
7-18-69	4.7	0	0	0	--	--	--	--	120	7.5	.10	.18	1.1	2.96	.06	.06	.02
5-26-70	--	--	--	--	--	--	--	--	--	.4	.15	.12	.15	.38	--	.49	.16
8-27-70	4.7	0	0	--	--	--	--	--	3.4	0	.10	.18	.63	.80	--	.17	.06
12-2-70	7.0	18	22	0	40	35	5	110	.7	.28	.19	.50	.89	.07	.13	.04	
3-1-71	6.4	24	29	0	30	22	8	110	1.2	.05	.04	.37	.69	.10	.16	.05	
5-3-71	6.8	24	29	0	30	23	7	50	0	.10	.13	1.5	1.63	--	.36	.12	
8-19-71	6.7	48	59	29	39	26	13	10	0	.03	.15	2.2	2.32	.18	.44	.14	
11-23-71	6.6	54	66	33	26	12	14	50	0	.06	.09	.40	.49	.12	.22	.07	
2-9-72	6.7	56	68	33	31	14	17	20	0	.03	.06	1.1	1.16	.08	.20	.06	
5-8-72	7.4	49	60	30	32	13	19	15	0	.03	1.4	.07	1.17	.12	.43	.14	
11-16-72	4.2	0	0	0	55	48	7	1.0	0	.08	.17	2.1	2.26	.18	.19	.06	
2-22-73	3.9	0	0	0	48	46	2	2.0	0	.05	.02	1.1	1.13	.09	.11	.04	
	Lateral	405	below S-405	near Vineland,	Florida	(2662.94)											
11-23-71	7.0	54	66	33	25	13	12	40	0	0.04	0.09	1.1	1.18	0.09	0.20	0.06	
8-19-71	6.5	--	55	--	--	--	--	--	.1	--	--	--	--	--	--	--	
2-9-72	6.5	46	56	28	26	15	11	40	.3	.06	.15	2.2	2.40	.13	.22	.07	
5-8-72	7.5	39	48	24	23	9	14	15	0	.03	.10	.68	.77	.08	.17	.06	

Table 9.--Chemical and nutrient analyses of surface waters in the Reedy Creek Improvement District area (results in milligrams per liter except for pH and turbidity)--continued.

Date	pH	Alkalinity as CaCO ₃	Bicarbonate (HCO ₃)	Free Carbon Dioxide, CO ₂	Carbonate (CO ₃)	Total Carbon	Organic Carbon	Inorganic Carbon	Turbidity (JTU)	Nutrients							
										Nitrate (NO ₃)	Nitrite (NO ₂)	Ammonia (NH ₄)	Organic Nitrogen (N)	Total Nitrogen (N)	Ortho- phosphate (PO ₄)	Total phosphate (PO ₄)	Total phosphorus (P)
	Lateral	410	below S-410	(2662.96)													
4-27-71	6.9	23	28		0	--	--	--	4.0	0	0.05	0.04	1.7	1.75	0.10	0.12	0.04
	Reedy Creek near Vineland, Florida	(2663.00)															
8-21-62	6.5	--	32		--	--	--	--	--	--	--	--	--	--	--	--	--
7-24-63	6.0	--	2		--	--	--	--	--	0	--	--	--	--	--	--	--
5-20-66	5.3	--	6		--	--	--	--	--	.5	--	--	--	--	--	--	--
5-8-67	5.3	--	7		0	--	--	--	--	1.6	--	--	--	--	--	0.15	0.05
4-9-68	5.3	--	4		--	--	--	--	--	.7	--	--	--	--	--	--	--
5-1-68	5.0	--	0		--	--	--	--	--	1.0	--	--	--	--	--	.06	.02
10-23-68	4.9	2	2		--	--	--	--	3.8	.5	.02	.10	.90	1.10	.03	.03	.01
2-4-69	5.3	--	--		--	--	--	--	40	0	.03	--	--	--	.02	.06	.02
3-25-69	4.9	--	--		--	--	--	--	35	0	.06	.06	1.3	1.36	.04	.05	.02
4-21-69	4.9	3	4		0	--	--	--	--	.1	--	--	--	--	.04	--	--
4-24-69	--	--	--		--	--	--	--	21	0	.02	.18	1.6	1.74	.02	.04	.01
6-16-69	5.1	--	--		0	--	--	--	90	.2	.05	.14	1.0	1.17	--	.10	.03
7-15-69	6.2	5	6		0	--	--	--	40	2.0	.03	.24	1.1	1.75	.15	.16	.05
5-20-70	6.8	--	24		--	--	--	--	--	.7	.02	.02	1.2	1.38	.14	.16	.05
8-27-70	6.5	19	23		--	--	--	--	120	.3	.04	.10	.52	.68	.15	.19	.06
12-2-70	7.0	16	20		0	35	30	5	58	0	.16	.15	.31	.48	.12	.17	.06
3-1-71	7.0	16	19		0	30	27	3	70	.8	.06	.07	.34	.59	.10	.13	.04
5-3-71	6.5	25	30		0	24	19	5	80	.2	.15	.04	.78	1.49	--	.37	.12
8-18-71	6.1	32	40		20	54	54	0	4.0	1.4	0	.10	1.6	1.99	.15	.17	.06

Table 9.--Chemical and nutrient analyses of surface waters in the Reedy Creek Improvement District area (results in milligrams per liter except for pH and turbidity)--continued.

Date	pH	Alkalinity as CaCO ₃	Bicarbonate (HCO ₃)	Free Carbon Dioxide, CO ₂	Carbonate (CO ₃)	Total Carbon	Organic Carbon	Inorganic Carbon	Turbidity (JTU)	Nutrients							
										Nitrate (NO ₃)	Nitrite (NO ₂)	Ammonia (NH ₄)	Organic Nitrogen (N)	Total Nitrogen (N)	Ortho- phosphate (PO ₄)	Total phosphate (PO ₄)	Total phosphorus (P)
Reedy Creek near Vineland, Florida (2663.00) (Continued)																	
11-22-71	6.3	29	34		17	29	23	6	--	0.3	0.06	0.04	1.1	1.22	0.36	0.46	0.15
2-8-72	6.2	16	20		9.9	40	35	5	10	.4	.05	.11	.45	.64	.17	.22	.07
5-9-72	7.1	24	29		14	27	20	7	3.0	.4	.04	.12	1.4	1.60	2.2	2.3	.75
8-16-72	6.0	8	10		0	50	4	46	2.0	.4	.07	.09	1.4	1.58	.52	.67	.22
11-15-72	7.6	30	36		0	28	17	11	2.0	1.5	.03	.09	.83	1.26	.89	.95	.31
2-21-73	6.4	11	15		0	35	31	4	5.0	.9	.06	.09	1.3	1.56	.40	.40	.13
5-2-73	6.8	26	32		0	30	25	5	5.0	1.8	.06	.06	.84	1.31	1.2	1.5	.50
Davenport Creek near Loughman, Florida (2664.80)																	
4-9-68	6.9	--	48		--	--	--	--	--	4.3	--	--	--	--	--	--	--
4-30-68	6.7	--	48		--	--	--	--	--	4.5	--	--	--	--	--	.22	0.07
10-23-68	6.4	21	26		--	--	--	--	4.7	1.3	.00	.06	1.1	1.44	.04	.08	.03
2-4-69	6.6	--	--		--	--	--	--	2.1	1.0	.03	--	--	--	.06	.12	.04
3-24-69	6.2	8	10		--	--	--	--	3.6	0	.03	.01	1.0	1.02	.07	.10	.03
4-29-69	6.4	--	--		--	--	--	--	16	1.5	.03	.06	.87	1.26	.09	.09	.03
6-18-69	6.9	--	--		--	--	--	--	12	3.1	.01	.00	.23	.93	--	.12	.04
7-15-69	7.2	43	52		0	--	--	--	1.8	3.0	.04	.00	.17	.86	--	.10	.03
5-25-70	7.7	--	--		--	--	--	--	4.5	2.5	.01	.07	.88	1.50	.07	.08	.03
8-31-70	6.4	16	20		--	--	--	--	1.3	.9	.07	.11	.69	1.00	.17	.17	.06
12-2-70	7.5	36	44		0	25	17	8	2.0	2.8	.07	.08	.29	1.00	.05	.08	.03
3-1-71	7.3	26	32		0	27	22	5	1.0	2.2	.06	.05	.37	.92	.08	.11	.04
5-3-71	7.0	37	45		0	10	3	7	4.0	3.9	.02	.06	.38	1.31	.05	.09	.03
8-18-71	6.9	31	38		19	40	35	5	4.0	1.5	.05	.16	1.4	1.88	.09	.12	.04
11-22-71	6.4	35	43		21	17	10	7	110	4.2	.21	.16	6.5	7.64	.57	.46	.15

Table 9.--Chemical and nutrient analyses of surface waters in the Reedy Creek Improvement District area (results in milligrams per liter except for pH and turbidity)--continued.

Date	pH	Alkalinity as CaCO ₃	Bicarbonate (HCO ₃)	Free Carbon Dioxide, CO ₂	Carbonate (CO ₃)	Total Carbon	Organic Carbon	Inorganic Carbon	Turbidity (JTU)	Nutrients							
										Nitrate (NO ₃)	Nitrite (NO ₂)	Ammonia (NH ₄)	Organic Nitrogen (N)	Total Nitrogen (N)	Ortho- phosphate (PO ₄)	Total phosphate (PO ₄)	Total phosphorus (P)
Davenport Creek near Loughman, Florida (2664.80) (Continued)																	
2-8-72	6.7	25	31		15	43	38	5	3.0	1.5	.03	.04	1.0	1.38	.03	.10	.03
5-9-72	7.8	39	48		24	15	3	12	1.0	3.0	.02	.02	1.3	2.00	.11	.12	.04
8-16-72	7.3	33	40		0	42	36	6	1.0	.1	.04	.06	1.4	1.48	.08	.09	.03
11-15-72	7.4	39	47		0	20	10	10	1.0	3.9	.02	.06	.44	1.38	.07	.12	.04
2-21-73	6.6	15	22		0	45	41	4	4.0	1.3	.05	.06	1.1	1.46	.07	.08	.02
Reedy Creek near Loughman, Florida (2665.00)																	
11-13-59	6.0	--	--		--	--	--	--	--	1.1	--	--	--	--	--	--	--
4-9-68	6.7	--	40		--	--	--	--	--	2.8	--	--	--	--	--	--	--
4-30-68	6.6	--	49		--	--	--	--	--	2.5	--	--	--	--	--	0.03	0.01
10-23-68	6.3	18	22		--	--	--	--	5.6	.6	0.00	0.08	0.96	1.16	0.02	.06	.02
2-5-69	6.7	--	--		--	--	--	--	16	.9	.05	--	--	--	.07	.09	.03
3-24-69	6.0	--	--		--	--	--	--	17	0	.05	.11	1.3	1.40	.17	.20	.06
4-21-69	6.2	15	18		0	--	--	--	--	.5	--	--	--	--	.02	--	--
4-24-69	--	--	--		--	--	--	--	910	.2	.02	.11	.93	1.07	.03	.07	.02
6-11-69	6.3	--	--		0	--	--	--	45	.7	.04	.16	.85	1.14	--	.10	.03
7-15-69	6.9	23	28		0	--	--	--	30	2.6	.03	.22	.69	1.46	.14	.15	.05
5-25-70	6.5	--	--		--	--	--	--	25	.1	.04	.62	.30	.82	.36	.39	.13
8-18-71	6.1	24	29		14	50	42	8	10	0	.08	.22	7.1	7.30	.12	.21	.07
11-22-71	5.8	18	36		15	26	17	9	20	1.8	.06	.05	1.1	1.56	.13	.22	.07
2-8-72	6.2	16	19		9.4	40	35	5	4.0	.4	.04	.05	2.2	2.34	.07	.10	.03
5-9-72	7.3	33	40		0	28	14	14	4.0	0	.03	.37	1.1	1.40	.61	.80	.26
8-16-72	6.2	1.3	16		0	54	6	48	7.0	.1	.07	.12	2.5	2.64	.28	.30	.10
11-15-72	7.1	30	36		0	23	13	10	2.0	3.8	.02	.08	.72	1.64	.49	.55	.18
2-21-73	6.4	16	20		0	36	30	6	5.0	4.0	.04	.09	.98	1.96	.17	.20	.06
5-2-73	6.7	27	30		0	27	22	5	9.0	2.2	.05	.09	.89	1.47	.67	.67	.22

Table 10.--Metals analyses of surface waters in the Reedy Creek Improvement District area (results in milligrams per liter).

Date of Collection	Aluminum (Al)	Copper (Cu)	Iron (Fe)	Manganese (Mn)	Strontium (Sr)	Arsenic (As)	Chromium (Cr)	Zinc (Zn)	Lead (Pb)	Mercury (Hg)
Bay Lake near Vineland, Florida (2638.50)										
May 18, 1966	--	--	0.41	--	--	--	--	--	--	--
Aug. 31, 1966	--	--	.36	--	--	--	--	--	--	--
May 23, 1967	--	--	.15	--	--	--	--	--	--	--
Mar. 19, 1968	--	--	.28	--	--	--	--	--	--	--
Apr. 9, 1968	--	--	.10	--	--	--	--	--	--	--
May 7, 1968	--	--	.07	.02	.00	--	--	--	--	--
Oct. 25, 1968	--	--	.05	--	--	--	--	--	--	--
Jul. 22, 1969	--	--	.02	--	--	--	--	--	--	--
Dec. 3, 1970	.12	.01	--	.00	.14	.00	.00	.02	.004	--
May 18, 1971	--	--	--	--	--	.01	--	--	--	--
Bay Lake Outlet below S-105A near Vineland, Florida (2638.52)										
Oct. 24, 1968	--	--	0.20	--	--	--	--	--	--	--
Jul. 18, 1969	--	--	.08	--	--	--	--	--	--	--
May 21, 1970	--	--	.19	--	--	--	--	--	--	--
Jun. 1, 1972	--	--	--	--	.18	--	--	--	--	--
South Lake Outlet above S-15 near Vineland, Florida (2638.69)										
Oct. 24, 1968	--	--	0.07	--	--	--	--	--	--	--
Jul. 6, 1969	--	--	.07	--	--	--	--	--	--	--
Aug. 27, 1970	--	.01	.07	.02	--	.01	.00	.01	.000	--
Dec. 2, 1970	0.40	.00	.03	.02	--	.03	.00	.04	.000	--
Mar. 1, 1971	.03	.00	.05	.01	--	.02	.00	.03	.000	--
May 3, 1971	--	.00	.02	.03	--	.01	.01	.02	.000	--
Aug. 19, 1971	--	.00	.03	.03	.06	.00	.00	.02	.000	--
Nov. 23, 1971	--	.00	.04	.02	--	.00	.00	.03	.002	--
Feb. 9, 1972	--	.04	.06	.03	.05	.01	.00	.05	.000	--
May 8, 1972	.10	.02	.03	.02	.00	.00	.00	.01	.003	--
Aug. 17, 1972	--	.01	.03	.03	.08	--	.00	.02	.001	--
Cypress Creek at Vineland, Florida (2640.00)										
Jul. 24, 1963	--	--	0.47	--	--	--	--	--	--	--
May 20, 1966	--	--	.38	--	--	--	--	--	--	--
May 8, 1967	--	--	.16	.00	.00	--	--	--	--	--
Oct. 24, 1968	--	--	.26	--	--	--	--	--	--	--
Jul. 7, 1969	--	--	.47	--	--	--	--	--	--	--

Table 10.--Metals analyses of surface waters in the Reedy Creek Improvement District area (results in milligrams per liter)--continued.

Date of Collection	Aluminum (Al)	Copper (Cu)	Iron (Fe)	Manganese (Mn)	Strontium (Sr)	Arsenic (As)	Chromium (Cr)	Zinc (Zn)	Lead (Pb)	Mercury (Hg)
Cypress Creek at Vineland, Florida (2640.00)	-- cont'd.									
May 18, 1970	--	--	.42	--	--	--	--	--	--	--
Aug. 27, 1970	--	.01	.37	.01	--	.01	.00	.01	.010	.0002
Dec. 2, 1970	--	--	.27	.01	--	.03	.00	.01	.000	--
Mar. 1, 1971	.24	.00	.23	.01	--	.03	.00	.02	.000	--
Aug. 18, 1971	--	.00	.46	.02	.05	.00	.00	.07	.002	--
Nov. 22, 1971	--	.00	.42	.02	--	.001	.00	.08	.003	--
Feb. 9, 1972	.00	.05	.25	.02	.06	.01	.00	.08	.001	--
Aug. 16, 1972	--	.01	.71	.01	.06	.03	.00	.04	.006	--
Feb. 22, 1973	--	.00	.17	.01	.04	.01	.00	.01	.002	--
Bonnet Creek near Vineland, Florida (2641.00)										
Jul. 24, 1963	--	--	0.42	--	--	--	--	--	--	--
May 20, 1966	--	--	.39	--	--	--	--	--	--	--
May 8, 1967	--	--	.01	--	--	--	--	--	--	--
Apr. 9, 1968	--	--	.24	--	--	--	--	--	--	--
May 1, 1968	--	--	.25	.00	.08	--	--	--	--	--
Oct. 23, 1968	--	--	.27	--	--	--	--	--	--	--
Jul. 15, 1969	--	--	.06	--	--	--	--	--	--	--
May 20, 1970	--	--	.10	--	--	--	--	--	--	--
Aug. 18, 1971	--	.02	.51	.02	.09	.00	.00	.08	.002	--
Nov. 22, 1971	--	.00	.20	.01	--	.002	.00	.01	.002	--
Feb. 8, 1972	--	.03	.11	.00	.10	.03	.00	.04	.00	--
May 8, 1972	.20	.04	.19	.00	.13	.01	.00	.00	.002	--
Aug. 16, 1972	--	.00	.13	.01	.10	--	.00	.04	.004	--
Nov. 16, 1972	--	.01	.29	.00	.10	.01	.00	.01	.002	--
Feb. 22, 1973	--	.00	.28	.01	.06	.01	.00	.03	.001	--
Reedy Creek below S-46 near Vineland, Florida (2660.26)										
Nov. 7, 1968	--	--	0.07	--	--	--	--	--	--	--
Jul. 17, 1969	--	--	.03	--	--	--	--	--	--	--
May 28, 1970	--	--	.07	--	--	--	--	--	--	--
Whittenhorse Creek near Vineland, Florida (2662.00)										
May 20, 1966	--	--	0.45	--	--	--	--	--	--	--
May 8, 1967	--	--	.61	.00	.00	--	--	--	--	--
May 1, 1968	--	--	.17	.00	.00	--	--	--	--	--
Oct. 23, 1968	--	--	.65	--	--	--	--	--	--	--

Table 10.--Metals analyses of surface waters in the Reedy Creek Improvement District area (results in milligrams per liter)--continued.

Date of Collection	Aluminum (Al)	Copper (Cu)	Iron (Fe)	Manganese (Mn)	Strontium (Sr)	Arsenic (As)	Chromium (Cr)	Zinc (Zn)	Lead (Pb)	Mercury (Hg)
Whittenhorse Creek near Vineland, Florida (2662.00) -- cont'd.										
Jul. 16, 1969	--	--	.78	--	--	--	--	--	--	--
Aug. 31, 1970	--	.00	.40	.01	--	.02	.00	.02	.020	.0009
Dec. 2, 1970	--	.00	.26	.01	--	.03	.01	.09	.000	--
Mar. 1, 1971	.19	.00	.19	.01	--	.05	.00	.04	.002	--
Aug. 18, 1971	--	.01	.32	.02	.04	.01	.00	.07	.004	--
Feb. 8, 1972	--	.04	.18	.01	.04	.00	.00	.05	.002	--
Aug. 16, 1972	--	.01	.39	.01	.08	.03	.00	.05	.009	--
Feb. 21, 1973	--	.01	.19	.01	.10	.01	.00	.04	.014	--
Lateral 405 above S-405A near Doctor Phillips, Florida (2662.91)										
Apr. 30, 1969	--	--	0.24	--	--	--	--	--	--	--
May 26, 1970	--	--	.18	--	--	--	--	--	--	--
Dec. 2, 1970	--	.01	.48	.01	--	.04	.00	.05	.00	--
Aug. 17, 1972	--	.01	.41	.02	.08	.02	.00	.04	.008	--
Lateral 405 below S-405A near Doctor Phillips, Florida (2662.92)										
Oct. 24, 1968	--	--	0.38	--	--	--	--	--	--	--
Apr. 30, 1969	--	--	.24	--	--	--	--	--	--	--
Jul. 18, 1969	--	--	.23	--	--	--	--	--	--	--
Aug. 27, 1970	--	.00	.64	.00	--	.02	.00	.37	.00	--
Dec. 2, 1970	--	.01	.48	.01	.00	.04	.00	.05	.00	--
Mar. 1, 1971	0.33	.00	.20	.01	--	.03	.00	.05	.002	--
May 3, 1971	--	.00	.22	.01	--	.00	.00	.04	.000	--
Aug. 19, 1971	--	.02	.20	.03	.08	.00	.00	.05	.001	--
Nov. 23, 1971	--	.00	.19	.01	--	.01	.00	.04	.001	--
Feb. 9, 1972	--	.03	.20	.02	.10	.01	.00	.05	.001	--
May 8, 1972	.00	.03	.17	.01	.19	.02	.00	.02	.004	--
Nov. 16, 1972	--	.01	.86	.03	.20	.02	.00	.02	.014	--
Feb. 22, 1973	--	.00	.36	.01	.03	.01	.00	.01	.003	--
Lateral 405 below S-405 near Vineland, Florida (2662.94)										
Nov. 23, 1971	--	0.00	0.15	0.01	--	0.01	0.00	0.01	0.001	--
Aug. 19, 1971	--	.02	.15	.01	.11	.00	.00	.02	.005	--
Feb. 9, 1972	--	.04	.10	.00	.11	.01	.00	.04	.000	--
May 8, 1972	0.00	.02	.13	.01	.17	.02	.00	.01	.002	--

Table 10.--Metals analyses of surface waters in the Reedy Creek Improvement District area (results in milligrams per liter)--continued.

Date of Collection	Aluminum (Al)	Copper (Cu)	Iron (Fe)	Manganese (Mn)	Strontium (Sr)	Arsenic (As)	Chromium (Cr)	Zinc (Zn)	Lead (Pb)	Mercury (Hg)
Reedy Creek near Vineland, Florida (2663.00)										
Jul. 24, 1963	--	--	0.39	--	--	--	--	--	--	--
May 20, 1966	--	--	.20	--	--	--	--	--	--	--
May 8, 1967	--	--	.17	--	--	--	--	--	--	--
Apr. 9, 1968	--	--	.15	--	--	--	--	--	--	--
May 1, 1968	--	--	.08	.00	.00	--	--	--	--	--
Oct. 23, 1968	--	--	.24	--	--	--	--	--	--	--
Apr. 21, 1969	--	--	.31	--	--	--	--	--	--	--
Jul. 15, 1969	--	--	.18	--	--	--	--	--	--	--
May 20, 1970	--	--	.16	--	--	--	--	--	--	--
Aug. 27, 1970	--	.01	.22	.00	--	.01	.00	.04	.000	0005
Dec. 2, 1970	--	.01	.18	.00	--	.03	.01	.04	.000	--
Mar. 1, 1971	.35	.00	.17	.00	--	.03	.00	.09	.000	--
May 3, 1971	--	.01	.08	.01	--	.01	.00	.11	.010	--
Aug. 18, 1971	--	.01	.30	.01	.16	.02	.00	.04	.001	--
Nov. 22, 1971	--	.00	.24	.01	--	.01	.00	.02	.002	--
Feb. 8, 1972	--	.04	.23	.01	.08	.01	.00	.05	.000	--
May 9, 1972	.10	.01	.21	.01	.10	.02	.00	.05	.004	--
Aug. 16, 1972	--	.01	.33	.01	.10	.02	.00	.05	.008	--
Nov. 15, 1972	--	.00	.19	.01	.10	.01	.00	.02	.003	--
Feb. 21, 1973	--	.00	.21	.01	.04	.01	.00	.08	.003	--
May 2, 1973	--	.01	.25	.00	.08	.01	.00	.02	.004	--
Davenport Creek near Loughman, Florida (2664.80)										
Apr. 9, 1968	--	--	0.06	--	--	--	--	--	--	--
Apr. 30, 1968	--	--	.03	--	--	--	--	--	--	--
Oct. 23, 1968	--	--	2.7	.00	.00	--	--	--	--	--
Jul. 15, 1969	--	--	.04	--	--	--	--	--	--	--
Aug. 31, 1970	--	.00	.39	.00	--	.01	.00	.02	.000	--
Dec. 2, 1970	--	.01	.12	.00	--	.03	.02	.03	.000	--
Mar. 1, 1971	0.14	.00	.14	.00	--	.03	.00	.02	.000	--
May 3, 1971	--	.01	.04	.00	--	.01	.00	.05	.001	--
Aug. 18, 1971	--	.02	.16	.00	.08	.01	.01	.03	.000	--
Nov. 22, 1971	--	.01	.12	.00	--	.01	.00	.04	.002	--
Feb. 28, 1972	--	.03	.23	.02	.09	.01	.00	.06	.000	--
May 9, 1972	.00	.02	.02	.01	.01	.01	.00	.02	.001	--
Aug. 16, 1972	--	.00	.19	.01	.11	.02	.00	.02	.006	--
Nov. 15, 1972	--	.02	.09	.01	.20	.01	.00	.02	.007	--
Feb. 21, 1973	--	.03	.21	--	.04	.01	.00	.03	.001	--

Table 10.--Metals analyses of surface waters in the Reedy Creek Improvement District area (results in milligrams per liter)--continued.

Date of Collection	Aluminum (Al)	Copper (Cu)	Iron (Fe)	Manganese (Mn)	Strontium (Sr)	Arsenic (As)	Chromium (Cr)	Zinc (Zn)	Lead (Pb)	Mercury (Hg)
Reedy Creek near Loughman, Florida (2665.00)										
Nov. 13, 1959	--	--	0.18	--	--	--	--	--	--	--
Apr. 9, 1968	--	--	.09	--	--	--	--	--	--	--
Apr. 30, 1968	--	--	.03	--	--	--	--	--	--	--
Oct. 23, 1968	--	--	.28	--	--	--	--	--	--	--
Apr. 21, 1969	--	--	.22	--	--	--	--	--	--	--
Jul. 15, 1969	--	--	.15	--	--	--	--	--	--	--
Aug. 18, 1971	--	.01	.42	.01	.08	.01	.00	.04	.005	--
Nov. 22, 1971	--	.00	.21	.00	--	.001	.00	.03	.016	--
Feb. 8, 1972	--	.04	.23	.01	.10	.00	.00	.05	.001	--
Aug. 16, 1972	--	.01	.37	.01	.08	.03	.00	.04	.018	--
Nov. 15, 1972	--	.01	.15	.00	.20	.01	.00	.01	.005	--
Feb. 21, 1973	--	.01	.22	.00	.06	.01	.00	.07	.011	--
May 2, 1973	--	.01	.17	.00	.10	.01	.00	.01	.006	--

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Table 11.--Biological data for surface waters in the Reedy Creek Improvement District area.

Date	Time	pH	Water temperature	Biochemical Oxygen demand (mg/l)	Total Coliform (col/100 ml)	Dissolved Oxygen (mg/l)	Specific Conductance (micromhos 25°C)
Bay Lake near Vineland, Florida (2638.50)							
5-23-67	--	5.1	26	--	--	7.5	92
5-7-68	--	5.0	25	--	--	5.8	110
10-25-68	1315	5.1	27	--	--	10	110
2-5-69	1230	5.2	18.5	--	--	10.5	120
4-30-69	1445	5.1	27	--	--	6.8	120
7-22-69	1300	4.7	36	--	--	6.4	185
South Lake Outlet above S-15 near Vineland, Florida (2638.69)							
10-24-68	1500	4.7	25.0	--	--	8.8	110
1-31-69	0930	5.0	18.0	--	--	10	120
4-28-69	1100	4.9	25.0	--	--	7.2	92
7-18-69	0940	--	30.0	--	--	7.2	--
8-20-69	1230	--	32.5	--	--	6.1	--
8-27-70	1145	4.8	31.0	1.3	150	6.3	105
12-2-70	1150	4.7	22.0	.2	12	8.0	109
3-1-71	1140	5.2	24.5	.4	50	6.9	112
5-3-71	1145	5.0	26.0	.6	25	7.2	122
8-19-71	0850	5.1	28.0	1.6	600	6.7	140
11-23-71	1040	5.0	19.0	.7	110	9.2	115
2-9-72	0830	5.0	--	1.1	250	--	119
5-8-72	0700	6.0	22.0	.2	100	8.0	125
8-17-72	0945	5.1	28.0	.6	10	7.0	130
Cypress Creek at Vineland, Florida (2640.00)							
5-8-67	--	4.9	27	--	--	3.6	180
10-24-68	0930	4.5	22	--	--	4.8	74
2-3-69	0840	4.4	16	--	--	7.5	78
3-25-69	--	4.4	--	0.7	1,000	--	75
7-18-69	0925	--	28	--	--	2.7	--
9-11-69	1030	4.2	24	.1	3,500	4.2	74
11-24-69	1000	4.1	15	.6	500	4.2	60
2-25-70	1030	3.4	12.5	.4	120	4.9	78
5-20-70	0915	4.5	20.5	.1	1,700	3.4	105
8-27-70	1240	4.2	26.5	1.1	320	5.5	88
12-2-70	1315	4.3	20.0	.2	1,400	5.7	82
3-1-71	1215	4.2	24.0	.4	700	4.7	103
8-18-71	1245	4.5	26.0	.3	1,650	5.9	82
11-22-71	1230	4.1	21.0	.8	2,200	5.3	75
2-8-72	1100	4.3	--	.9	2,100	--	77
8-16-72	1005	3.9	24.0	1.0	490	3.3	102
2-22-73	0950	3.7	10.5	1.4	200	9.7	110

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Table 11.--Biological data for surface waters in the Reedy Creek Improvement District area--continued.

Date	Time	pH	Water temperature	Biochemical Oxygen demand (mg/l)	Total Coliform (col/100 ml)	Dissolved Oxygen (mg/l)	Specific Conductance (micromhos 25°C)
Bonnet Creek near Vineland, Florida (2641.00)							
5-1-68	--	6.5	21	--	--	3.3	106
10-23-68	1630	6.1	24	--	--	8.0	73
2-4-69	1155	7.2	15.5	--	--	11.2	190
3-25-69	--	6.2	--	1.4	--	--	87
4-29-69	1345	6.1	24	--	--	4.8	100
7-18-69	1520	--	28	--	--	3.3	--
9-11-69	1115	6.2	29	3.9	5,600	5.9	140
11-24-69	1100	6.3	17	.7	800	6.3	93
2-25-70	1115	5.8	15	.6	800	8.2	80
5-20-70	1030	7.1	24	.3	1,600	5.2	120
8-18-71	1130	6.1	28.0	1.3	1,350	6.5	100
11-22-71	1145	6.5	16.0	.5	800	6.3	135
2-8-72	1110	6.7	--	2.1	230	--	112
5-8-72	1010	7.7	23.5	2.1	500	--	123
8-16-72	1010	6.6	28.0	1.2	220	4.8	120
11-16-72	0730	7.7	20.5	.8	400	5.5	135
2-22-73	0740	6.6	14.0	2.2	250	8.7	121
Reedy Creek below S-46 near Vineland, Florida (2660.26)							
1-31-69	1145	5.8	20	--	--	6.1	88
4-29-69	1200	4.6	25	--	--	5.1	84
Whittenhorse Creek near Vineland, Florida (2662.00)							
5-8-67	--	6.5	28	--	--	0.2	309
5-1-68	--	6.0	25	--	--	1.6	162
10-23-68	1430	4.5	23	--	--	3.0	74
2-3-69	1510	4.6	18	--	--	7.0	81
9-11-69	1340	4.4	27	0.5	7,200	3.4	77
11-24-69	1350	4.5	15.5	.0	750	4.0	62
2-25-70	1510	4.1	14.0	.3	50	--	58
5-20-70	1325	4.7	28.0	3.3	23,000	.6	77
8-27-70	1645	4.0	27.0	1.5	490	3.4	115
12-2-70	1610	4.7	17.5	.6	1,300	2.8	83
3-1-71	1530	4.5	26.5	1.2	7,100	4.2	84
8-18-71	1015	4.5	25.0	1.0	1,700	4.5	90
2-8-72	1000	4.5	--	2.1	1,000	--	80
8-16-72	0910	4.3	24.5	.7	590	3.5	75
2-21-73	0935	4.3	11.0	.5	410	7.8	84

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Table 11.--Biological data for surface waters in the Reedy Creek Improvement District area--continued.

Date	Time	pH	Water temperature	Biochemical Oxygen demand (mg/l)	Total Coliform (col/100 ml)	Dissolved Oxygen (mg/l)	Specific Conductance (micromhos 25°C)
Lateral 405 above S-405A near Doctor Phillips, Florida (2662.91)							
4-30-69	1100	6.1	26	--	--	3.8	105
7-18-69	1039	--	28	--	--	4.2	--
9-11-69	1440	4.3	34	1.1	3,400	5.5	145
11-24-69	1515	4.2	19	1.2	880	5.6	131
5-20-70	1445	4.3	27	2.1	200	4.0	128
8-27-70	0945	4.3	28	2.6	420	3.5	99
5-3-71	0940	4.2	24.5	--	--	5.7	125
8-17-72	0845	4.4	27.0	2.8	2,300	3.6	150
Lateral 405 below S-405A near Doctor Phillips, Florida (2662.92)							
10-24-68	1245	5.7	24	--	--	7.0	128
1-31-69	1400	4.4	25	--	--	6.5	105
4-30-69	1100	4.5	24	--	--	1.2	107
7-18-69	1034	4.7	30	--	--	4.5	131
12-2-70	0920	6.3	17.0	0.9	2,000	5.5	116
3-1-71	0910	6.4	22.5	8.7	200	3.7	65
5-3-71	0920	6.2	22.5	1.1	25	3.8	120
8-19-71	1045	6.7	32.5	8.4	2,400	5.5	204
11-23-71	0900	6.6	19.5	1.6	200	5.6	165
2-9-72	0945	6.7	--	4.3	76	--	175
5-8-72	0915	7.5	23.0	7.3	290	--	181
11-16-72	0835	4.2	18.5	4.2	280	4.2	135
2-22-73	0900	3.9	12.0	--	940	8.2	171
Lateral 405 below S-405 near Vineland, Florida (2662.94)							
8-19-71	0930	6.5	27.5	8.6	450	1.0	162
11-23-71	1000	7.0	19.0	2.1	57	7.3	162
2-9-72	1020	6.5	--	2.6	230	--	154
5-8-72	0830	7.5	22.0	1.8	180	--	148
Reedy Creek near Vineland, Florida (2663.00)							
5-1-68	--	5.0	28	--	--	9.7	70
10-23-68	1545	4.9	23	--	--	5.3	67
2-4-69	1430	5.3	14	--	--	10.0	58
3-25-69	--	4.9	--	0.9	8,100	--	55
7-18-69	1545	--	27	--	--	4.9	--
9-11-69	1150	5.5	28	.8	16,000	6.5	64

Table 11.--Biological data for surface waters in the Reedy Creek Improvement District area--continued.

Date	Time	pH	Water temperature	Biochemical Oxygen demand (mg/l)	Total Coliform (col/100 ml)	Dissolved Oxygen (mg/l)	Specific Conductance (micromhos 25°C)
Reedy Creek near Vineland, Florida (2663.00) -- cont'd.							
11-24-69	1145	4.7	17	.8	900	4.8	60
2-25-70	1240	5.5	15	.6	300	5.5	46
5-20-70	1110	7.2	23.5	.4	1,400	6.1	87
8-27-70	1415	5.2	27.0	2.0	1,100	5.2	136
12-2-70	1350	6.6	20.0	1.2	1,400	6.3	210
3-1-71	1330	6.2	24.5	1.4	180	5.9	94
5-3-71	1350	6.5	23.5	1.4	3,000	7.7	95
8-18-71	1115	6.1	25.5	.7	7,000	7.2	95
11-22-71	1100	6.3	16.0	2.3	1,200	7.5	140
2-8-72	1045	6.2	--	2.1	900	--	120
5-9-72	0900	7.1	24.5	1.0	750	6.6	155
8-16-72	0945	6.0	24.5	1.9	4,800	4.6	95
11-15-72	0940	7.6	21.0	.8	450	5.3	150
2-21-73	1015	6.4	11.0	.7	100	6.0	112
5-2-73	1000	6.8	19.0	1.4	2,500	7.1	150
Davenport Creek near Loughman, Florida (2664.80)							
4-30-68	--	6.7	23	--	--	7.5	140
10-23-68	1300	6.4	22	--	--	5.7	88
2-4-69	1545	6.6	14	--	--	12.2	89
4-29-69	1050	6.4	24	--	--	5.9	87
7-18-69	1607	--	26	--	--	6.4	--
8-27-70	1600	5.7	26	1.2	950	5.3	129
12-2-70	1445	7.3	19.5	.7	1,300	6.7	119
3-1-71	1425	6.4	24.0	1.2	1,200	5.3	104
5-3-71	1450	6.9	21.0	.2	1,600	8.7	139
8-18-71	0930	6.9	25.5	.9	6,400	8.0	160
11-22-71	0945	6.4	16.0	--	1,500	9.6	115
2-8-72	0915	6.7	--	2.1	950	--	132
5-9-72	0800	7.8	22.0	.3	4,200	7.4	128
8-16-72	0830	7.3	24.0	.8	1,200	7.0	160
11-15-72	0835	7.4	20.5	2.0	190	7.5	140
2-21-73	0845	6.6	11.0	.8	480	8.4	102
Reedy Creek near Loughman, Florida (2665.00)							
4-30-68	--	6.6	23	--	--	1.5	143
10-23-68	1100	6.3	24	--	--	2.5	87
2-5-69	1000	6.7	11.5	--	--	8.2	78

BUREAU OF GEOLOGY

Table 11.--Biological data for surface waters in the Reedy Creek Improvement District area--continued.

Date	Time	pH	Water temperature	Biochemical Oxygen demand (mg/l)	Total Coliform (col/100 ml)	Dissolved Oxygen (mg/l)	Specific Conductance (micromhos 25°C)
Reedy Creek near Loughman, Florida (2665.00)--cont'd.							
3-25-69	--	--	--	1.7	5,500	--	--
7-18-69	1630	--	26	--	--	1.5	--
11-11-69	1250	6.3	26	.9	8,600	1.0	96
1-24-69	1240	6.1	15	1.7	950	2.0	75
1-25-70	1345	4.8	14	.5	400	5.0	67
1-20-70	1200	6.1	24.5	2.0	2,600	.6	94
3-18-71	0845	6.1	24.5	1.8	5,800	1.1	108
11-22-71	0845	5.8	16.0	1.5	1,800	4.7	120
2-8-72	0810	6.2	--	2.6	650	--	112
5-9-72	0700	--	--	--	220	--	--
8-16-72	0755	6.2	23.0	6.2	1,000	3.4	99
11-15-72	0800	7.1	21.0	1.6	140	5.4	150
2-21-73	0815	6.4	10.5	1.2	460	8.4	106
5-2-73	0810	6.7	19.0	1.9	410	6.0	105

Table 12.--Insecticide analyses for surface waters in the Reedy Creek Improvement District area (results of water samples in micrograms per liter and of sediments in micrograms per kilogram).

Date of Collection	Type of Sample	Aldrin	DDD	DDE	DDT	Dieldrin	Endrin	Heptachlor	Lindane	Methyl-Parathion	Malathion	Parathion	Diazinon	Ethion	Trithion	Methyl-Trithion
	South Lake Outlet			above	S-15	near	Vineland, Florida (2638.69)									
Sept. 1, 1970	Water	0.0	0.0	0.0	0.01	0.0	0.0	0.0	0.0	--	--	--	--	--	--	--
	Sediment	.0	.0	.0	.0	.7	.0	.0	.0	--	--	--	--	--	--	--
Dec. 2, 1970	Water	.0	.0	.0	.02	.0	.0	.0	.0	--	--	--	--	--	--	--
	Sediment	.0	.0	.0	.0	T.P.	.0	.0	.0	--	--	--	--	--	--	--
Mar. 1, 1971	Water	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0.0	--
	Sediment	.0	.0	.0	.0	.0	.0	.0	.0	--	--	--	--	--	--	--
May 3, 1971	Water	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	--	--
	Sediment	.0	.0	.0	.0	.0	.0	.0	.0	--	--	--	--	--	--	--
Aug. 19, 1971	Water	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0.0
	Sediment	.0	.0	.0	.0	.0	.0	.0	.0	--	--	--	--	--	--	--
Feb. 9, 1972	Water	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
	Sediment	.0	.0	.2	.3	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Aug. 17, 1972	Water	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
	Sediment	.0	.0	.0	.0	.0	.0	.0	.0	1.2	.0	.0	.0	.0	.0	.0
	Cypress Creek at Vineland, Florida						(2640.00)									
Sept. 12, 1969	Water	0.0	0.00	0.0	0.0	0.0	0.0	0.0	0.0	--	--	--	--	--	--	--
	Sediment	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aug. 27, 1970	Water	.0	.0	.0	.0	.0	.0	.0	.0	--	--	--	--	--	--	--
	Sediment	.0	.2	.0	.0	.4	.0	.0	.0	--	--	--	--	--	--	--

T.P. - Trace present.

Table 12.--Insecticide analyses for surface waters in the Reedy Creek Improvement District area (results of water samples in micrograms per liter and of sediments in micrograms per kilogram)--continued.

Date of Collection	Type of Sample	Aldrin	DDD	DDE	DDT	Dieldrin	Endrin	Heptachlor	Lindane	Methyl-Parathion	Malathion	Parathion	Diazinon	Ethion	Trithion	Methyl-Trithion
		Cypress Creek at Vineland, Florida (2640.00) --cont'd.														
Dec. 27, 1970	Water	.0	.0	.0	.0	.0	.0	.0	.0	--	--	--	--	--	--	--
	Sediment	.0	.0	.0	.0	.0	.0	.0	.0	--	--	--	--	--	--	--
Mar. 1, 1971	Water	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Sediment	.0	2.1	3.0	.0	.0	.0	.0	.0	--	--	--	--	--	--	--
May 3, 1971	Water	.0	.0	.0	.0	.0	.0	.0	.0	0.0	0.0	0.0	0.0	0.0	--	--
	Sediment	.0	3.8	7.1	.0	.4	.0	.0	.0	--	--	--	--	--	--	--
Aug. 18, 1971	Water	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0.0
	Sediment	.0	.3	.0	.5	.0	.0	.0	.0	--	--	--	--	--	--	--
Feb. 9, 1972	Water	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
	Sediment	.0	.4	1.1	1.1	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Aug. 17, 1972	Water	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
	Sediment	.0	.0	.3	.0	.2	.0	.0	.0	2.1	.0	.0	.0	.0	.0	.0
Feb. 22, 1973	Water	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
	Sediment	.0	5.0	.0	1.0	.1	.0	.0	.0	--	--	--	--	--	--	--
		Bonnet Creek near Vineland, Florida (2641.00)														
Aug. 18, 1971	Water	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.02	0.0	0.0	0.0	0.0	0.0
	Sediment	.0	.0	.0	.0	.0	.0	.0	.0	--	--	--	--	--	--	--
Feb. 8, 1972	Water	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Sediment	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0

Table 12.--Insecticide analyses for surface waters in the Reedy Creek Improvement District area (results of water samples in micrograms per liter and of sediments in micrograms per kilogram)--continued.

Date of Collection	Type of Sample	Aldrin	DDD	DDE	DDT	Dieldrin	Endrin	Heptachlor	Lindane	Methyl-Parathion	Malathion	Parathion	Diazinon	Ethion	Trithion	Methyl-Trithion
	Bonnet Creek near Vineland, Florida (2641.00)	--cont'd.														
Aug. 16, 1972	Water	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
	Sediment	.0	.0	.0	.0	.0	.0	.0	.0	4.8	.0	.0	.0	.0	.0	.0
Feb. 21, 1973	Water	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
	Sediment	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
	Whittenhorse Creek near Vineland, Florida (2662.00)															
Sept. 12, 1969	Water	0.0	0.0	0.0	0.0	0.0	0.0	0.0	T.P.	--	--	--	--	--	--	--
	Sediment	.0	.0	.0	.0	.0	.0	.0	.0	--	--	--	--	--	--	--
Aug. 31, 1970	Water	.0	.0	.0	.01	.0	.0	.0	.0	--	--	--	--	--	--	--
	Sediment	.0	3.4	5.4	.0	1.1	.0	.0	.0	--	--	--	--	--	--	--
Dec. 2, 1970	Water	.0	.0	.0	.0	.0	.0	.0	.0	--	--	--	--	--	--	--
	Sediment	.0	.0	.0	.0	.0	.0	.0	.0	--	--	--	--	--	--	--
Mar. 1, 1971	Water	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0.0	.0	0.0	--	--
	Sediment	.0	2.2	1.3	.0	.0	.0	.0	.0	--	--	--	--	--	--	--
May 3, 1971	Water	.0	.01	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0.07	--	--
	Sediment	.0	.8	1.0	.0	.4	.0	.0	.0	--	--	--	--	--	--	--
Aug. 18, 1971	Water	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0.0
	Sediment	.0	.0	13	.0	T.P.	.0	.0	.0	--	--	--	--	17	--	--
Feb. 8, 1972	Water	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
	Sediment	1.3	.7	4.4	1.0	2.2	.0	.0	.0	.0	.0	.0	.0	200	.0	.0

T.P. - Trace present.

Table 12.--Insecticide analyses for surface waters in the Reedy Creek Improvement District area (results of water samples in micrograms per liter and of sediments in micrograms per kilogram)--continued.

Date of Collection	Type of Sample	Aldrin	DDD	DDE	DDT	Dieldrin	Endrin	Heptachlor	Lindane	Methyl-Parathion	Malathion	Parathion	Diazinon	Ethion	Trithion	Methyl-Trithion
		Whittenhorse Creek near Vineland, Florida (2662.00)--cont'd.														
Aug. 16, 1972	Water	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
	Sediment	.0	.0	.0	.0	.0	.0	.0	.0	4.8	.0	.0	.0	.0	.0	.0
Feb. 22, 1973	Water	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
	Sediment	.0	.0	.0	.0	.0	.0	.0	.0	--	--	--	--	--	--	--
		Lateral 405 above S-405 near Doctor Phillips, Florida (2662.91)														
Aug. 17, 1972	Water	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Sediment	.0	.0	.0	.0	.0	.0	.0	.0	3.8	.0	.0	.0	.0	.0	.0
Feb. 22, 1973	Water	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
	Sediment	.0	.0	.0	.9	.4	.0	.0	.0	--	--	--	--	--	--	--
		Lateral 405 below S-405A near Doctor Phillips, Florida (2662.92)														
Aug. 27, 1970	Water	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	--	--	--	--	--	--	--
	Sediment	.0	1.6	.0	.0	.7	.0	.0	.0	--	--	--	--	--	--	--
Dec. 2, 1970	Water	.0	.0	.0	.01	.0	.0	.0	.01	--	--	--	--	--	--	--
	Sediment	.0	.0	.0	.0	.0	.0	.0	.0	--	--	--	--	--	--	--
Mar. 1, 1971	Water	.0	.0	.0	.0	.0	.0	.0	.02	.0	.0	.0	.0	.0	--	--
	Sediment	.0	.0	.0	.0	.0	.0	.0	.0	--	--	--	--	--	--	--
May 3, 1971	Water	.0	.0	.0	.0	.0	.0	.0	.01	0.0	0.0	0.0	0.0	0.0	--	--
	Sediment	.0	.0	.0	.0	.0	.0	.0	.0	--	--	--	--	--	--	--

Table 12.--Insecticide analyses for surface waters in the Reedy Creek Improvement District area (results of water samples in micrograms per liter and of sediments in micrograms per kilogram)--continued.

Date of Collection	Type of Sample	Aldrin	DDD	DDE	DDT	Dieldrin	Endrin	Heptachlor	Lindane	Methyl-Parathion	Malathion	Parathion	Diazinon	Ethion	Trithion	Methyl-Trithion
	Lateral 405 below S-405A near Doctor Phillips, Florida (2662.92)--cont'd.															
Aug. 19, 1971	Water	.0	.0	.0	.0	.03	.0	.0	.0	.0	.3	.0	.0	.0	2.9	0.0
	Sediment	.0	.0	.0	.0	.5	.0	.0	.0	--	--	--	--	--	--	--
Feb. 9, 1972	Water	.0	.0	.0	.0	.0	.0	.0	.0	.0	2.3	.0	.0	.0	.0	.0
	Sediment	.0	.0	.0	.0	T.P.	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
	Lateral 405 below S-405 near Vineland, Florida (2662.94)															
Aug. 19, 1971	Water	0.0	0.0	0.0	0.0	0.04	0.0	0.0	0.0	0.0	0.25	0.0	0.02	0.0	0.94	0.0
	Sediment	.0	.0	.0	.0	.2	.0	.0	.0	--	--	--	--	--	--	--
Feb. 9, 1972	Water	.0	.0	.0	.0	.0	.0	.0	.0	.0	.34	.0	.0	.0	.0	.0
	Sediment	.0	T.P.	.2	.1	1.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
	Reedy Creek near Vineland, Florida (2663.00)															
Sept. 12, 1969	Water	0.0	0.0	0.0	0.0	0.0	0.0	T.P.	T.P.	--	--	--	--	--	--	--
	Sediment	.0	.0	.0	.0	.0	.0	.0	.0	--	--	--	--	--	--	--
Aug. 27, 1970	Water	.0	.0	.0	.0	.0	.0	.0	.0	--	--	--	--	--	--	--
	Sediment 1/	.0	.0	.0	.0	1.8	.0	.0	.0	--	--	--	--	--	--	--
Dec. 2, 1970	Water	.0	.0	.0	.01	.0	.0	.0	.0	--	--	--	--	--	--	--
	Sediment	.0	.0	.0	.0	.0	.0	.0	.0	--	--	--	--	--	--	--
Mar. 1, 1971	Water	.0	.0	.0	.0	.0	.0	.0	.01	.0	.0	.0	.0	.0	--	--
	Sediment 38	.7	.7	.7	.0	.7	.0	.0	.0	--	--	--	--	--	--	--

T.P.- Trace present.

Table 12.--Insecticide analyses for surface waters in the Reedy Creek Improvement District area (results of water samples in micrograms per liter and of sediments in micrograms per kilogram)--continued.

Date of Collection	Type of Sample	Aldrin	DDD	DDE	DDT	Dieldrin	Endrin	Heptachlor	Lindane	Methyl-Parathion	Malathion	Parathion	Diazinon	Ethion	Trithion	Methyl-Trithion
	Reedy Creek near Vineland, Florida (2663.00)--cont'd.															
May 3, 1971	Water	.0	.0	.0	.0	.0	.0	.0	.0	0.0	0.0	0.0	0.0	0.0		
	Sediment	.2	.2	.0	.1	3.1	.0	.0	.0	--	--	--	--	--	--	--
Aug. 18, 1971	Water	.0	.0	.0	.0	.0	.0	.0	.0	--	T.P.	.0	.0	.0	0.0	0.0
	Sediment	2.4	.0	.0	.0	3.0	.0	.0	.0	--	--	--	--	--	--	--
Feb. 8, 1972	Water	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.02	.0	.0	.0	.0
	Sediment	1.7	.1	.2	.2	.8	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Aug. 16, 1972	Water	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
	Sediment	16	.3	.0	1.0	14	.0	.0	.0	18	.0	.0	.0	.0	.0	.0
Feb. 21, 1973	Water	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
	Sediment	.0	.2	.1	.4	1.6	.0	.0	.0	--	--	--	--	--	--	--
	Davenport Creek near Loughman, Florida (2664.80)															
Sept. 12, 1969	Water	0.0	0.0	0.0	0.0	0.0	0.0	T.P.	T.P.	--	--	--	--	--	--	--
	Sediment	.0	.0	2.00	T.P.	.0	.0	.0	.0	--	--	--	--	--	--	--
Aug. 31, 1970	Water	.0	.0	.0	.01	.0	.0	.0	.0	--	--	--	--	--	--	--
	Sediment	.0	7.1	9.6	8.5	.8	.0	.0	.0	--	--	--	--	--	--	--
Dec. 2, 1970	Water	.0	.0	.0	.01	.0	.0	.0	.0	--	--	--	--	--	--	--
	Sediment	.0	2.8	4.6	.3	.2	.0	.0	.0	--	--	--	--	--	--	--
Mar. 1, 1971	Water	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	0.0	--
	Sediment	.0	.4	.4	.0	.0	.0	.0	.0	--	--	--	--	--	--	--

T.P. - Trace present.

Table 12.--Insecticide analyses for surface waters in the Reedy Creek Improvement District area (results of water samples in micrograms per liter and of sediments in micrograms per kilogram)--continued.

Date of Collection	Type of Sample	Aldrin	DDD	DDE	DDT	Dieldrin	Endrin	Heptachlor	Lindane	Methyl-Parathion	Malathion	Parathion	Diazinon	Ethion	Trithion	Methyl-Trithion
Davenport Creek near Loughman, Florida (2664.80)--cont'd.																
May 3, 1971	Water	.0	.0	.01	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	--	--
	Sediment	.0	2.1	1.0	.0	.3	.0	.0	.0	--	--	--	--	--	--	--
Aug. 18, 1971	Water	.0	.0	.0	.0	.0	.0	.0	.0	.0	.04	.0	.0	.03	.0	0.0
	Sediment	.0	1.4	.0	.0	.0	.0	.0	.0	--	--	--	--	120	--	--
Feb. 8, 1971	Water	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
	Sediment	.0	1.0	10	2.2	.5	.0	.0	.0	.0	.0	.0	.0	9.9	.0	.0
Aug. 16, 1972	Water	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
	Sediment	.0	4.9	2.1	.0	3.1	.0	.0	.0	2.5	.0	.0	.0	.0	.0	.0
Feb. 21, 1973	Water	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
	Sediment	.0	.3	1.7	.8	.1	.0	.0	.0	--	--	--	--	--	--	--
Reedy Creek near Loughman, Florida (2665.00)																
Sept. 12, 1969	Water	0.0	0.0	0.0	0.0	0.0	0.0	0.0	T.P.	--	--	--	--	--	--	--
	Sediment	.0	.0	.0	.0	.0	.0	.0	.0	--	--	--	--	--	--	--
Aug. 18, 1971	Water	.0	.0	.0	.0	.0	.0	.0	.0	.0	0.05	0.0	0.0	0.0	0.0	0.0
	Sediment	.0	.6	.9	3.9	.0	.0	.0	.0	--	--	--	--	--	--	--
Feb. 8, 1972	Water	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
	Sediment	.0	.9	1.8	2.0	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Aug. 16, 1972	Water	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
	Sediment	.0	1.0	.4	.0	.2	.0	.0	.0	3.1	.0	.0	.0	.0	.0	.0

T.P. - Trace present.

Table 12.--Insecticide analyses for surface waters in the Reedy Creek Improvement District area (results of water samples in micrograms per liter and of sediments in micrograms per kilogram)--continued.

Date of Collection	Type of Sample	Aldrin	DDD	DDE	DDT	Dieldrin	Endrin	Heptachlor	Lindane	Methyl-Parathion	Malathion	Parathion	Diazinon	Ethion	Trithion	Methyl-Trithion
Feb. 21, 1973	Reedy Creek near Loughman, Florida (2665.00) --cont'd.															
	Water	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
	Sediment	.0	1.6	.8	2.6	.2	.0	.0	.0	.1	.1	.1	.1	.1	.1	.1

Table 13.--Herbicide analyses for surface waters in the Reedy Creek Improvement District area (results of water samples in micrograms per liter and of sediments in micrograms per kilograms).

Date of Collection	Type of Sample	2,4-D	2,4,5-T	Silvex
South Lake Outlet above S-15 near Vineland, Florida (2638.69)				
Nov. 23, 1971	Water	0.00	0.00	0.00
	Sediment	.00	.00	.00
Cypress Creek at Vineland, Florida (2640.00)				
Nov. 22, 1971	Water	0.00	0.00	0.00
	Sediment	.00	.00	.00
Bonnet Creek near Vineland, Florida (2641.00)				
Nov. 23, 1971	Water	0.00	0.00	0.00
	Sediment	.00	.00	.00
Nov. 16, 1972	Water	.00	.00	.00
	Sediment	.00	.00	.00
May 3, 1973	Water	.00	.00	.02
	Sediment	.00	.00	.00
Whittenhorse Creek near Vineland, Florida (2662.00)				
Nov. 22, 1971	Water	No flow - No data collected.		
	Sediment			
May 2, 1973	Water	0.00	0.00	0.00
	Sediment	.00	.00	.00
Lateral 405 above S-405A near Doctor Phillips, Florida (2662.91)				
Nov. 23, 1971	Water	0.00	0.00	0.00
	Sediment	.00	.00	.00
May 3, 1973	Water	.00	.00	.00
	Sediment	.00	.00	.00
Lateral 405 below S-405 near Vineland, Florida (2662.94)				
Nov. 23, 1971	Water	0.00	0.00	0.00
	Sediment	.00	.00	.00

Table 13.--Herbicide analyses for surface waters in the Reedy Creek Improvement District area (results of water samples in micrograms per liter and of sediments in micrograms per kilograms)--continued.

Date of Collection	Type of Sample	2,4-D	2,4,5-T	Silvex
Reedy Creek near Vineland, Florida (2663.00)				
Nov. 22, 1971	Water	0.00	0.00	0.02
	Sediment	.00	.00	.00
Nov. 15, 1972	Water	.00	.00	.21
	Sediment	.00	.00	.00
May 2, 1973	Water	.00	.00	.00
	Sediment	.00	.00	.00
Davenport Creek near Loughman, Florida (2664.80)				
Nov. 22, 1971	Water	0.00	0.00	0.00
	Sediment	.00	.00	.00
Nov. 15, 1972	Water	.00	.00	.00
	Sediment	.00	.00	.00
May 2, 1973	Water	.00	.00	.00
	Sediment	.00	.00	.00
Reedy Creek near Loughman, Florida (2665.00)				
Nov. 22, 1971	Water	0.00	0.00	0.00
	Sediment	.00	.00	Trace
Nov. 15, 1972	Water	.00	.00	.07
	Sediment	.00	.00	.00
May 2, 1973	Water	.00	.00	.00
	Sediment	.00	.00	.00

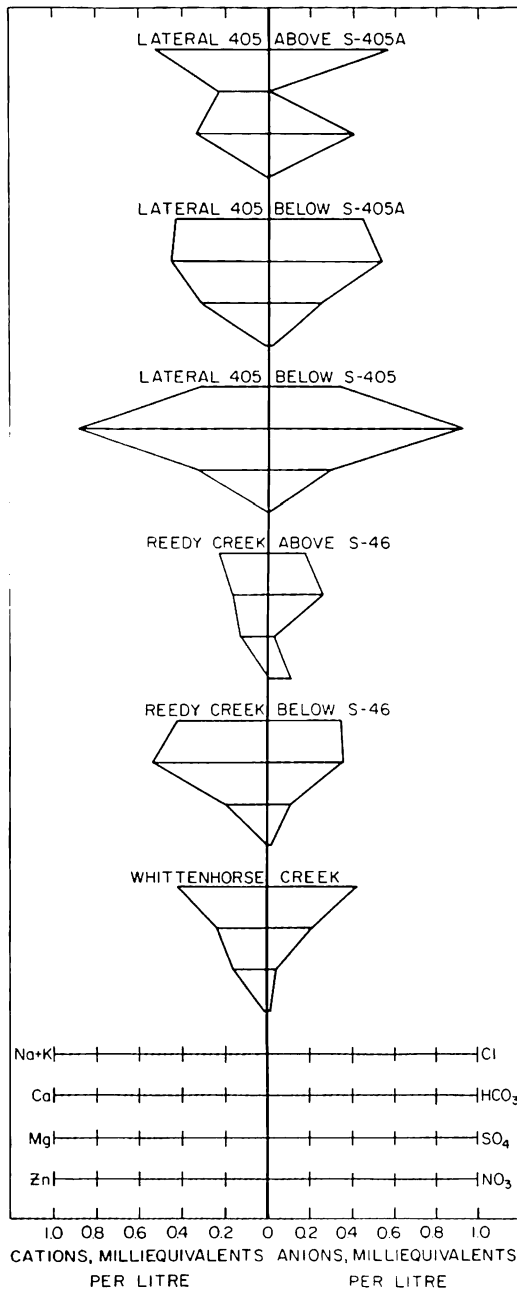


Figure 24—Concentration of chemical constituents in surface waters in the Reedy Creek Improvement District area.

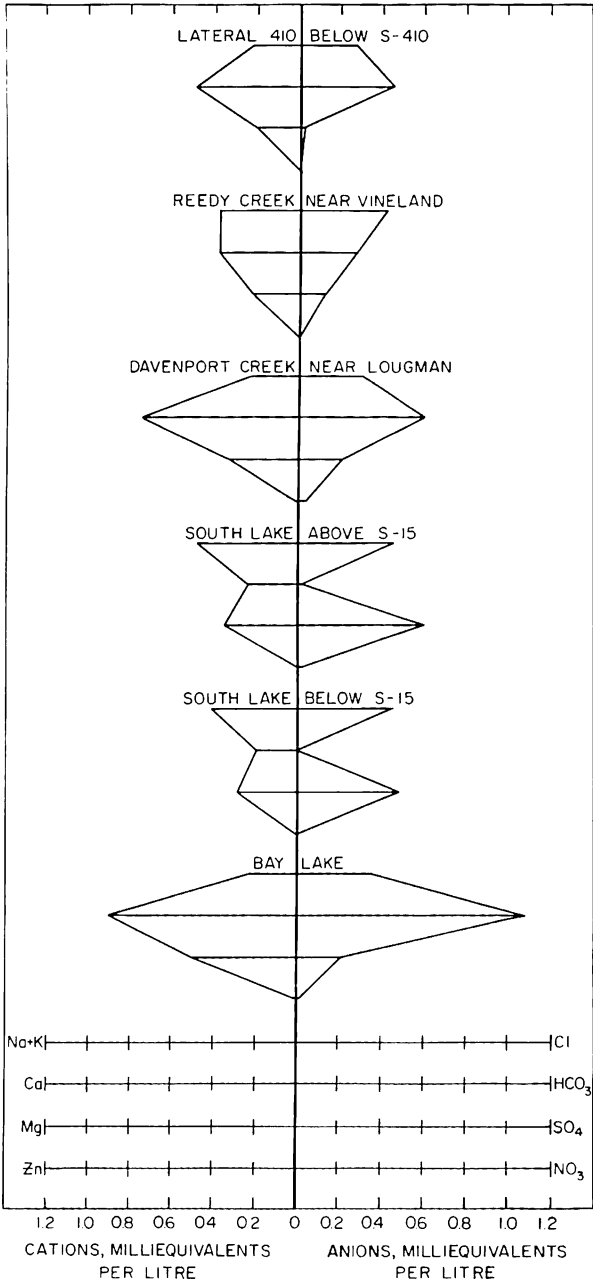


Figure 25—Concentration of chemical constituents in surface waters in the Reedy Creek Improvement District area.

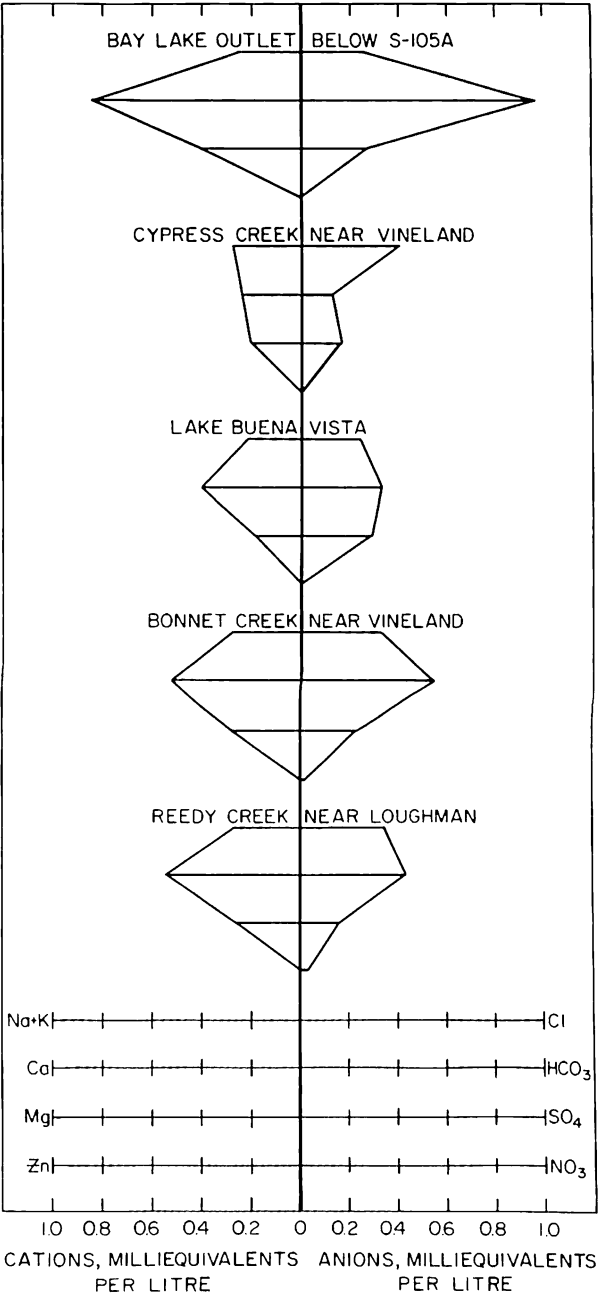


Figure 26—Concentration of chemical constituents in surface waters in the Reedy Creek Improvement District area.

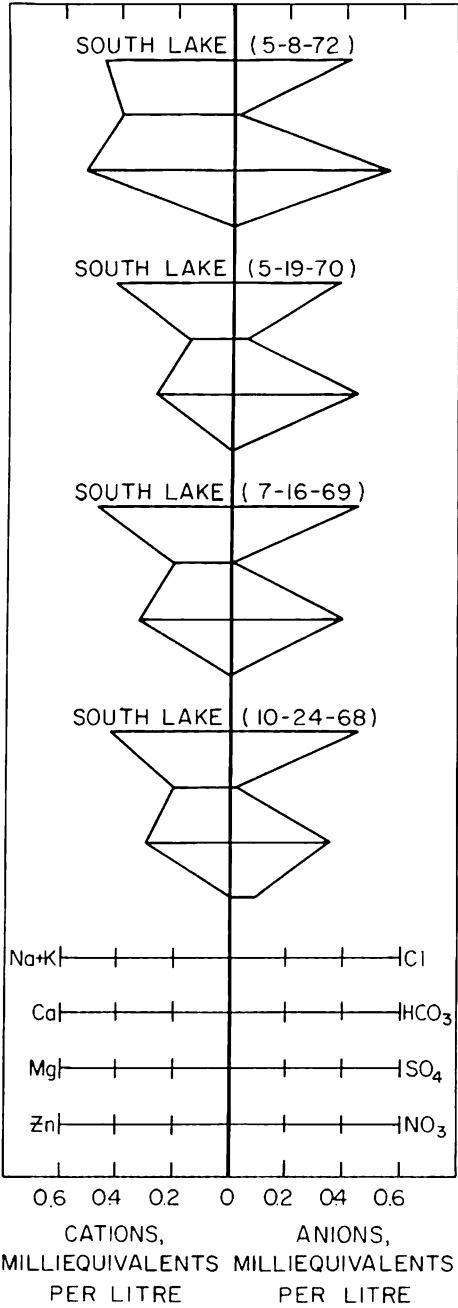


Figure 27—Concentration of chemical constituents in South Lake.

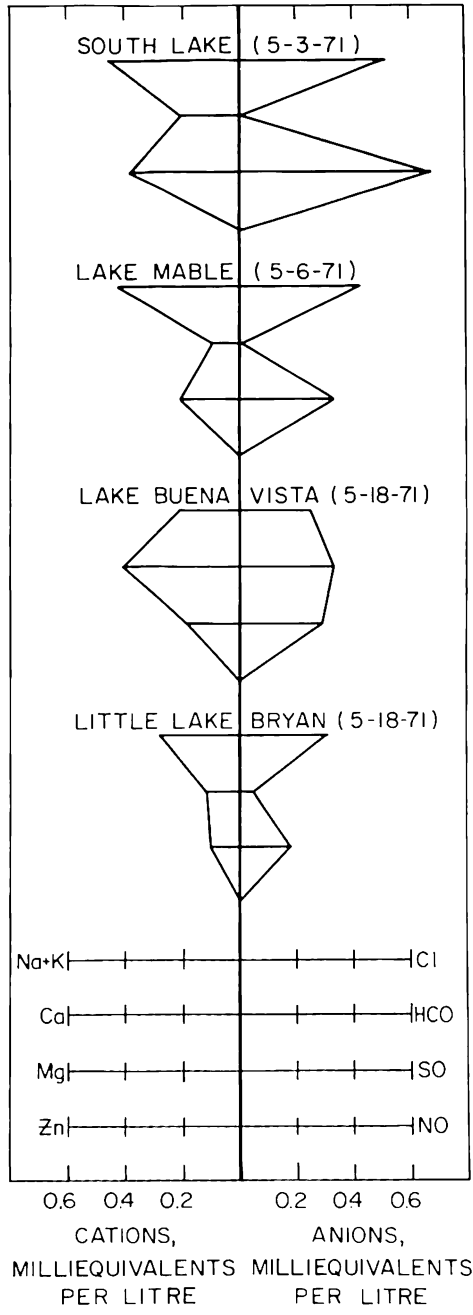


Figure 28—Concentration of chemical constituents in surface waters in the Reedy Creek Improvement District area.

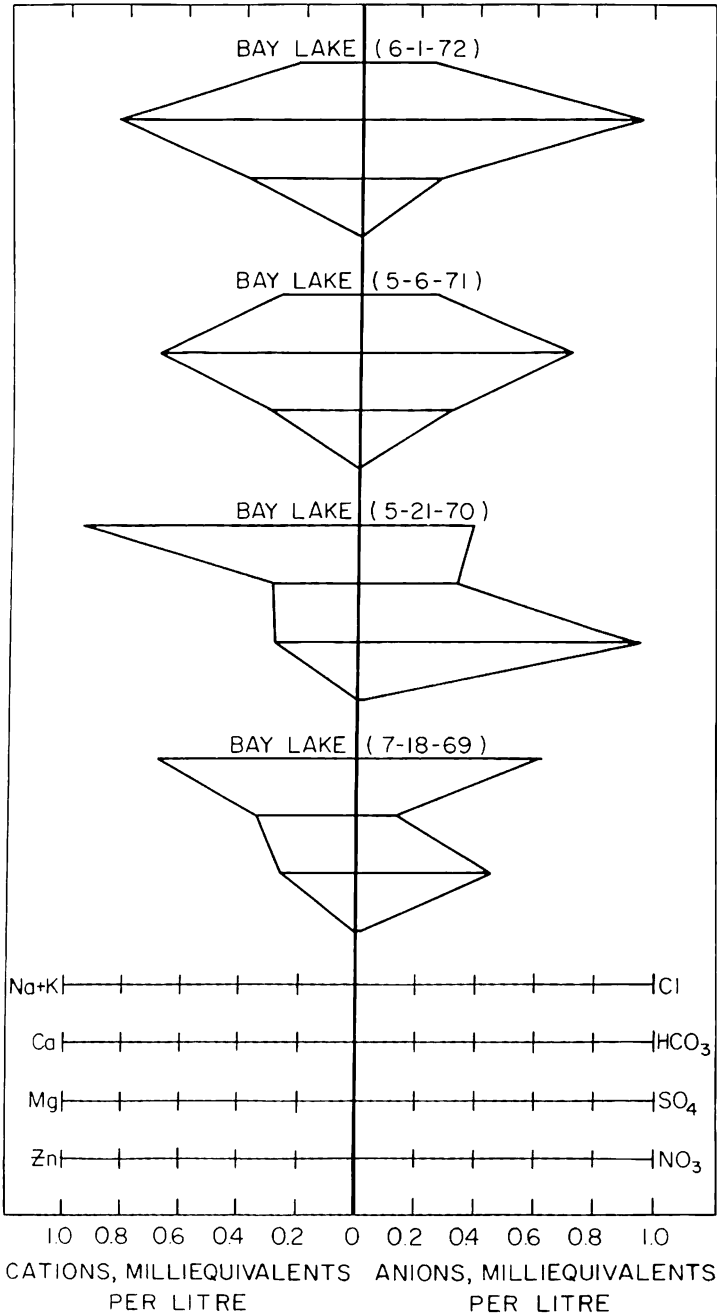


Figure 29—Concentration of chemical constituents in Bay Lake.

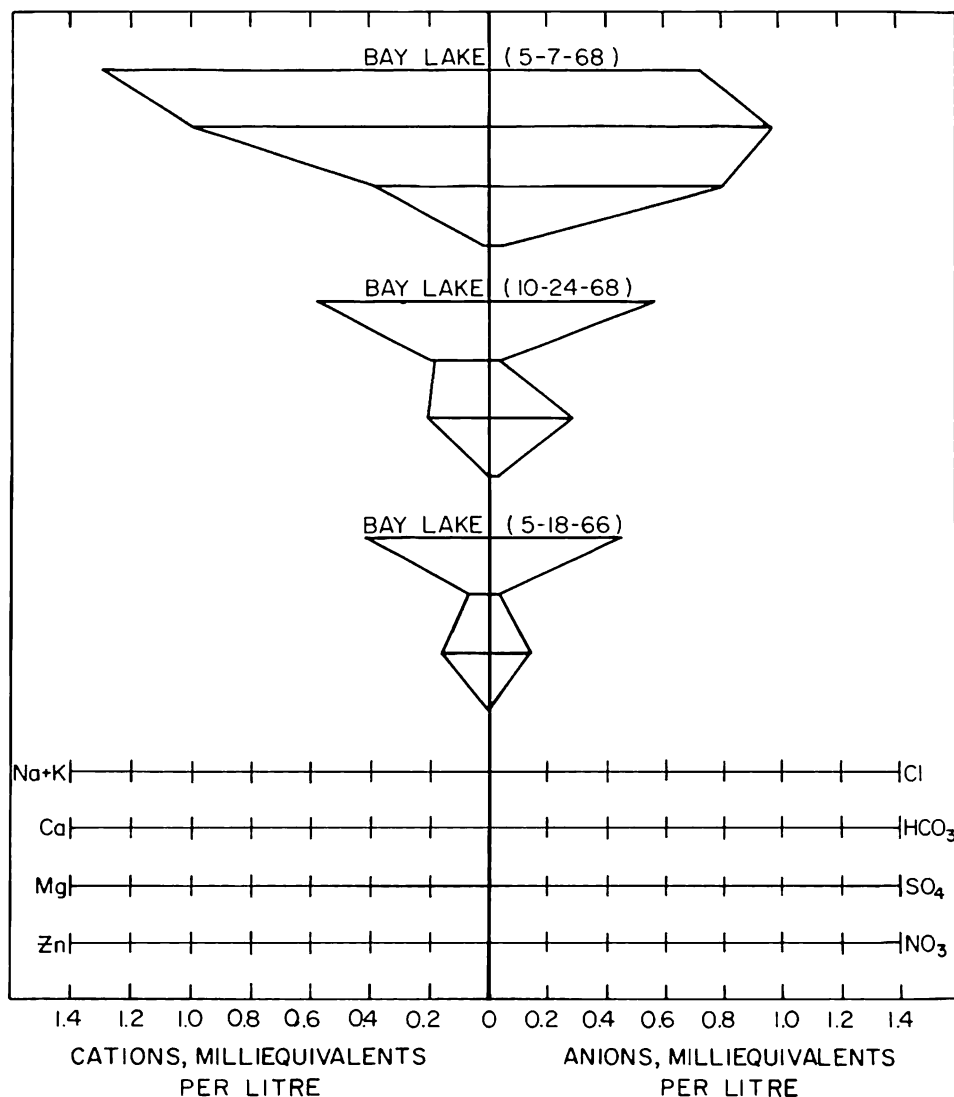


Figure 30—Concentration of chemical constituents in Bay Lake.

(1974) lowered potentiometric surface as observed in Bay Lake deep well, 825-134-2, is evidence that a potential exists to recycle water pumped to the lake from the Floridan aquifer. Since the water seeping from Bay Lake to the Floridan aquifer is more mineralized now than before 1969, a potential exists to locally increase the concentration of minerals in the water of the aquifer.

Although Bonnet Creek is the natural outlet for Bay Lake, the chemical character of its water was similar to that of water from the Floridan aquifer

before the chemical character of the lake water was changed by the refilling of the lake with Floridan aquifer water. The water of Bonnet Creek is still (1974) similar to water from the Floridan aquifer even when Cypress Creek is contributing water of a different characteristic. This chemical quality of the water along with the higher annual runoff for Bonnet Creek confirms that at best the area of Bonnet Creek delineated in figure 2 provides little or no recharge for the Floridan aquifer. Also, these chemical characteristics indicate that upward leakage is the controlling influence on the chemical quality of the water in Bonnet Creek.

SUMMARY AND CONCLUSIONS

Since the beginning of data collection and of Walt Disney World construction, rainfall has been generally below normal. The average rainfall deficit has been 5.53 inches (140 millimetres) per year below the 60-year average measured by the National Weather Service at Windermere, Florida. The maximum annual deficit was 12.47 inches (317 millimetres), with only 1 year out of 6 having a total greater than average and then only by 2.70 inches (68 millimetres).

Congruent with the period of deficient rainfall was the period of successive changes in land and water use. Some changes represented nonrecurring factors, and others represented recurring factors, the effects of which varied with development. Thus, the ultimate effect of completed developments cannot be accurately assessed from the short-term records available.

The average level of water in the Floridan aquifer well at Bay Lake, 825-134-2, declined about 8 feet (2.4 metres), 6 feet (1.8 metres) of which is attributed to pumping of water from the Floridan aquifer for use in the RCID. The remaining 2 feet (0.6 metre) of the decline in water level is attributed to the effect of deficient rainfall. Water-level records for two nearby Floridan aquifer wells indicate that the decline in water level due to pumping presently (1974) extends less than 10 miles (16 kilometres) from Bay Lake. As pumping from the aquifer continues or increases, the localized decline in the potentiometric surface of the Floridan aquifer — on the basis of the record for well 825-134-2 — can be expected to continue until the hydraulic gradient in the pumped area is such that recharge water will be supplied at a rate equal to the withdrawal rate.

Long-term streamflow record for Cypress Creek at Vineland, Florida (2640.00), indicates no change in surface-water discharge for streams tributary to the RCID from 1946 to 1972. However, an interrupted streamflow record, 1946 to 1958 and 1969 to 1972, for Reedy Creek at Loughman, Florida (2665.00), and the higher low flows during dry seasons for Reedy Creek near Vineland (2663.00) and Bonnet Creek near Vineland (2641.00) indicate that streamflow for part of the same streams in the RCID may be increasing because of development activity within the RCID. Some of the increase in low flow is

the result of nonrecurring activity such as the draining of Bay Lake and the initial seepage from the water table where canalization and stream-channel improvement incised the nonartesian aquifer deeper than before development. This increase will probably diminish in time as development is completed. As pumpage, recharge to the aquifer, and seepage to stream channels stabilize, the seasonal distribution will probably change to a more rapid, increased runoff during the wet season and a more stable low flow during the dry season. When more records after development are available, separating the flow originating outside the RCID from the flow originating within the RCID along with the change in movement of surface water through Reedy Creek Swamp to Shingle and Reedy Creeks will provide a more reliable evaluation of the changes in the relation between rainfall and runoff.

In general, the quality of the water in the RCID area is good. The dissolved-solids concentration is low with surface water generally less than 90 mg/l and with ground water generally less than 150 mg/l. Color ranges from 0 to 40 units for ground water and from 10 to 600 units for surface water. Further, there is no indication of a detrimental effect on water quality from the influence of development.

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BUREAU OF GEOLOGY**

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