UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

Soil and Water Conservation Research Division
Southern Branch

in
cooperation with the
Central and Southern Florida Flood Control District
Crops Research Division
and
Florida Agricultural Experiment Station

ANNUAL REPORT

For Calendar Year Ending

December 31, 1963

Fort Lauderdale, Florida

Everglades Project

REGISTERED COPY NO. 35
NOT FOR PUBLICATION.

1963 ANNUAL REPORT

EVERGLADES PROJECT

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In Cooperation with the

Central and Southern Florida Flood Control District
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Florida Agricultural Experiment Station

Plantation Field Laboratory
5305 SW 12th Street
Fort Lauderdale, Florida

U.S.D.A. PERSONNEL PREPARING REPORT:

E. H. STEWART
W. H. SPEIR
W. C. MILLS
J.E. BROWNING

Participating Personnel are listed
under individual Research Outlines.

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GENERAL INTRODUCTORY STATEMENTS

Changes in Personnel:

William C. Mills, Agricultural Engineer, reported for duty on February 18, 1963, and has been working on assignments in watershed engineering research.

William R. Moore, Jr., Engineering Technician, under a temporary appointment, resigned August 23, 1963 to continue his studies at the graduate level. This position was filled by John H. Howerton, Jr., at the time Mr. Moore left.

W. T. Forsee, III, was hired as an Engineering Aid from May 20, 1963, thru August 28, 1963, to assist in servicing the instruments and collecting data on the water-table plots at the Everglades Experiment Station.

James E. Browning, Engineering Technician, has been on sick leave since May 29, 1963 and expects to return to duty in May 1964.

Program Activity:

Research Outline SWC 11-b4 (Fla PL-9), which was concerned with strontium-90 accumulation on plant foliage, was terminated as of Oct. 7, 1963. A report was prepared and published in Science on the significant findings of this study.

Research activities continued essentially unchanged on all other lines of investigations. Research outlines in watershed engineering investigations are to be revised in early 1964 to conform with approved work and line project objectives. New research outlines are to be prepared to cover precipitation studies and organic soil subsidence from a watershed aspect. Research outline SWC 6-b1 (Fla PL-1) on evapotranspiration studies is to be amended in 1964 to study evapotranspiration of grass under partial sod cover conditions.

Climatic Conditions:

Ground-water levels in southern Florida were below average at the beginning of the water year due to a prolonged deficiency in rainfall during normal wet season, except in isolated areas of south-central and southwestern Florida, where levels were slightly above average. Water levels declined through the normally dry winter and spring, then rose to near average levels during June in response to heavy rainfall. During the last quarter of the water year levels declined again to below average for the period of record, then rose sharply due to belated seasonal rainfall in the latter part of September.

Water levels in south Dade County and the Everglades National Park area were near record low during the spring months for the second consecutive year, but major losses were averted in most of the highly urbanized coastal areas within the regional water-management system.

The freeze in mid-December 1962 caused severe damage to citrus trees and vegetable crops in central Florida and scattered areas south of Lake Okeechobee. Monthly rainfall in 1963 was inadequate for January, March, April and October for the Belle Glade area. The total annual rainfall of about 50 inches is near normal.

Cooperative Activities:

Agricultural Research Service personnel of the Crops Research Division and Soil and Water Conservation Research Division held a work conference on April 3, 1963 to discuss recent results and future plans with cooperators and other interested agencies. Assistance was also given in cooperation with two state field day meetings held at the Plantation Field Laboratory on May 1 and 2, 1963. Total attendance at the work conference was 38, and for the two field day meetings approximately 210.

THE EFFECT OF WATER TABLE LEVEL, CLIMATE AND RELATED FACTORS ON EVAPOTRANSPIRATION AND CROP GROWTH

Line Project No.: SWC 6-b1 Code No.: FLA PL-1

Prepared by: E. H. Stewart

Location of Experiment: Plantation Field Laboratory, Fort Lauderdale, and Everglades Experiment Station, Belle Glade, Fla.

Personnel Involved:
ARS - E. H. Stewart, J. R. Carreker, W. H. Speir, W. H. Moore
Fla. Agr. Exp. Sta. - E. O. Burt, F. T. Boyd, and Frank Thomas

Date of Initiation: July 1957

Expected Duration: 7 years

Objectives:

To determine the inter-relation of evapotranspiration and yields between climate, soil moisture level, and growth stage for crops.

To determine the effects of water-table level on evapotranspiration, yield and quality of various crops grown on sandy and organic soils.

Need for Study: See 1961 Annual Report.

Design and Procedure: See 1961 Annual Report.

Experimental Data and Observations:

Mean daily evapotranspiration, ET, data for each month by Tifway bermudagrass with 12-, 24-, and 36-inch water-table levels for 1962 and 1963 are shown in Table 1. A complete tabulation of daily ET by plots with appropriate means are listed in Part IV, Division 3, of the Appendix. Water-balance data for bermudagrass grown in nonweighing evapotranspirometers with the various water-table levels in 1962 and 1963 are shown in Table 2. The data includes total annual rainfall, subirrigation, drainage water removed, and evapotranspiration. Yield data of bermudagrass clippings for 1963 are shown in Table 3. A total of 13 clippings were made with 9 being weighed for comparative growth ratings. Fertilizer applications were made 6 times during the year using a complete NPK fertilizer mixture. Graphic relations of recorded thermal radiation measurements with evaporation and evapotranspiration are shown in Figure 1.

Comments and Interpretations:

Total rainfall for 1962 and 1963 was nearly the same although the monthly distribution was quite different; particularly for the months of February, March, April, and December. Total ET for the respective water-table depths was essentially the same for the two years. However, there were significant differences in the mean daily ET for the same months for the two years (Table 1). These differences are usually directly related to the available soil moisture and relative thermal radiation received during the respective periods. One exception is for the last quarter of 1963 when the mean ET for the 24-inch water-table plots was significantly lower than for the other two water-table levels. This was due mainly to a heavy infestation of nematodes in one of the plots of the 24-inch water-table treatment. All of the plots were treated with a nematicide the early part of December which corrected this problem. As in 1962, the average daily ET ranged from about 0.07 in. for the 3 winter months to about 0.14 in. for the period April thru August. During a six-week rain-free period between the latter part of February and early April, ET was about 23 percent less for the 36-inch water-table plots than for the 12-inch water-table plots.

Yield and quality of vegetative growth from the 24-inch and 36-inch water-table plots appeared to be better than from the 12-inch plots, as they were in 1962, but not of the same magnitude. The general health of the grass during the second year was below that of the first year. This may be contributed to nematode infestations and some disease problems but the extent of each was uncertain. Two complete years of data from a full stand of grass will be obtained by April 1964. Following this, present plans call for amending the research outline to cover new studies on potential ET from partial stands of grasses.

Graphic relations of radiation data obtained from various radiation measuring instruments to standard pan evaporation and evapotranspiration of Tifway bermudagrass are shown in Figure 1. These data are plotted as langleys per day based on ten-day means. Similarity of the curves indicate a high degree of correlation among the data from the various sources. Data from the Gunn-Bellani instrument was very close to that of measured evapotranspiration in both magnitude and rate of change. This instrument gives a measure of the integrated radiation reaching a blackened copper sphere, which contains water. The water vaporizes and condenses in a graduated receiver. The difference in readings between any two times is a measure of the total radiation utilized during that interval.

Similarly, the Beckman and Whitley thermal radiometer, which measures the net heat exchange, yielded data which were very close to that obtained from the standard evaporation pan. This instrument's radiometer sensing element is composed of thermopiles capable of sensing the net difference of the incoming and outgoing thermal radiation by generating a thermoelectric current. A coupled counter, which has the capacity of recording 500 counts per minute at 20 millivolts sensed from the radiometer sensing elements, records the total net radiation for any selected period of time.

The Campbell-Stokes sunlight recorder records, over a 24-hour period, sunlight reaching the instrument with sufficient intensity to burn a charred line on the chart by focusing the sun's rays to a point on the chart. Usually, if the sunlight is sufficient to cast a shadow it will be recorded on the chart. Although this instrument does not give a measure of highly diffused sunlight through clouds a good correlation of its measured sunlight and measured ET is obtained as shown in Figure 1.

From a practical standpoint any of the three radiation instruments mentioned above will furnish sufficient information to determine good estimates of potential ET when correlated for periods of known potential ET conditions. The data plotted in Figure 1 are for periods of ten days. Further studies of the data on hand are to be made to determine the degree of correlation based on from one- to five-day means. During periods of high potential ET the sandy soils of the area can hold only enough soil moisture in the root zone to last from 3 to 5 days before it becomes a limiting growth factor.

Summary:

1. With similar total annual rainfall for 1962 and 1963, the total ET of bermudagrass was very nearly the same for the two years. However, monthly ET varied somewhat depending on available soil moisture and radiant energy.

2. Average daily ET ranged from 0.07 in. for the 3 winter months to 0.14 in. for the period April thru August.

3. During an extended dry period of 6 weeks ET was about 23 percent less for the 36-inch water-table plots than for the 12-inch water-table plots.

4. Good correlation exists between recorded radiant energy measured at the earth's surface and measured potential ET and standard pan evaporation.

Table 1. Evapotranspiration by Tifway bermudagrass grown in lysimeters at various water table depths, 1962-63

Month	Average daily evapotranspiration[1]						
	1962			1963			
	Water table depth			Water table depth			
	12"	24"	36"	12"	24"	36"	Average
	inches	inches	inches	inches	inches	inches	
Jan.	0.068	0.062	0.056	0.075	0.073	0.078	0.069
Feb.	.108	.105	.098	.089	.085	.087	.096
March	.115	.104	.100	.137	.119	.106	.114
April	.142	.134	.128	.159	.144	.135	.141
May	.176	.170	.164	.156	.150	.148	.161
June	.120	.118	.139	.118	.125	.126	.125
July	.137	.143	.134	.154	.157	.155	.147
Aug.	.122	.143	.148	.132	.121	.154	.137
Sept.	.130	.128	.132	.095	.094	.109	.115
Oct.	.124	.121	.108	.111	.090	.092	.108
Nov.	.094	.087	.076	.084	.063	.069	.079
Dec.	.070	.066	.058	.066	.052	.057	.062
Average	.117	.115	.112	.115	.106	.110	

[1] Bermudagrass was sprigged on November 16, 1961 and the water table maintained at 12, 18, and 24 inches, respectively, until March 15, 1962 to assure uniform stand establishment.

Table 2. Water balance data for Tifway bermudagrass grown in lysimeters at various water table depths, 1962-63

Year	Water table depth	Rainfall	Water added, subirrig.	Rain water removed	Evapotranspiration
		Inches of water			
1962	12"	51.5	31.5	39.7	43.3
	24"	51.5	26.3	35.2	42.6
	36"	51.5	20.4	30.7	41.2
1963	12"	52.9	29.8	41.0	41.7
	24"	52.9	24.4	38.8	38.5
	36"	52.9	19.3	32.1	40.1

Table 3. Yield of Tifway bermudagrass as affected by water table depth, 1963

Cutting dates 1963	Water table depth		
	12-in.	24-in.	36-in.
		Pounds per acre	
1/2	142	279	235
1/15	119	100	117
1/29	265	148	166
2/13	132	150	126
2/25	70	121	181
3/18	121	103	87
9/4	136	200	325
9/16	89	101	105
10/15	105	141	114
Total	1180	1340	1460

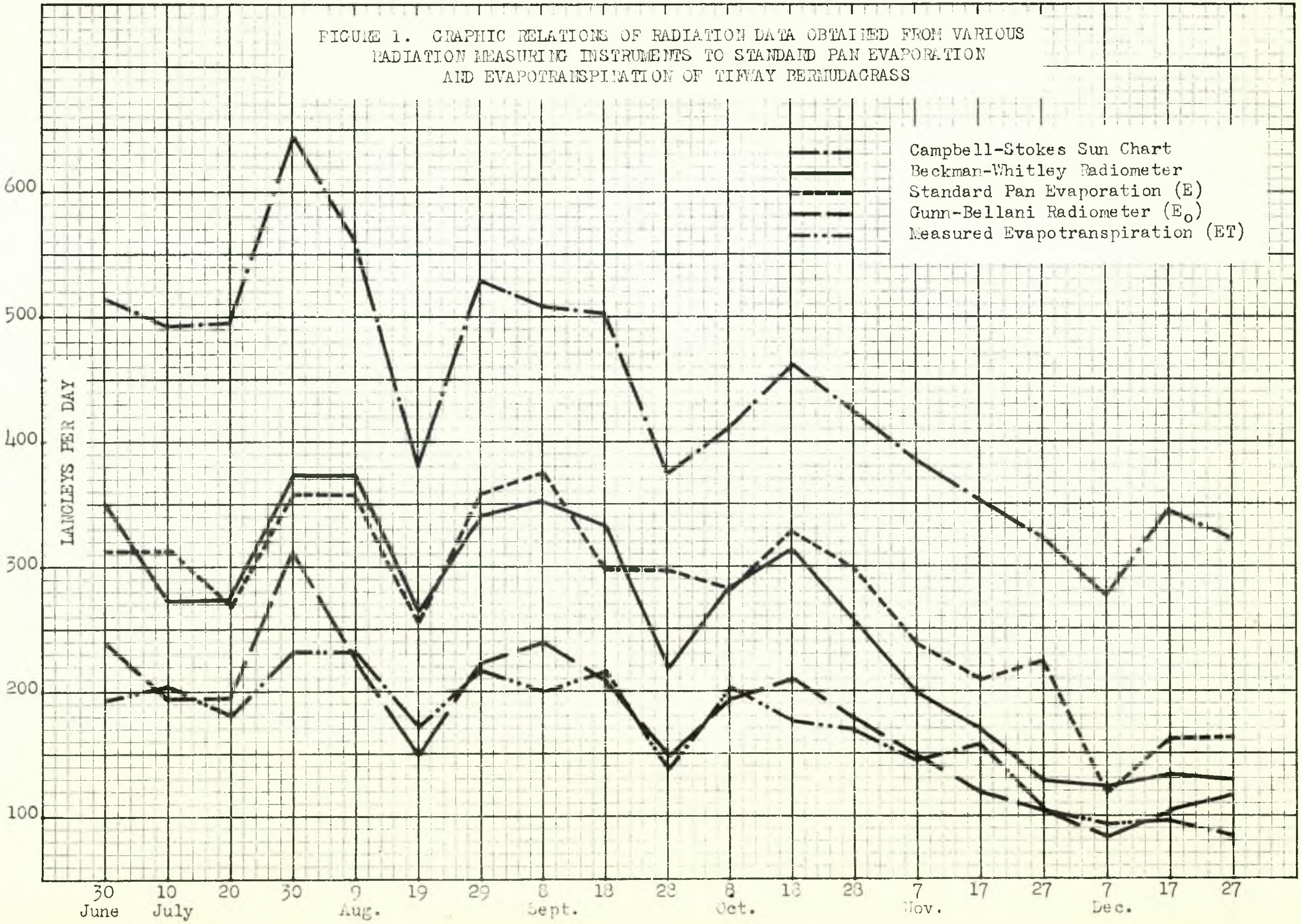


FIGURE 1. GRAPHIC RELATIONS OF RADIATION DATA OBTAINED FROM VARIOUS RADIATION MEASURING INSTRUMENTS TO STANDARD PAN EVAPORATION AND EVAPOTRANSPIRATION OF TIFWAY BERMUDAGRASS

THE EFFECT OF WATER TABLE LEVEL IN ORGANIC SOIL ON SOIL PROPERTIES AND CROP PRODUCTION

Line Project No.: SWC 6-bl   Code No.: FLA PL-2

Prepared by: E. H. Stewart and W. H. Speir

Location of Experiment: Everglades Experiment Station, Belle Glade, Fla.

Personnel Involved:
ARS - E. H. Stewart, W. H. Speir, J. R. Carreker, and W. T. Forsee, III.
Fla. Agr. Exp. Sta. - Frank Thomas, H. W. Burdine, V.E. Green, Jr.,
E. D. Harris, Jr., J.R. Orsenigo, P. L. Thayer,
F. T. Boyd, and Victor Guzman

Date of Initiation: October 1958   Expected Duration: 7 years

Objectives: To determine the effects of depth to water table in Everglades peaty muck on:

1. Physical, chemical, and biological soil properties
2. Fertility requirements
3. Yield and quality of vegetable and fiber crops
4. Insects and their control
5. Weeds and their control
6. Incidence of diseases and control

Need for Study: See 1961 Annual Report.

Design and Procedure: See 1961 Annual Report.

Experimental Data and Observations:

The periodic 5-year survey of the organic soil subsidence lines was made in June, 1963. The graphs incorporated in Figures 1 through 11 show the organic soil loss for the period of record for each of these lines.

Considerable work was done on the project toward getting the irrigation and drainage facilities modified to improve the water control system. After installing the recirculating pump at the east end of the test it was found that the rock elevation in the drainage ditches leading to the pump were too high to permit sufficient water flow to the pump for efficient operation. This necessitated moving the pump to another location on the west side of the test. If it is found necessary, a smaller pump may be installed at the east for better drainage. Contours on rock surface of the water table plots are shown in Figure 12.

A recording rain gage and seven water level recorders were installed on the test site to record water levels in the irrigation-drainage ditches and 3 of the 9 water-table plots. Also, piezometers were reinstalled on the water-table plots as originally installed. Continuous water-level data have been recorded from July 26, 1963 to the present. Some piezometer data were obtained in July and August for correlating with the continuous recorded data.

Figure 13 presents graphic data of an irrigation-drainage and rainfall events occurring on a selected water-table plot from December 11-18, 1963.

Comments and Interpretations:

A test run was made on the water-table plots the first part of December, 1963, to determine the capabilities of the irrigation-drainage system to control the water-table level in the plots. The results obtained on one of the high water-table plots as indicated by continuous water-level recorders are shown in Figure 13. Mean ground surface is approximately 11.5 feet above mean sea level, and the data are plotted using ground surface as a base and expressed as feet below mean ground surface. At the beginning of the irrigation cycle the water-table level in the plot and ditch was 2.0 and 2.1 ft. below ground surface, respectively. Water level in the ditches reached the maximum set by the controls in about 4 hours, and maintained the level between 0.65 and 0.45 ft. below ground surface until the irrigation pump was turned off. Total irrigation period was about 18 hours. Almost immediately the water-table level began to rise in the plot reaching a maximum rate of 0.075-ft. rise per hour, and the maximum water-table level reached at the measuring site was 1.43 ft. below ground surface. In a subsequent test in which the irrigation system was on for nearly 48 hours the maximum water-table level maintained was about 1.2 ft. below ground surface. This appears to be about the maximum that can be maintained under present conditions.

Water-table levels started dropping very soon after the irrigation pump was turned off; and with the drainage pump running, in the low water-table system, the rate of drop of the water table in the high water-table plots reached a maximum of about 0.033 ft. per hour. The water level in the ditches and the plots continued to drop for about 3 days; leveling off at about 2.05 and 1.94 ft. below ground surface, respectively.

One of the most important features brought out in these data concerns the question of seepage through the rock strata underlying the organic soil. The data indicate that considerable seepage occurred in that the plot water-table level dropped 0.14 ft. in the seven-hour period it took the water level in the ditch to drop to the same level as the maximum water-table height reached in the plot. Evidently the plot water table dropped about 0.40 ft. before the ditch water level was low enough to influence the drainage of the plot unless appreciable drainage occurred above the locus of points at which the pressure in the ground water was equal to atmospheric pressure. It is possible that some of the water moved up into the unsaturated zone above the water table after the subirrigation was discontinued.

A slow rain of about 1.06 in. fell during a 48-hour period between noon December 16 and noon December 18. The effect of this rain on the water levels is also shown in Figure 13. The drainage pump was still in operation during this period. The free water-table level in the plot reached within 1.27 ft. of the ground surface and started dropping rapidly after the rain stopped.

Summary:

1. Water-table levels responded quickly to changes in the irrigation-drainage control system. Under present conditions the maximum water-table level that can be maintained is about 1.2 feet below ground surface.

2. Seepage through the rock strata underlying the organic soil appears to be an important factor affecting water-table control.

3. A summary statement on organic soil subsidence is made in the last paragraph of Page 14 of this report.

Organic Soil Subsidence

In June of 1963 the periodic 5-year surveys to determine the continuing loss of organic soils in the Everglades were made. One of the lines at the Everglades Experiment Station was abandoned due to the installation of buildings and rock fill that had been placed over a large portion of the area traversed by the survey line.

The graphs incorporated in Figures 1 through 11 show the organic soil loss for the period of record for each of these lines. An examination of the charts shows that the loss-in-elevation rate has remained fairly constant with variations due to periods of drought or flood. There is a slight acceleration of loss between 1958 and 1963. This is to be expected since water tables were abnormally low for most of this period, and the rate of subsidence is directly proportional to depth of water table.

In Figure 6 the accelerated rate after 1958 does not present the data accurately. It will be noted that an extension from the 1953 to the 1963 elevation points would be more in line with the normal rate to be expected. The 1958 surveys were checked, and it was found that the area traversed by this line had been plowed and disked just prior to the survey. Due to the flocculent nature of organic soil when cultivated it is felt that the elevations taken in 1958 were in error and that normal subsidence had occurred.

The apparent leveling off of subsidence indicated by Figure 1 is due to the fact that this line parallels the Bolles Canal. Water tables in this area are maintained almost at ground surface, and very little subsidence could be expected.

Land use histories for each of the subsidence lines with geographic locations follow.

Figure 1 - Section 36, T44S, R36E - Okeelanta peaty muck with gravity drainage prior to 1942; sporadic plantings of truck crops prior to 1953 at which time the entire area was converted to pasture. Years of observation: 1913-1963; total peat lost: 7.57 ft.; mean annual loss: .1519 ft/yr.

Figure 2 - Section 13, T44S, R36E - Okeelanta peaty muck with gravity drainage until 1927; generally planted to sugarcane and truck crops after pumps were installed in 1927. Years of observation: 1914-1963; total peat lost: 5.88 ft.; mean annual loss: .1346 ft/yr.

Figure 3 - Section 3, T44S, R37E - Everglades peat having had initial subsidence under controlled drainage; planted to truck crops during years of observation: 1934-1963; total peat lost: 2.43 ft.; mean annual loss: .0853 ft/yr.

Figure 4 - Section 3, T44S, R37E - Everglades peat covered with St. Augustine grass 14 years before and during years of observation: 1938-1963; total peat lost: 1.90 ft.; mean annual loss: .0755 ft/yr.

Figure 5 - Section 30, T42S, R34E - Everglades peaty muck having had initial subsidence prior to the years of observation; planted to sugar cane during the years of observation: 1935-1963; total peat lost: 2.10 ft.; mean annual loss: .0746 ft/yr.

Figure 6 - Section 10, T44S, R37E - Everglades peat with virgin growth (sawgrass and elders) until 1950; planted to field crops after 1950; poor drainage prior to development; converted to pasture about 1959; years of observation: 1932-1963; total peat lost: 2.82 ft.; mean annual loss: .0905 ft/yr.

Figure 7 - Section 10, T44S, R37E - Everglades peat with virgin growth until 1944; planted to field and truck crops through years of observation: 1938-1963; total peat lost: 2.74 ft.; mean annual loss: .1089 ft/yr.

Figure 8 - Section 8, T44S, R38E - Everglades peat in virgin sawgrass until 1938; in cultivation until about 1941 when it was converted into pasture; converted into field crops 1962; years of observation: 1938-1963; total peat lost: 2.40 ft.; mean annual loss: .0973 ft/yr.

Figure 9 - Section 5, T44S, R38E - Everglades peat in virgin sawgrass until 1937; intensively cultivated for truck crops through 1950 when it was converted to pasture; years of observation: 1938-1963; total peat lost: 1.65 ft.; mean annual loss: .0669 ft/yr.

Figure 10 - Section 8, T44S, R38E - Everglades peat in virgin sawgrass until 1938; in cultivation until about 1941 when it was converted to pasture; years of observation: 1938-1963; total peat lost: 2.22 ft.; mean annual loss: .0900 ft/yr.

Figure 11 - Section 8, T44S, R38E - Everglades peat in virgin sawgrass with moderate drainage until 1937; truck crops through 1946; converted to pasture in 1947; years of observation: 1938-1963; total peat lost: 1.96 ft.; mean annual loss: .0794 ft/yr.

Average loss over total area represented by subsidence lines: .0959 ft/yr.

This loss of .10 ft. per year for the 50 years since drainage began would indicate a loss of 5 ft. of organic soil over the entire Everglades--some 5,500,000 acres. This change in topography over such a vast area has a tremendous effect on water yields, rates of runoff, soil storage, and other watershed characteristics. During the next year an additional experimental outline will be written to incorporate these data into a study for evaluating subsidence in terms of watershed engineering research.

SUBSIDENCE OF ORGANIC SOILS

LINE 280' NORTH OF BOLLES CANAL AT OKEELANTA

SEC 36 TWP 44 S.R. 36 E

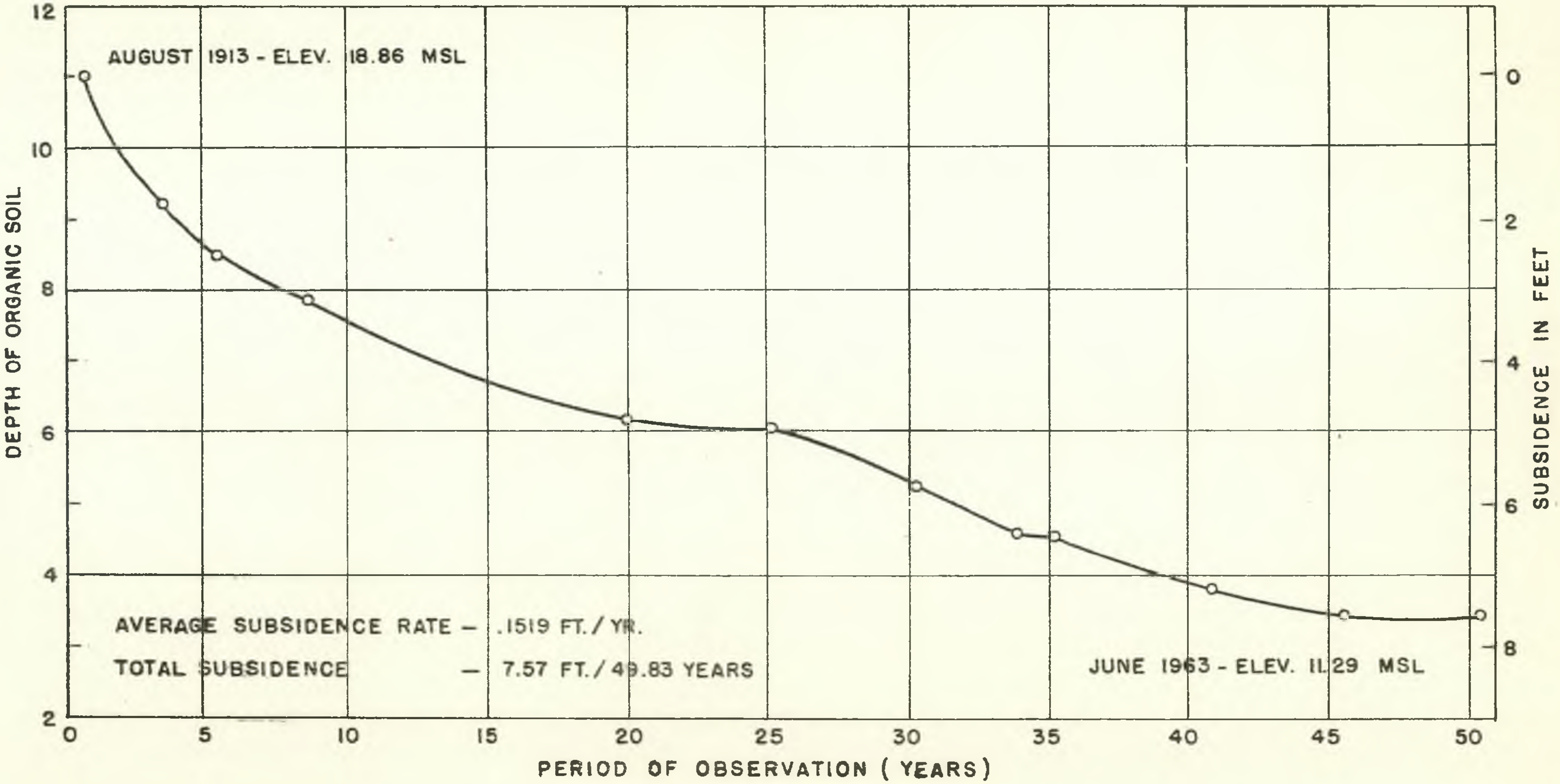


FIG. 1

SUBSIDENCE OF ORGANIC SOILS

LINE BELOW SOUTH BAY LOCKS NEAR 1 MILE POST ON NORTH NEW RIVER CANAL

SEC. 13 TWP 44 S. R. 36 E

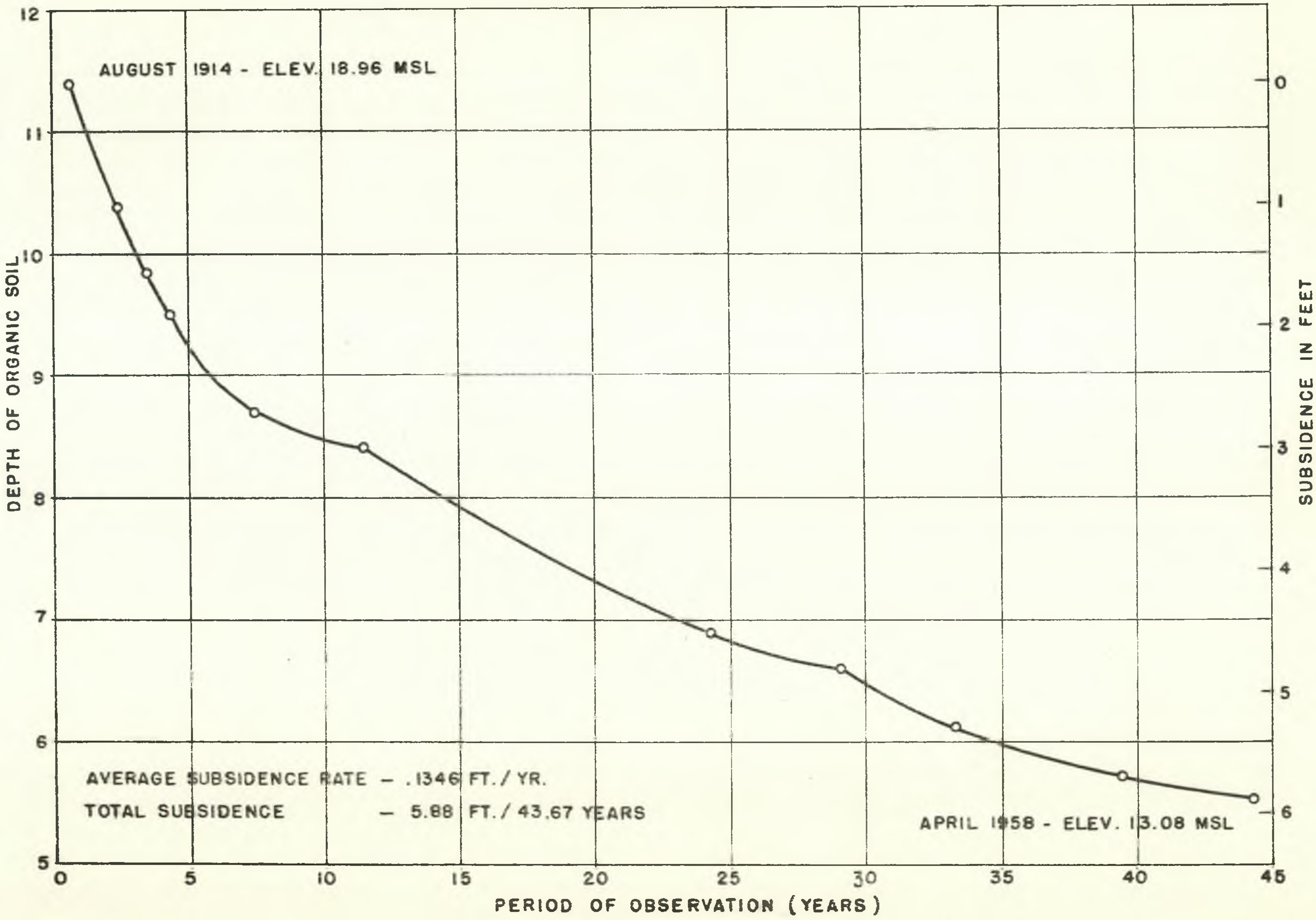


FIG. 2

SUBSIDENCE OF ORGANIC SOILS

EAST LINE AT EXPERIMENT STATION

STA. 0+00 TO 11+00± – SEC. 3 T 44 S.R. 37 E

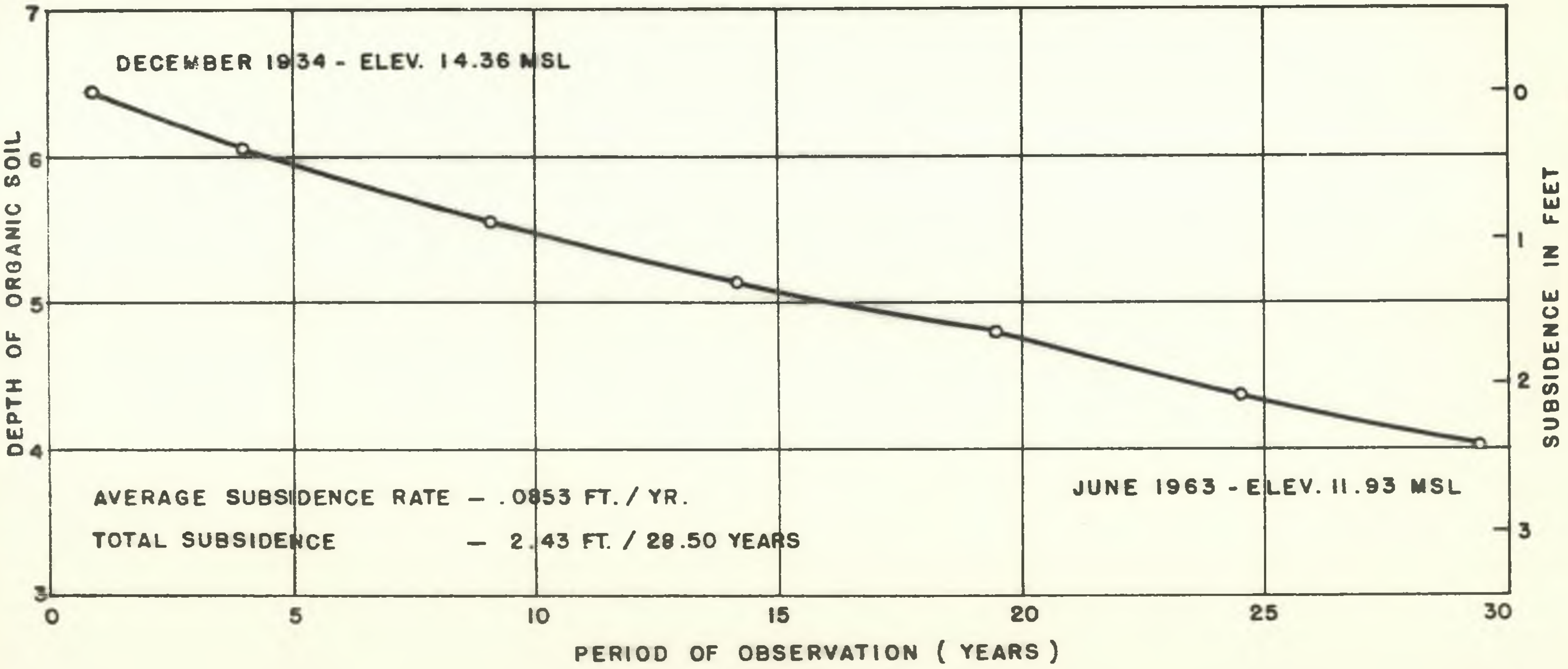


FIG. 3

SUBSIDENCE OF ORGANIC SOILS

LINE ON LAWN AT EXPERIMENT STA. - 95 FT WEST OF FRONT END OF PORCHES OF RESIDENCES
STA. 1+75 TO 6+25 - SEC. 3 T. 44 S.R. 37 E.

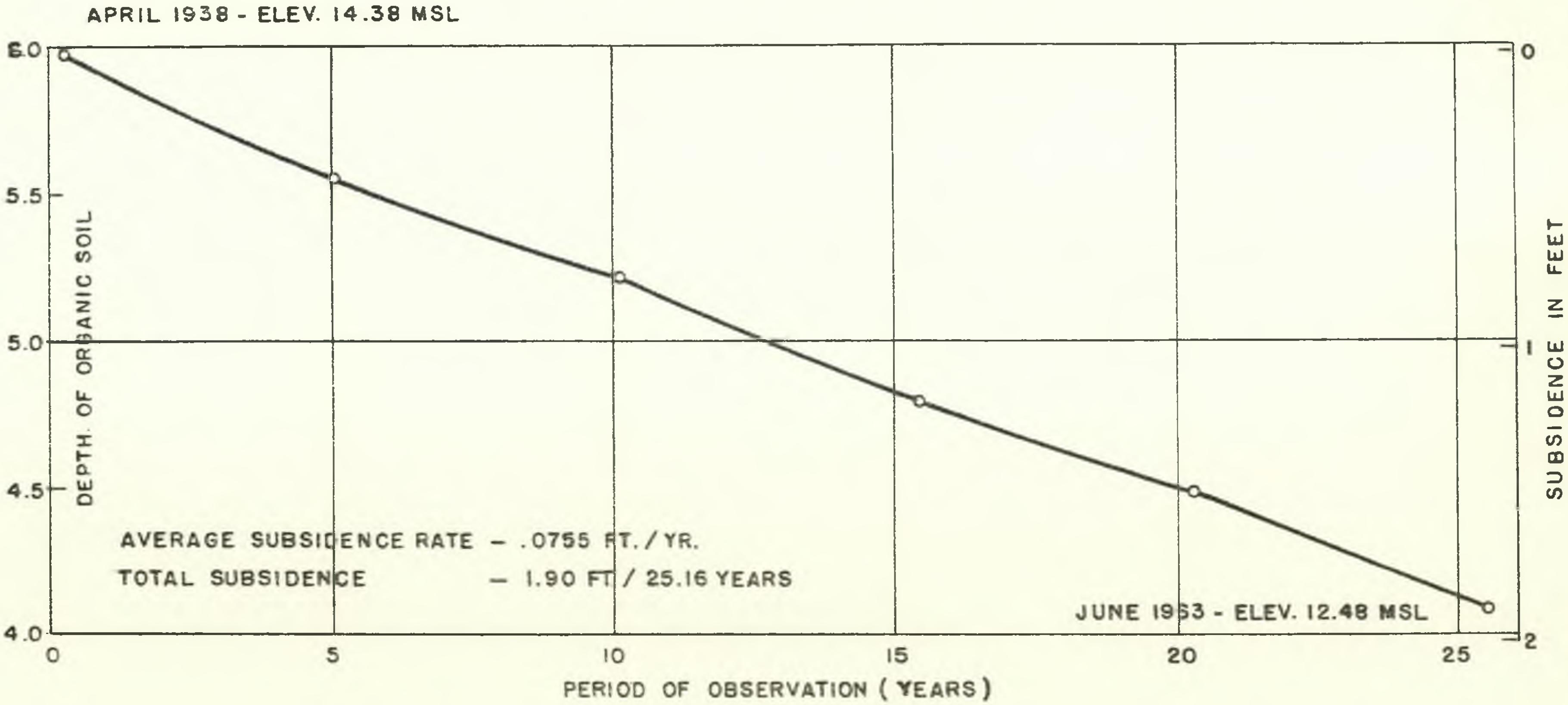


FIG. 4

SUBSIDENCE OF ORGANIC SOILS

WELL LINE "T" AT LIBERTY POINT

SEC. 30 TWP 42 S.R. 34 E

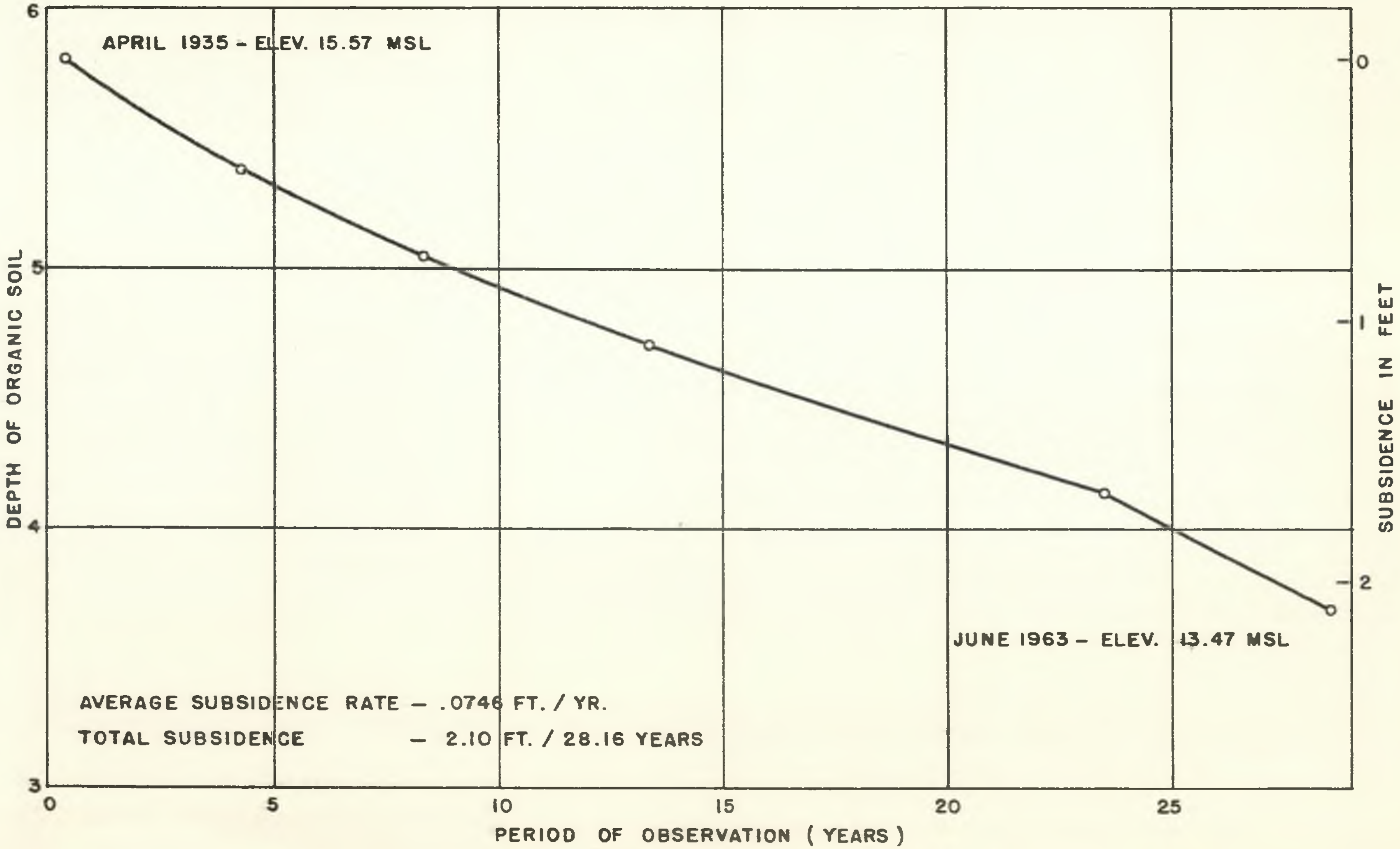


FIG. 5

SUBSIDENCE OF ORGANIC SOILS

WELL LINE "A" - REACH "A" - STA. 27+50 - 52+00 AT EXPERIMENT STATION

SEC. 10 TWP 44 S.R. 37 E

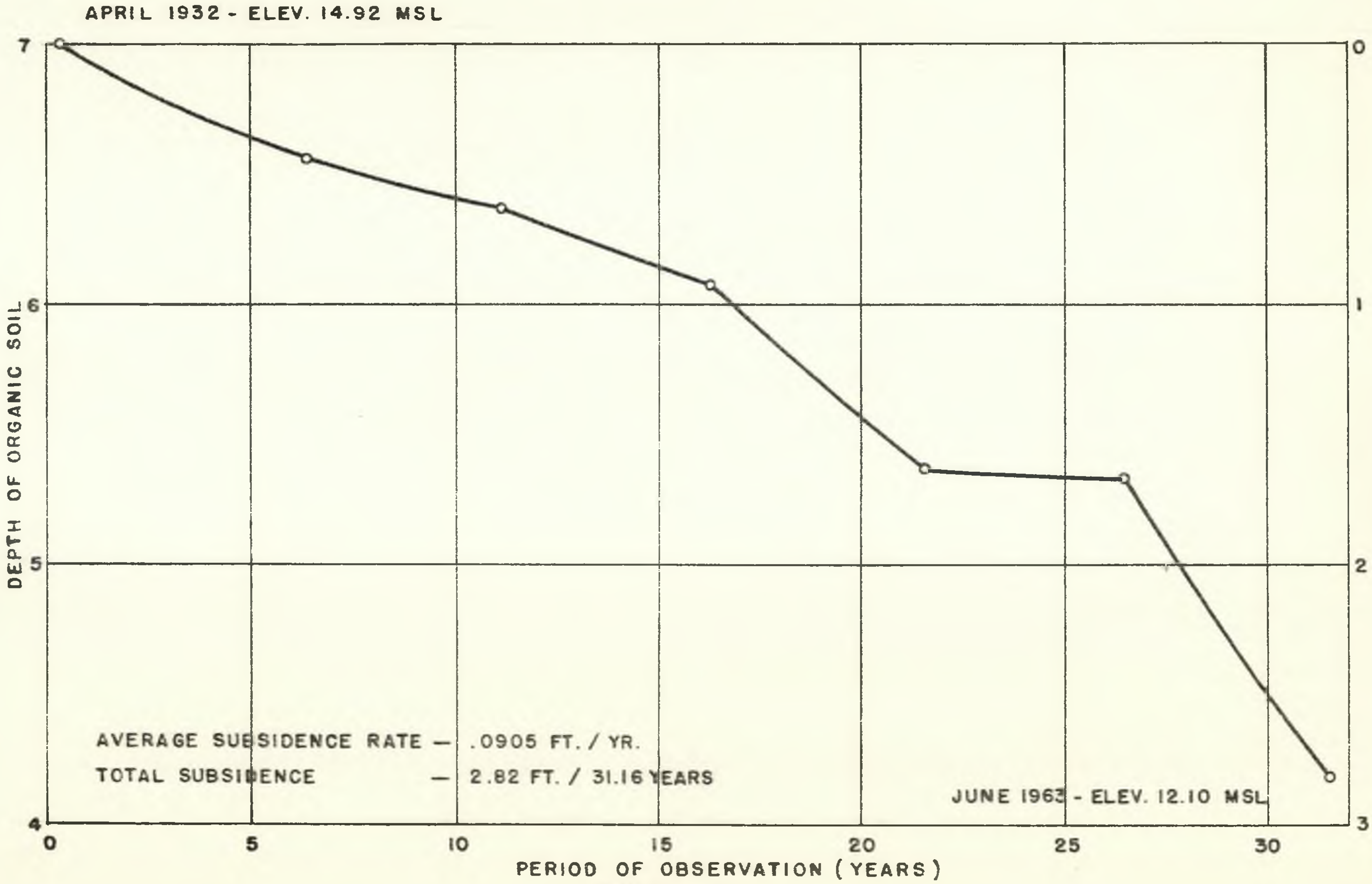
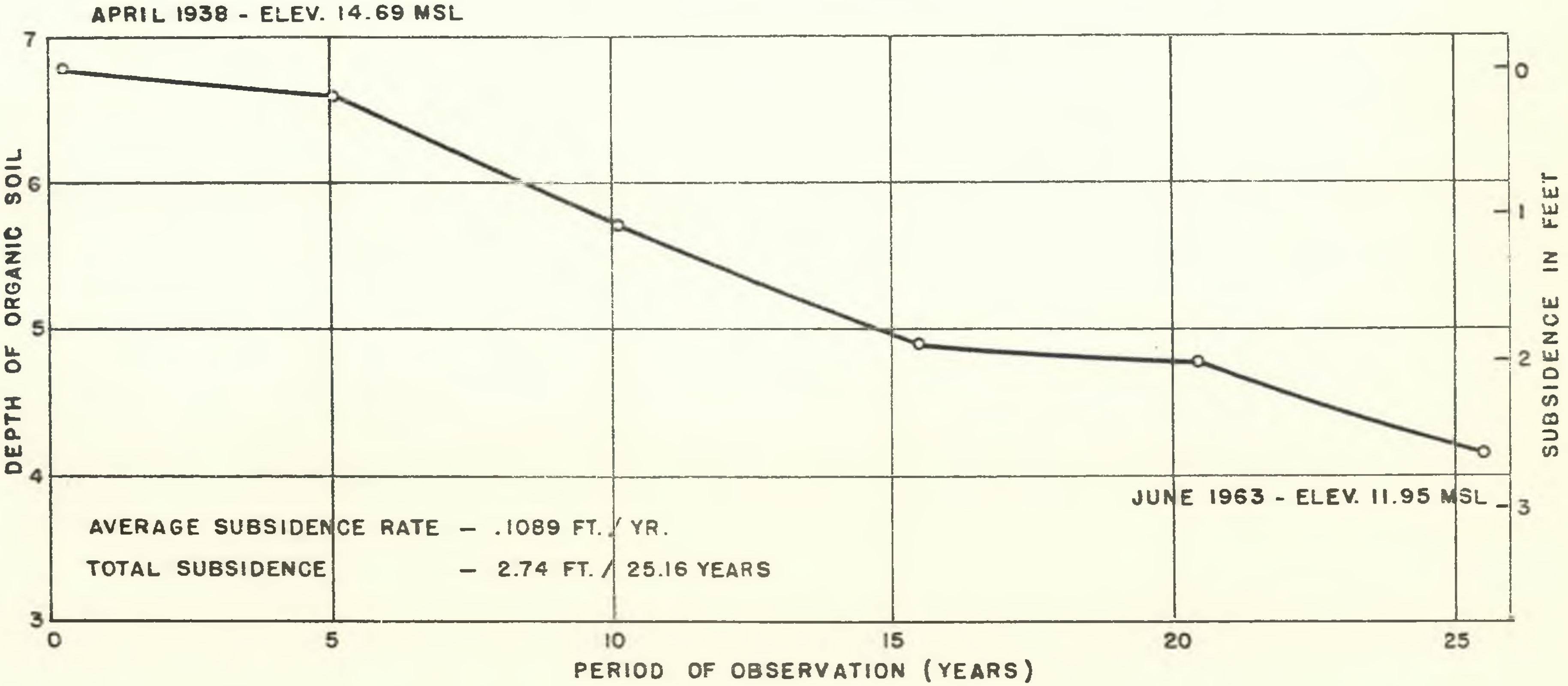


FIG. 6

SUBSIDENCE OF ORGANIC SOILS

WELL LINE "A"- REACH "B"- STA. 0+00-27+00 AT EXPERIMENT STATION
SEC. 10 TWP 44 S.R. 37 E



AVERAGE SUBSIDENCE RATE — .1089 FT. / YR.
TOTAL SUBSIDENCE — 2.74 FT. / 25.16 YEARS

FIG. 7

SUBSIDENCE OF ORGANIC SOILS

SEC. 5 & 8 T 44 S.R. 38E (WEDGEWORTH - RAOUL FARMS)

NORTH & SOUTH LINE STA. 0+00 TO STA. 9+90

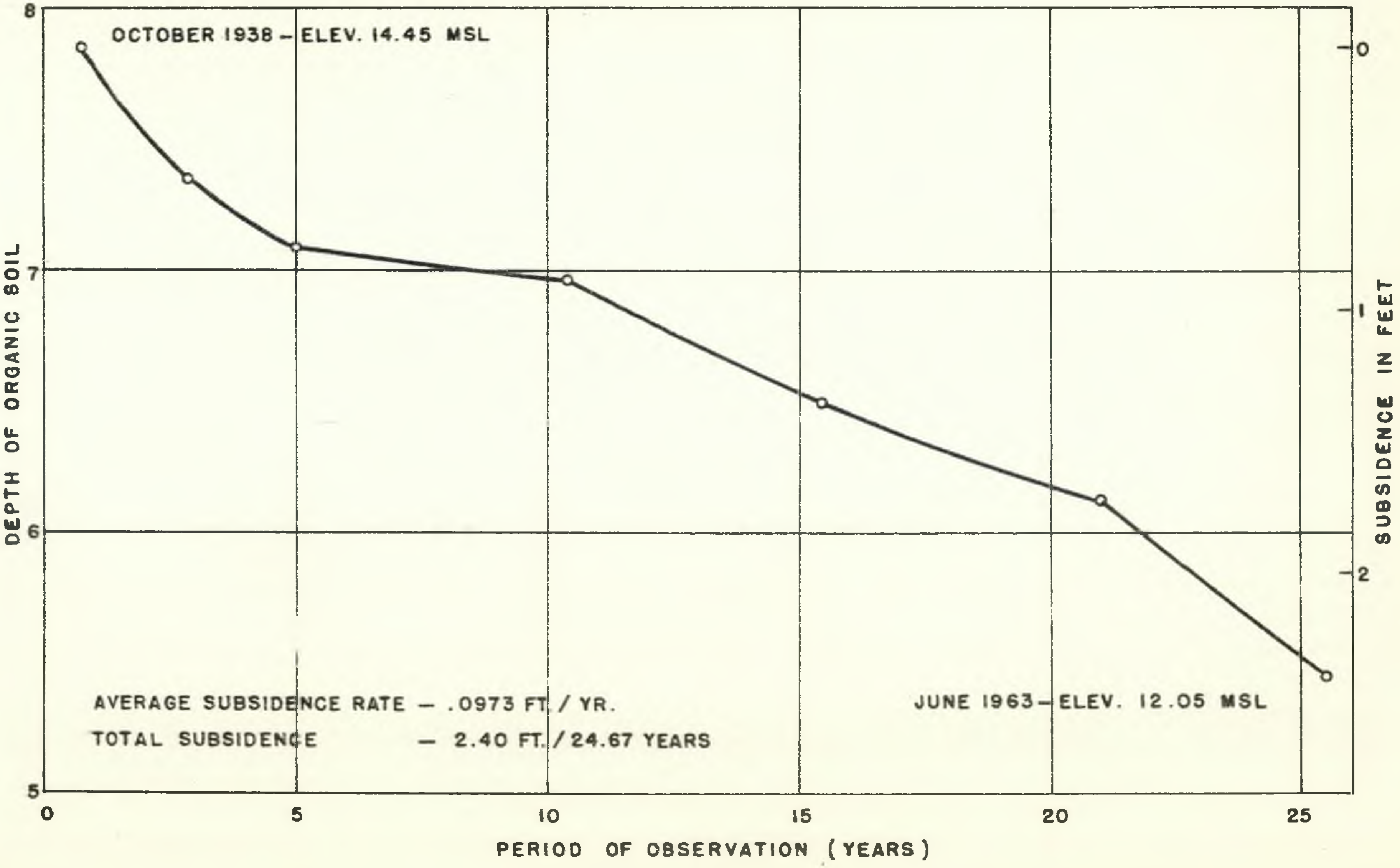


FIG. 8

SUBSIDENCE OF ORGANIC SOILS

SEC. 5 & 8 T 44 S.R. 38 E (WEDGEWORTH - RAOUL FARMS)

NORTH & SOUTH LINE STA. 11+00 TO 20+00

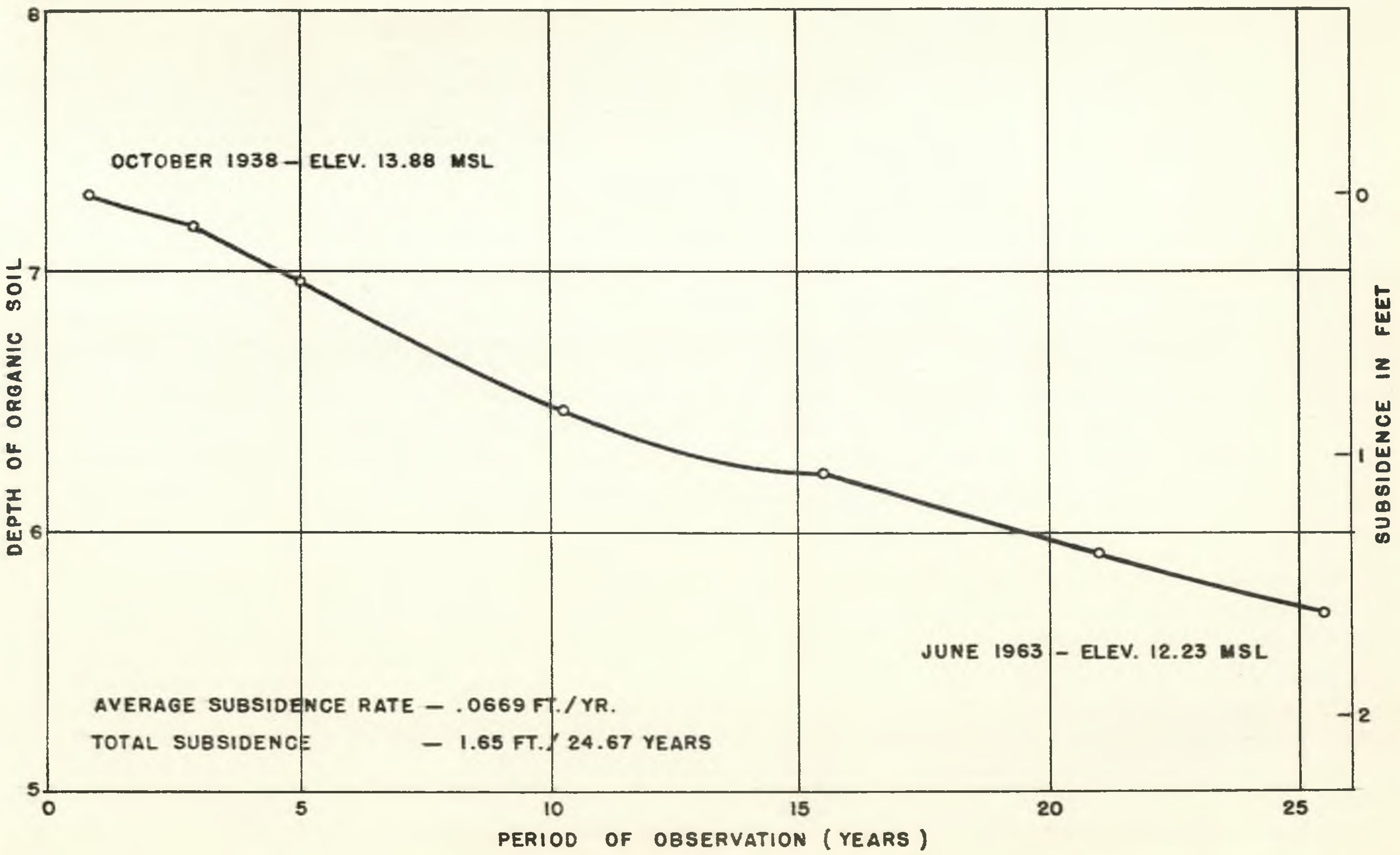
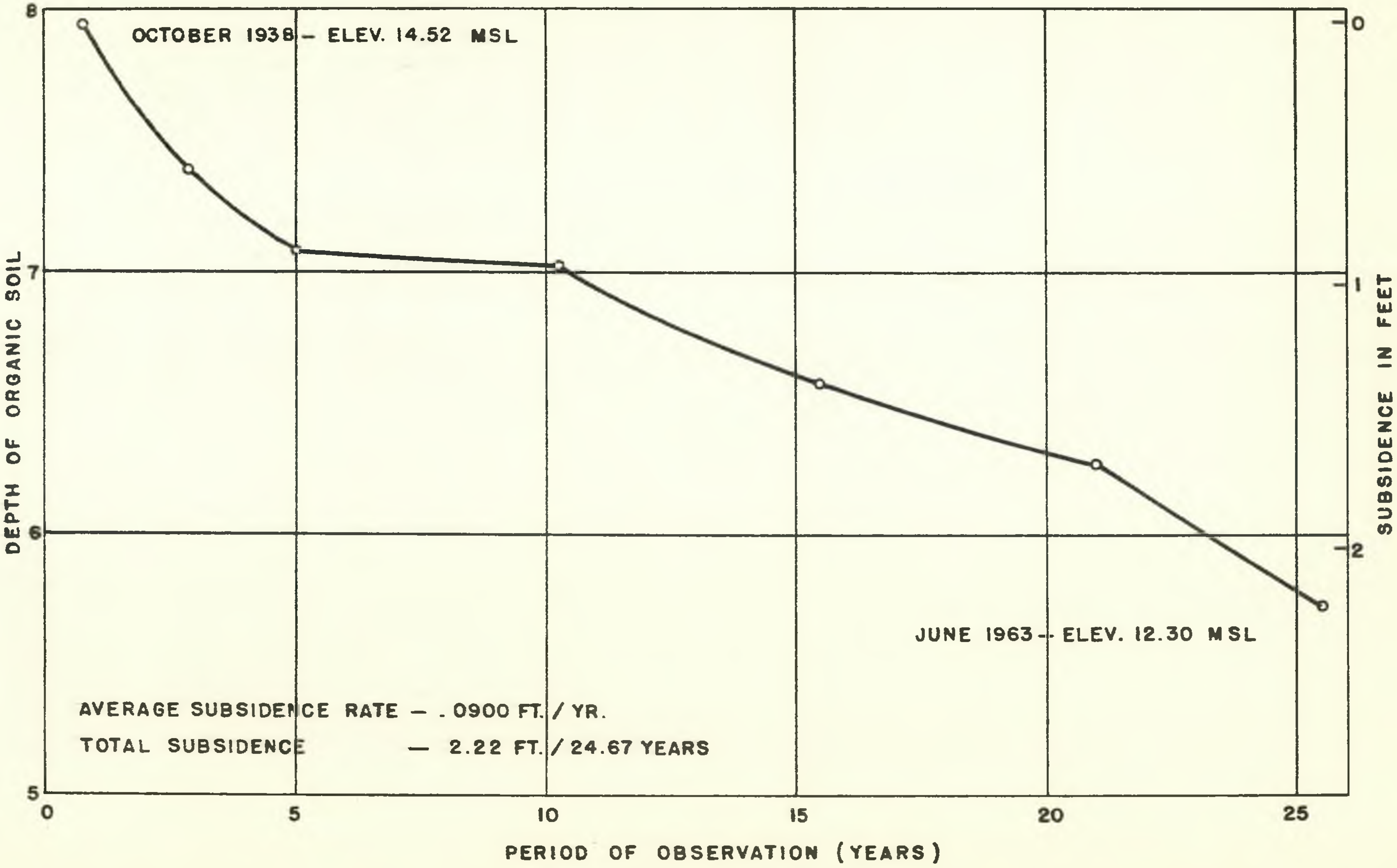


FIG. 9

SUBSIDENCE OF ORGANIC SOILS

SEC. 5 & 8 T 44 S.R.38 E. (WEDGEWORTH - RAOUL FARMS)

EAST & WEST LINE STA. 0+00 TO 9+50



OCTOBER 1938 – ELEV. 14.52 MSL

JUNE 1963 – ELEV. 12.30 MSL

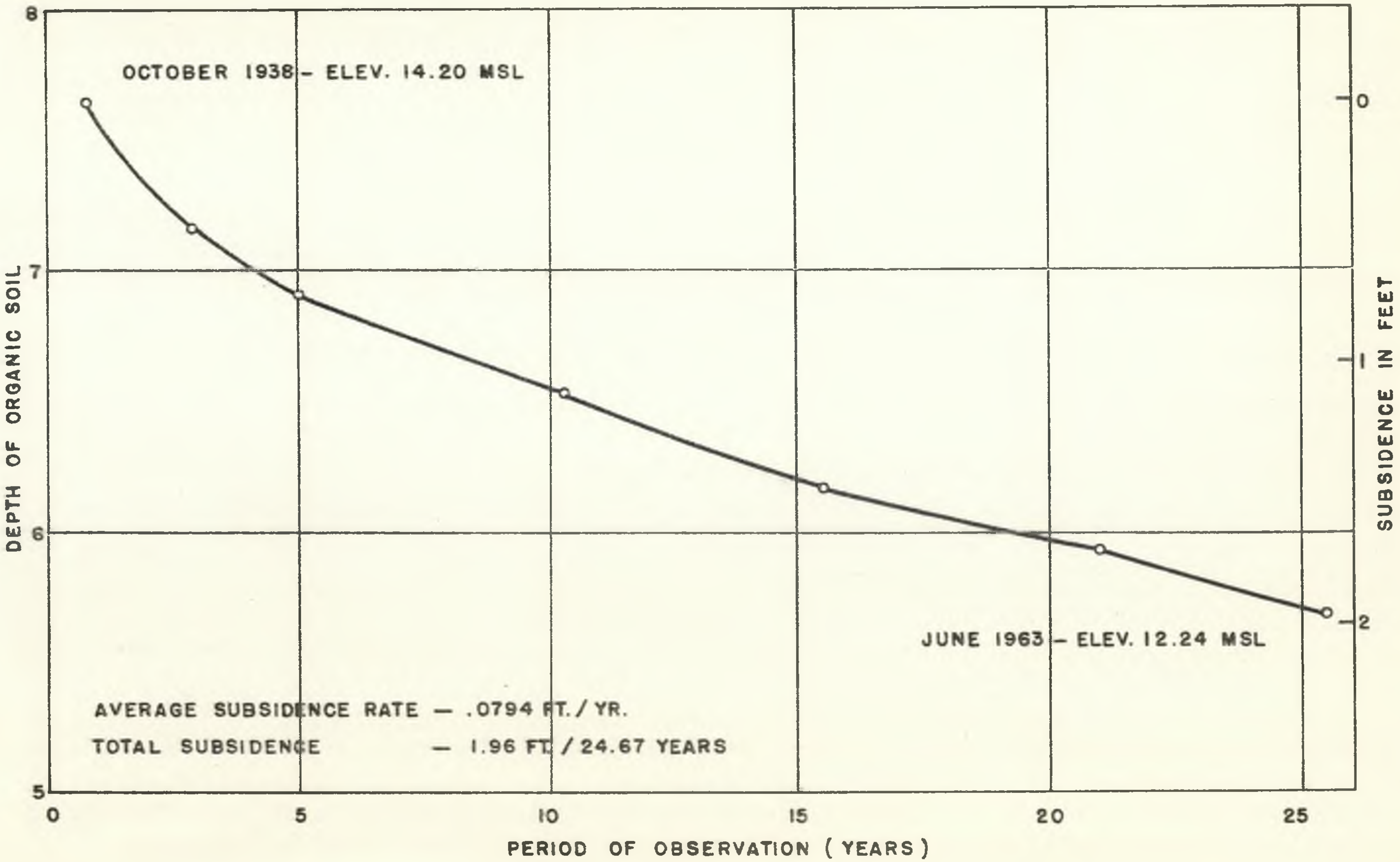
AVERAGE SUBSIDENCE RATE — .0900 FT. / YR.

TOTAL SUBSIDENCE — 2.22 FT. / 24.67 YEARS

FIG. 10

SUBSIDENCE OF ORGANIC SOILS

SEC. 5 & 8 T 44 S.R. 38 E (WEDGEWORTH – RAOUL FARMS)
EAST & WEST LINE STA. 10+50 TO 23+00

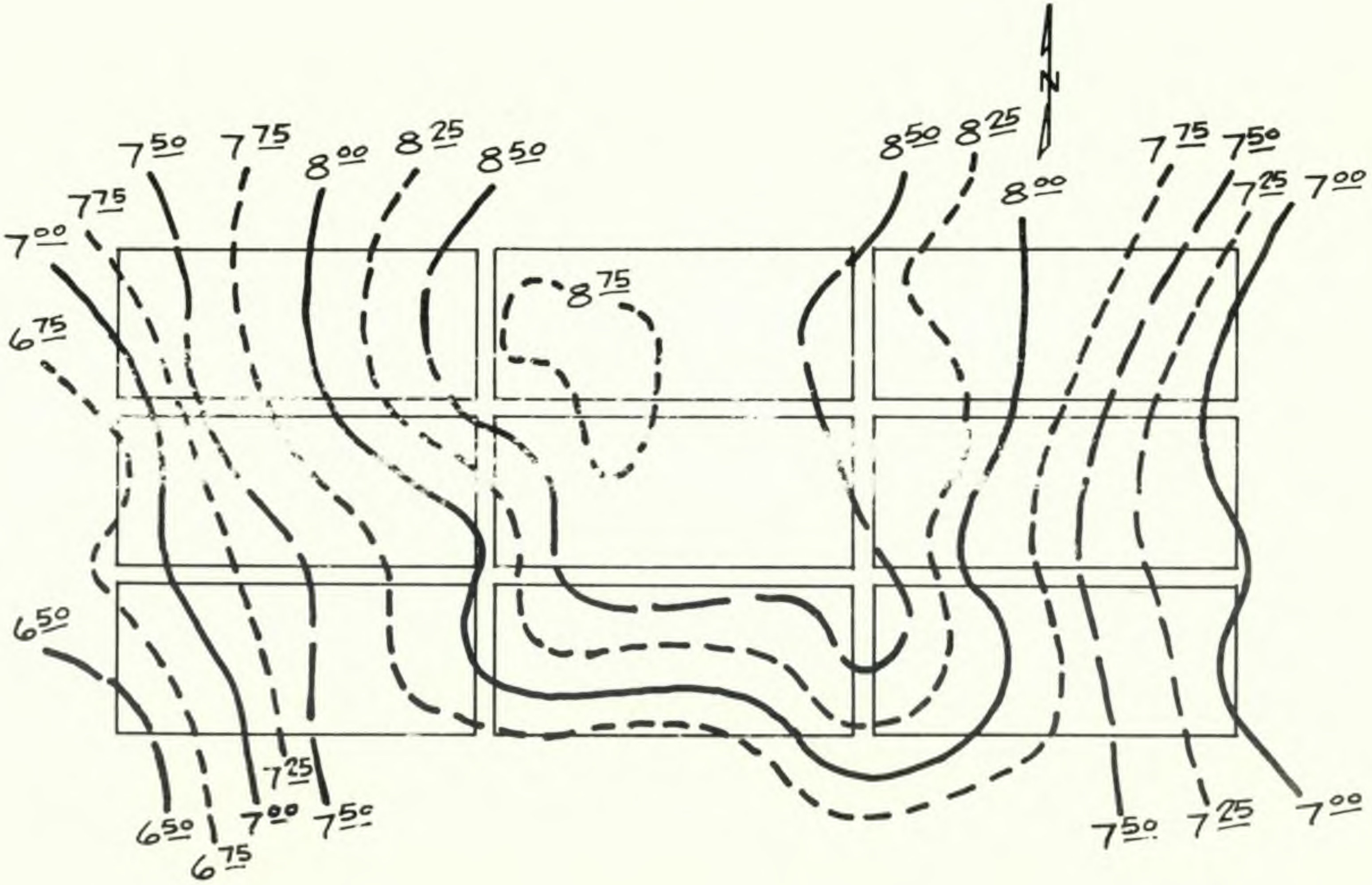


OCTOBER 1938 – ELEV. 14.20 MSL

JUNE 1963 – ELEV. 12.24 MSL

AVERAGE SUBSIDENCE RATE — .0794 FT. / YR.
TOTAL SUBSIDENCE — 1.96 FT. / 24.67 YEARS

FIG. 11



CONTOURS ON ROCK SURFACE (MSL)
WATER TABLE PLOTS
EES

FIG. 12

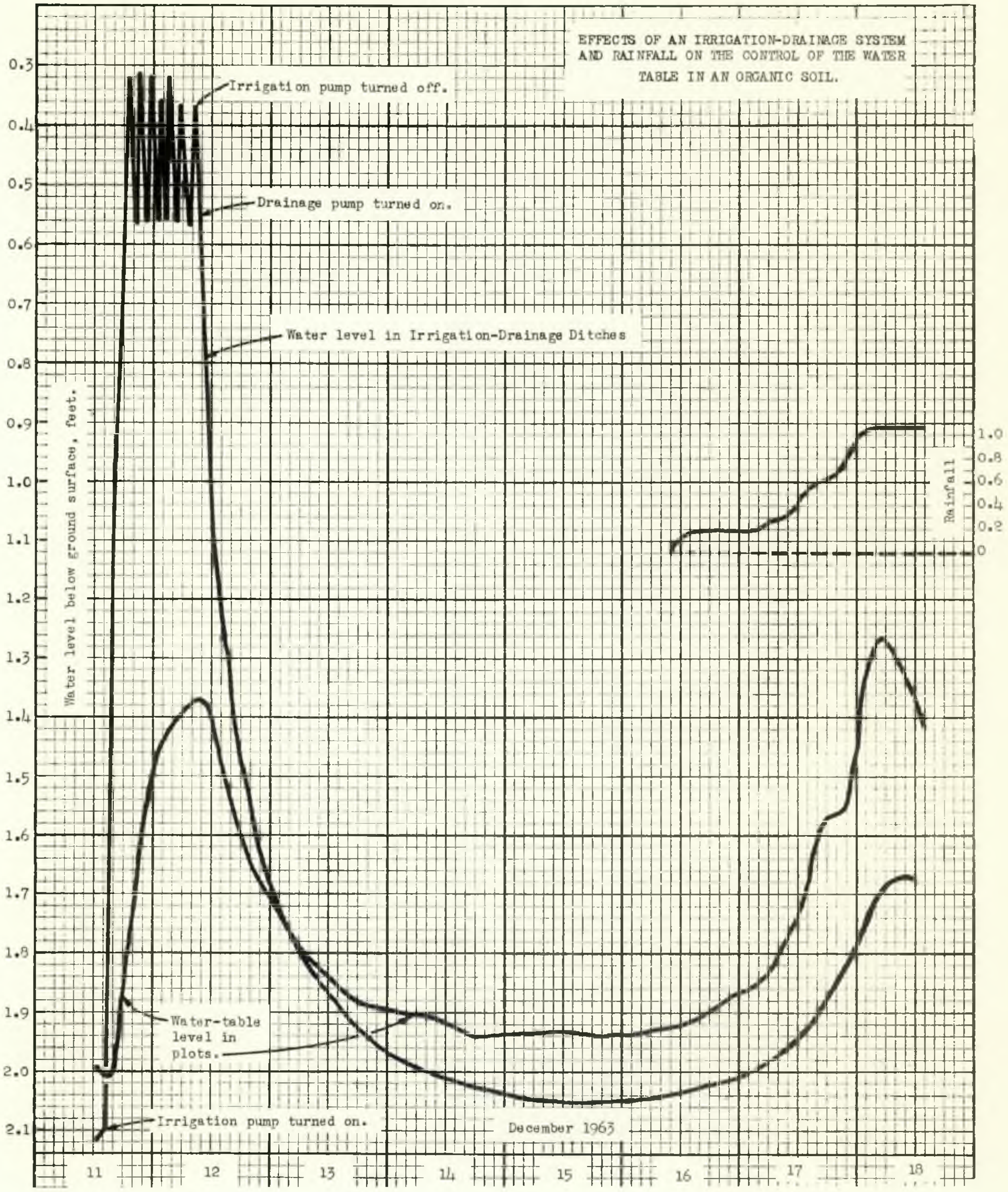

EFFECTS OF AN IRRIGATION-DRAINAGE SYSTEM AND RAINFALL ON THE CONTROL OF THE WATER TABLE IN AN ORGANIC SOIL.
Irrigation pump turned off.
Drainage pump turned on.
Water level in Irrigation-Drainage Ditches
Water-table level in plots.
Irrigation pump turned on.
December 1963
Water level below ground surface, feet.
Rainfall
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
1.1
1.2
1.3
1.4
1.5
1.6
1.7
1.8
1.9
2.0
2.1
1.0
0.8
0.6
0.4
0.2
0
11
12
13
14
15
16
17
18

FIG. 13

COLLECTION OF BASIC AGRI-HYDROLOGIC DATA IN CENTRAL AND SOUTHERN FLORIDA

Line Project No.: SWC 2-b1, 2-b2, 2-b4 Code No.: FLA PL-3

Prepared by: W. H. Speir

Location of Experiment: Central and southern Florida, headquarters at Fort Lauderdale, Fla.

Personnel Involved:

ARS - W. H. Speir, J. E. Browning, J. H. Howerton, Jr., F. E. Cherry and W. R. Moore
Fla. Agr. Exp. Sta. - F. H. Thomas, F. T. Boyd
Central & So. Fla. Flood Control Dist. - J. P. Clawson, R. L. Taylor

Date of Initiation: January 15, 1950

Expected Duration: Continuing

Objectives:

To systematically measure, record and preserve basic hydrologic data in a form suitable for various analyses in approved agricultural investigations in central and southern Florida.

Need for Study: See 1961 Annual Report.

Design and Procedure: See 1961 Annual Report.

Experimental Data and Observations:

The collection of basic hydrologic data was continued in cooperation with the Florida Agricultural Experiment Station, the Central and Southern Florida Flood Control District, the U.S. Geological Survey, and other agencies.

Monthly hydrologic data for Plantation Field Laboratory, the Everglades Experiment Station, Indian River Farms Drainage District (Fla W-1) Upper Taylor Creek (Fla W-2), Upper Taylor Creek (Fla W-3) and Monreve Ranch (Fla W-4) are shown in Tables 1, 2, 3, 4, 5, and 6, respectively. Data for Plantation Field Laboratory and the Everglades Experiment Station are shown for the calendar year, while the watershed data is based on the water year as established by the U.S. Geological Survey.

Elevations of groundwater at weekly readings are given for well lines "A" and "B" in Table 7.

All data have been tabulated on a daily basis and are included as an appendix to this report.

Comments and Interpretations:

The purpose of this outline is to measure, record, present, and preserve basic data in a form suitable for use by the Agricultural Research Service and Cooperators. The use of this data in specific investigations is presented under separate research outlines within this report.

Summary:

The collection of basic hydrologic data continued at six sites over central and southern Florida. Two additional water stage recorders were installed on Well Lines "A" and "B" for continuous records on ground water movement near the main watercourse in the Upper Taylor Creek Watersheds W-2 and W-3. Monthly tabulations of hydrologic data are shown for each observation site. Watershed tabulations are made on a water year basis, while other sites are tabulated by calendar years.

TABLE 1
MONTHLY HYDROLOGIC DATA
PLANTATION FIELD LABORATORY
FORT LAUDERDALE, FLA.

DATE	EVAP	RAIN	WIND	MN TEMP	SUNLIGHT	PEAK RAINFALL			
1963	(IN)	(IN)	(MN.MILES)	°F	MN.HOURS	24 HRS	DATE	48 HRS	DATE
JAN	3.62	1.29	42.7	65.7	4.8	0.28	16	0.30	16-17
FEB	3.66	5.09	47.8	64.7	5.3	2.97	13	3.03	12-13
MAR	6.90	0.19	55.2	72.3	7.4	0.15	30	0.15	30
APR	7.88	0.81	60.5	72.7	7.9	0.64	8	0.64	8
MAY	7.55	6.51	36.4	76.0	7.7	2.67	4	4.07	3-4
JUNE	7.00	7.15	25.8	80.0	7.2	1.56	11	1.61	11-12
JULY	8.38	3.20	31.3	82.7	9.1	0.85	5	0.90	5-6
AUG	7.12	4.61	28.9	82.7	8.3	1.43	20	2.45	20-21
SEPT	5.52	10.68	19.2	81.3	5.2	1.69	20	2.61	20-21
OCT	6.16	7.76	24.0	75.4	6.4	3.62	3	3.91	3-4
NOV	4.71	1.30	24.2	70.5	6.0	0.55	6	0.60	10-11
DEC	3.13	4.30	15.4	61.2	6.7	3.30	31	3.30	31
TOTAL	71.63	52.89	34.3	73.8	6.8	-	-	-	-

REMARKS:

TABLE 2
MONTHLY HYDROLOGIC DATA
EVERGLADES EXPERIMENT STATION
BELLE GLADE, FLA.

DATE	PAN EVAPORATION		TANK EVAP		RAIN	WIND	MN TEMP	PEAK RAINFALL			
1963	P2	P3	T7	T8	(IN)	MN. MILES	°F	24 HRS	DATE	48 HRS	DATE
JAN	3.26	3.37	3.01	3.06	0.98	66.6	63.2	0.35	27	0.46	21-22
FEB	3.26	3.37	3.41	3.27	3.49	86.4	61.4	0.79	13	1.07	12-13
MAR	5.94	5.94	5.00	5.04	0.42	68.2	69.1	0.12	7	0.22	7-8
APR	6.99	7.29	6.11	6.08	0.28	73.3	70.5	0.25	7	0.25	7
MAY	6.49	6.31	5.42	5.68	7.06	47.1	74.5	3.66	4	3.81	3-4
JUNE	6.58	6.83	5.89	5.62	11.59	37.1	78.8	2.60	29	3.80	28-29
JULY	6.83	DISCONTINUED	6.11	6.20	1.78	34.5	80.9	0.81	31	0.84	30-31
AUG	6.50		5.82	5.77	4.95	33.4	81.1	1.10	19	1.83	19-20
SEPT	5.09		4.90	4.60	9.27	36.0	79.9	2.04	23	2.09	22-23
OCT	5.35		5.16	5.26	1.60	69.6	73.7	0.58	3	0.64	2-3
NOV	3.86		3.21	3.53	2.79	58.2	67.2	1.78	11	2.36	11-12
DEC	3.15		3.03	3.07	5.66	64.3	58.8	4.44	31	4.44	31
TOTAL	63.30	-	57.07	57.18	49.87	56.2	-	-	-	-	-

REMARKS:

TABLE 3
MONTHLY HYDROLOGIC DATA
INDIAN RIVER FARMS DRAINAGE DIST.
FLA W1
INDIAN RIVER COUNTY, FLA.

DATE	PAN EVAP	RAINFALL	RUNOFF	PEAK RAINFALL				PEAK RUNOFF			
1962	(IN)	(IN)	(IN)	24 HRS	DATE	48 HRS	DATE	24 HRS	DATE	48 HRS	DATE
OCT	6.97	0.49	*	0.20	13	0.21	12-13				
NOV	5.60	3.14		1.90	9	2.77	8-9				
DEC	3.58	0.48		0.20	24	0.40	24-25				
1963											
JAN	4.10	0.82		0.25	26	0.27	26-27				
FEB	4.15	5.00		1.35	26	1.35	26				
MAR	6.07	1.99		0.79	30	0.99	29-30				
APR	7.73	0.62		0.44	30	0.44	30				
MAY	7.58	3.34		0.94	30	1.38	29-30				
JUNE	7.59	6.09		0.71	14	1.22	26-27				
JULY	7.92	4.40		1.41	11	1.42	11-12				
AUG	8.58	4.56		0.90	18	1.22	18-19				
SEPT	6.81	16.22		6.41	24	7.26	23-24				
TOTAL	76.68	47.15		-	-	-	-				

PROVISIONAL DATA ONLY.

REMARKS: *Provisional data only.

TABLE 4
MONTHLY HYDROLOGIC DATA
UPPER TAYLOR CREEK, TOTAL AREA
FLA W2
OKEECHOBEE COUNTY, FLA.

DATE	EVAP	RAIN	RUNOFF	MEAN TEMP	W.T.*	PEAK RAINFALL				PEAK RUNOFF			
1962	(IN)	(IN)	(IN)	°F	(FT)	24 HRS	DATE	48 HRS	DATE	24 HRS	DATE	48 HRS	DATE
OCT	4.88	1.21	0.58	77.0	2.22	0.53	3	0.54	3-4	.064	5	.120	5-6
NOV	3.39	2.31	0.13	65.8	2.55	1.16	9	2.18	8-9	.011	11	.021	11-12
DEC	2.75	0.36	0.09	60.2	3.12	0.12	24	0.12	24	.004	12	.007	12-13
1963													
JAN	2.80	0.85	0.08	62.5	3.50	0.30	21	0.30	21	.004	22	.008	22-23
FEB	3.52	4.20	0.29	61.5	3.02	1.73	26	1.73	26	.075	28	.143	27-28
MAR	5.77	1.10	0.19	71.0	2.54	0.22	30	0.22	30	.049	1	.068	1-2
APR	7.23	0.75	0.03	72.8	3.94	0.50	25	0.50	25	.001	26	.002	26-27
MAY	7.23	4.75	0.03	78.9	4.10	1.34	3	1.34	3	.001	4	.002	4
JUNE	6.48	5.44	0.13	82.0	3.26	0.91	4	1.51	4-5	.007	7	.014	7-8
JULY	6.78	3.12	0.09	83.4	3.37	0.65	17	1.23	16-17	.007	1	.012	1-2
AUG	6.98	3.48	0.03	83.3	4.10	0.96	20	1.18	19-20	.002	22	.004	22-23
SEPT	5.17	7.36	0.36	81.9	3.38	1.17	23	2.32	23-24	.056	29	.112	29-30
TOTAL	62.98	34.93	2.03	73.4	3.26	-	-	-	-	-	-	-	-

* MEAN WATER TABLE DEPTH BELOW GROUND SURFACE
REMARKS:

TABLE 5
MONTHLY HYDROLOGIC DATA
UPPER TAYLOR CREEK, SUB AREA
FLA W3
OKEECHOBEE COUNTY, FLA.

DATE	EVAP	RAIN	RUNOFF	MEAN TEMP	W.T.*	PEAK RAINFALL				PEAK RUNOFF			
1962	(IN)	(IN)	(IN)	°F	(FT)	24 HRS	DATE	48 HRS	DATE	24 HRS	DATE	48 HRS	DATE
OCT	4.88	1.05	0.46	77.0	1.75	0.71	1	0.71	1	.159	4	.245	3-4
NOV	3.39	2.99	0.13	65.8	1.79	1.60	9	2.64	8-9	.026	10	.050	9-10
DEC	2.75	0.35	0.03	60.2	2.31	0.18	24	0.18	24	.001	-	.002	-
1963													
JAN	2.80	0.81	.02	62.5	2.63	0.23	7	0.26	14-15	.001	-	.002	-
FEB	3.52	4.17	.12	61.5	2.23	1.73	26	1.73	26	.038	27	.060	27-28
MAR	5.77	1.30	.13	71.0	1.94	0.41	30	0.41	30	.017	1	.031	1-2
APR	7.23	0.80	.01	72.8	3.31	0.46	25	0.46	25	.001	1	.002	1-2
MAY	7.23	5.65	.01	78.9	3.45	1.48	25	1.52	25-26	.004	27	.007	26-27
JUNE	6.48	5.93	.15	82.0	2.25	0.87	28	1.67	27-28	.008	30	.014	29-30
JULY	6.78	5.08	.16	83.4	1.98	1.50	17	1.76	17-18	.018	19	.032	18-19
AUG	6.98	1.84	.02	83.3	3.06	0.62	20	0.89	19-20	.003	1	.005	1-2
SEPT	5.17	8.62	.93	81.9	2.61	1.74	14	3.10	23-24	.250	25	.500	25-26
TOTAL	62.98	38.59	2.17	73.4	2.44	-	-	-	-	-	-	-	-

* MEAN WATER TABLE DEPTH BELOW GROUND SURFACE
REMARKS:

TABLE 6
MONTHLY HYDROLOGIC DATA
MONREVE RANCH
FLA W4
MARTIN COUNTY, FLA.

DATE	EVAP	RAIN	RUNOFF	IRRIGATION	PEAK RAINFALL				PEAK RUNOFF			
1962	(IN)	(IN)	(IN)	(IN)	24 HRS	DATE	48 HRS	DATE	24 HRS	DATE	48 HRS	DATE
OCT	4.09	0.26	.93	.22	0.09	13	0.11	13-14	.117	1	.222	1-2
NOV	2.78	0.68	.20	.56	0.21	21	0.28	8-9	.020	24	.033	27-28
DEC	2.34	0.27	.51	1.72	0.22	24	0.22	24	.027	11	.054	11-12
1963												
JAN	2.93	1.06	.18	.72	0.72	21	0.72	21	.010	15	.019	15-16
FEB	3.70	3.84	.18	-	1.11	26	1.11	26	.007	26	.014	26-27
MAR	5.18	0.98	.29	1.02	0.37	9	0.37	9	.019	21	.036	21-22
APR	5.75	0.77	.29	2.02	0.77	25	0.77	25	.019	7	.033	19-20
MAY	5.90	5.34	.40	.70	2.12	3	2.12	3	.086	3	.154	3-4
JUNE	6.14	4.42	.29	.18	0.96	25	1.63	25-26	.037	29	.066	28-29
JULY	6.78	3.72	.14	.53	1.21	6	1.21	6	.012	6	.019	6-7
AUG	5.77	4.02	.19	.24	1.07	16	1.09	15-16	.033	22	.063	21-22
SEPT	5.01	7.91	.62	-	1.55	11	2.05	11-12	.117	25	.210	25-26
TOTAL	56.37	33.27	4.22	7.91	-	-	-	-	-	-	-	-

REMARKS:

Table 7. Water Table Elevations - Well Lines "A" and "B", Upper Taylor Creek Watershed, Okeechobee County, Florida, Water Year 1962-1963

Well No.	A1	A2	A3	A4	A5	A6	B1	B2	B3	B4	B5	B6
Ground Eleva. at Well site (Ft. MSL)	stream	38.8	39.1	40.3	42.0	45.0	stream	24.4	24.3	25.2	25.8	32.8
Horz. Dist. from stream (Ft.)	0	10	38	104	535	2000	0	10	38	104	535	2000
Date	(Water Table Elev. - Ft. MSL)											
10/1/62	36.29	36.70	37.11	38.03	40.21	43.04	25.25	25.23	25.26	25.30	25.40	30.69
8	36.22	36.74	37.20	38.22	40.59	43.24	25.57	25.15	25.15	25.11	25.60	30.47
15	36.02	36.36	36.77	37.62	39.90	42.73	23.99	23.93	23.70	23.44	23.40	30.07
22	35.96	36.22	36.59	37.34	39.67	42.43	23.51	23.39	23.24	23.13	23.13	29.74
29	35.87	36.10	36.44	37.10	39.48	42.20	23.24	23.13	23.02	23.00	22.97	29.52
11/5	35.84	36.04	36.34	37.45	39.27	41.88	23.10	22.99	22.86	22.83	22.82	29.29
12	36.17	36.80	37.39	38.26	40.68	43.16	24.34	24.36	24.44	24.52	24.83	30.32
19	36.08	36.48	36.94	37.71	40.12	42.65	23.80	23.69	23.65	23.59	23.73	29.60
26	36.08	36.45	36.89	37.66	40.12	42.59	23.50	23.38	23.31	23.27	23.39	29.39
12/3	36.05	36.35	36.73	37.42	39.87	42.34	23.40	23.31	23.20	23.18	23.22	29.26
10	36.02	36.32	36.68	37.34	39.72	42.17	23.70	23.66	23.62	23.58	23.60	29.10
17	36.00	36.29	36.63	37.25	39.55	41.98	23.58	23.50	23.48	23.50	23.49	28.96
23	35.97	36.25	36.59	37.19	39.50	41.83	23.51	23.51	23.47	23.48	23.43	28.86
30	35.97	36.26	36.61	37.17	39.48	41.70	23.81	23.38	23.32	23.32	23.40	28.78
1/7/63	35.93	36.19	36.70	37.23	39.35	41.56	23.81	23.84	23.88	23.91	23.72	28.66
14	35.91	36.19	36.51	37.04	39.10	41.44	24.00	24.21	24.30	24.53	24.06	28.57
21	35.96	36.37	36.81	37.22	39.25	41.42	24.29	24.38	24.65	25.05	25.13	28.58
28	35.93	36.21	36.51	36.55	39.01	41.32	23.69	23.61	23.68	23.69	23.93	28.82
2/4	35.94	36.22	36.65	36.50	38.95	41.22	24.13	24.29	24.50	24.83	24.88	28.60
11	35.83	36.06	36.32	36.85	38.82	41.12	23.37	23.21	23.19	23.21	23.42	28.59
18	36.04	36.51	36.97	37.63	39.47	41.58	24.25	24.25	24.47	24.62	24.99	28.98
25	36.02	36.42	36.82	37.52	39.43	41.74	24.01	23.95	23.98	24.01	24.37	29.38
3/4	36.22	36.73	37.25	38.02	40.06	42.43	24.58	24.57	24.63	24.68	25.13	30.06
11	36.12	36.54	36.99	37.78	39.83	41.99	23.98	23.91	23.94	23.88	24.30	29.99
18	36.01	36.29	36.63	37.33	39.47	41.88	23.42	23.26	23.18	23.17	23.47	29.68
25	35.76	35.96	36.26	36.89	39.08	41.52	22.82	22.68	22.56	22.57	22.81	29.26
4/1	35.73	35.96	36.25	36.83	38.98	41.28	22.77	22.61	22.47	22.46	22.58	28.97
8	36.40	35.56	35.85	36.52	38.68	41.09	22.62	22.45	22.30	22.27	22.35	28.71
15	35.06	35.27	35.60	36.29	38.49	40.87	22.40	22.22	22.06	22.09	22.19	28.40
22	34.84	35.03	35.40	36.09	38.29	40.68	22.37	22.15	21.95	21.94	22.01	28.18
29	34.68	34.84	35.25	35.97	38.13	40.55	22.51	22.33	22.10	22.04	22.04	27.99
5/6	35.44	35.67	36.01	36.69	38.88	41.30	23.10	22.94	22.78	22.68	22.76	28.30
13	35.25	35.45	35.79	36.30	38.53	40.87	22.53	22.35	22.17	22.15	22.19	27.90
20	34.58	34.80	35.22	35.94	38.14	40.59	22.24	22.01	21.79	21.79	21.82	27.62
27	36.12	36.28	36.51	37.11	39.37	41.71	23.01	22.88	22.68	22.55	22.53	27.53
6/3	35.96	36.13	36.37	36.93	39.07	41.52	23.64	23.09	22.81	22.67	22.60	27.51
11	36.14	36.60	37.01	37.82	40.09	42.74	24.09	24.26	23.45	22.68	22.38	27.50
18	36.27	36.22	37.27	38.28	40.57	43.15	23.47	23.32	23.20	23.05	22.86	27.37
25	35.92	36.16	36.47	37.15	39.49	42.23	22.90	22.68	22.36	22.23	22.08	26.75
7/2	36.27	36.54	36.85	37.57	39.83	42.85	24.33	24.49	24.22	23.97	23.70	28.20
9	35.95	36.03	36.31	36.90	39.18	41.99	23.21	23.06	22.83	22.67	22.62	28.04
17	36.09	36.33	36.66	37.07	39.22	41.89	23.57	23.55	23.36	23.21	22.94	27.65
25	36.19	36.45	36.77	37.32	39.52	42.52	23.25	23.07	25.83	22.75	22.67	27.47
31	35.95	36.12	36.35	36.85	39.05	41.97	23.16	23.03	22.77	22.68	22.42	27.26
8/7	35.51	35.66	35.94	36.50	38.67	41.54	22.88	22.75	22.53	22.44	22.33	27.05
14	35.21	35.35	35.66	36.23	38.39	41.27	22.41	22.37	22.17	22.07	22.00	26.87
21	35.78	35.98	36.29	36.71	39.01	41.51	23.12	23.17	23.05	22.96	22.81	26.79
28	35.59	35.72	35.96	36.45	38.60	41.39	23.29	23.22	23.09	23.12	23.50	28.20
9/4	35.35	35.47	35.71	36.06	38.20	40.90	23.03	23.01	22.94	22.90	23.10	27.87
11	35.53	35.67	35.94	36.48	38.57	41.46	22.89	22.80	22.65	22.62	22.78	27.60
18	36.28	36.23	36.65	37.02	39.05	41.92	22.81	23.46	23.66	23.69	24.11	28.60
25	38.93	38.90	38.87	39.08	41.03	43.65	24.80	24.70	24.88	25.20	25.79	30.55
10/2	36.73	36.98	37.33	37.82	39.79	42.66	25.00	25.00	25.00	25.33	25.78	29.86

THE INFLUENCE OF EVAPORATION, TRANSPIRATION, AND WATER LEVELS ON WATERSHED RETENTION AND STREAMFLOW

Line Project No.: SWC 2-b1, 2-b4 Code No.: FLA. PL-4

Prepared by: W. C. Mills and W. H. Speir

Location of Experiment: Central and south Florida

Personnel Involved:

ARS - Wm. C. Mills, J. C. Stephens, W. H. Speir, E. H. Stewart

Fla. Agr. Exp. Sta. - Open
Central & So. Fla. Flood Control Dist. - J. P. Clawson, R. L. Taylor

Date of Initiation: May 18, 1959

Expected Duration: 5 years

Objectives:

To develop techniques for separation of the evaporation losses between water, soil and plant surfaces.

To test methods used in computing the water budget.

To relate climatic factors with consumptive use and water yields on a watershed basis.

To seek the contribution of condensation to water yields.

Need for Study: See 1961 Annual Report

Procedure: See 1961 Annual Report for overall procedure. The following additional procedure applies to 1963 studies.

Methods for estimating watershed evapotranspiration developed from data collected on experimental watersheds are checked for application to other watersheds in Florida by computing water budgets and comparing computed runoff to measured runoff for those basins.

Experimental Data and Observations:

Table 1 shows monthly water budget computations for Joshua Creek Watershed covering the period from October 1955 through September 1961.

Comments and Interpretations:

Checking the Water-Use Curve

A water-use curve has previously been developed to compute monthly water use (evapotranspiration) for typical Coastal Plain watersheds in central and southern Florida where pan evaporation and monthly rainfall amounts are known. The curve, methods of development, and instructions for use are explained in detail in the 1960 Annual Report.

To determine the magnitude of error inherent in such a generalized relation and consequently its usefulness, the water budget for water years 1956 through 1960 was computed for Taylor Creek Watershed using the curve to estimate evapotranspiration. (These calculations are presented in the 1960 Annual Report.) A deviation of computed runoff from measured runoff of only 1.54 inches for the five-year period indicates that the method is generally valid. However, since the water-use curve was developed from data collected on Taylor Creek it could not be certain that this curve would apply to other watersheds in central and southern Florida without further verification.

It was desired to check the validity of the water-use curve for another typical watershed in central or southern Florida by using the curve in computing the water budget of that watershed. Joshua Creek Watershed, which is located in the southwestern section of peninsular Florida, was chosen for this check.

The 6-year period from October 1955 through September 1961 was selected for water budget computations since the range of monthly and yearly rainfall and runoff was such that both extremely wet and dry conditions are represented during this time.

Joshua Creek, a tributary of Peace River, extends in a north-eastward direction from its mouth near Nocatee. The drainage area of this basin above the lowest stream gaging station has been estimated by the U.S. Geological Survey as approximately 115 square miles. The center of Joshua Creek Watershed is located near Latitude 27° 10' N, Longitude 83° 40' W.

Streamflow and rainfall records are necessary in computing the water budget. Streamflow has been measured by the U.S. Geological Survey at Nocatee since 1950 and these records were obtained from U.S.G.S. publications. The only rainfall gaging station in the vicinity of Joshua Creek Watershed is located at Arcadia and rainfall records from this station were acquired from climatological data compiled and published by the U.S. Weather Bureau.

Monthly Class A pan evaporation figures from Taylor Creek were employed in the computation of watershed evapotranspiration for the period June 1956 through September 1961. Pan evaporation records from the University of Florida's Everglades Experiment Station at Belle Glade were used for the period October 1955 to June 1956 since the evaporation pan had not been installed at Taylor Creek at that time.

Computation of the water budget is essentially a straightforward substitution of values into the equation:

$$Q_c = P \pm C \pm \Delta S \pm M - ET_w, \text{ where}$$

Q_c is computed watershed runoff in inches;
P is precipitation;
C is rainfall carryover; (when heavy rains occur during the latter part of a month, a portion of recorded rainfall for that month is carried over to the next month)

ΔS is storage change in watershed between beginning and end of month; (determined from the daily discharge vs basin storage curve)

M is soil moisture deficiency; (When the water-use curve indicates an ET_w value greater than apparent available water, this term is added and then subtracted for the following month) and

ET_w is water lost from watershed by evaporative process as determined by ratio of ET_w/E_p. (Figure 1)

Table 1 gives the elements of calculation and computed runoff values for the six water years from October 1955 through September 1961. Also shown are measured runoff values and deviations of computed runoff from measured runoff.

Water-balance calculations for Joshua Creek basin give greater computed than observed runoff for most years considered and show an accumulative deviation of 31.92 inches for the six-year period. This large discrepancy between computed and observed runoff indicates a bias in one or more elements of the water budget. A further study was made in an attempt to determine the cause of this bias.

It was noted, from a closer examination, that the highest deviations usually occurred during the wettest years, and especially during the wetter months. This might suggest that the upper limit ratio of watershed ET to pan evaporation as indicated on the water use curve is too low.

Several consecutive months of high rainfall for Joshua Creek Watershed were selected for further analysis. During these periods the water supply should provide for ET_w rates which approach the potential ET. Using measured rainfall and runoff figures, watershed ET rates were obtained by substituting values into the water balance equation. Impossibly high ET_w rates were indicated by this method for two of the high rainfall periods. Computed evapotranspiration was 104 percent of pan evaporation for the period May through October of 1959 and 114 percent for the period June through September of 1960. Plainly, these rates are incorrect. The laws of physics do not allow such great rates except perhaps on small isolated plots where both the oasis and clothesline effect may occasionally give these high values. But, obviously, it is impossible to obtain these rates on a large watershed with mixed cover over a period of months.

Although the upper limit ratio of ET_w to pan evaporation indicated by the water-use curve cannot be verified from this observation, it is evident that some error in the data is contributing to a discrepancy in the water balance of Joshua Creek Watershed. An effort was then made to isolate and adjust for incorrect water-budget data:

(1) It was considered that pan evaporation data, which were obtained from Taylor Creek and Belle Glade, might not represent that which would occur in the immediate vicinity of Joshua Creek. However, a check on pan evaporation records at other locations in various directions from Joshua

Creek was made and pan evaporation values for Joshua Creek interpolated from this information were found to be not significantly different from the Taylor Creek and Belle Glade values.

(2) Since only one raingage is available for rainfall measurements in the Joshua Creek area it might be suspected that records from this gage give an overestimate of basin rainfall. However, this would require a consistent and rather high overcatch and it is extremely doubtful in such terrain that this is the case. We would normally expect discrepancies, but over the 6-year period the plus and minus values should more or less balance.

(3) Consistently low runoff measurements would cause such an accumulated error as was found. However, as in the case of rainfall, this would be hardly probable.

(4) An incorrect estimate of watershed area is another possible cause of error. The Joshua Creek drainage area was listed as 115 square miles by U.S. Geological Survey until revised September 30, 1963. The revised figure gives an area of 132 square miles. If this larger area were used in the calculations, however, it would show an even greater bias in the water balance for water years 1956-1961. From topographic maps it can be seen that this additional area in the revised figure has been included because of artificial drainage of adjacent areas into Joshua Creek basin. Evidently, these drainage ditches were only recently constructed and the revised area does not apply to the period October 1955-September 1961.

(5) The only other apparent explanation of a water balance bias worthy of consideration is that water from Joshua Creek basin spills over into adjacent watersheds at high stages and the total runoff does not pass through the measuring station at Nocatee. This supposition is supported by the fact that the greatest water balance discrepancies appear during months of high rainfall when high water stages are most likely to occur. Also, a closer study of topographic maps of the Joshua Creek area reveals several possible high stage outlets from the watershed.

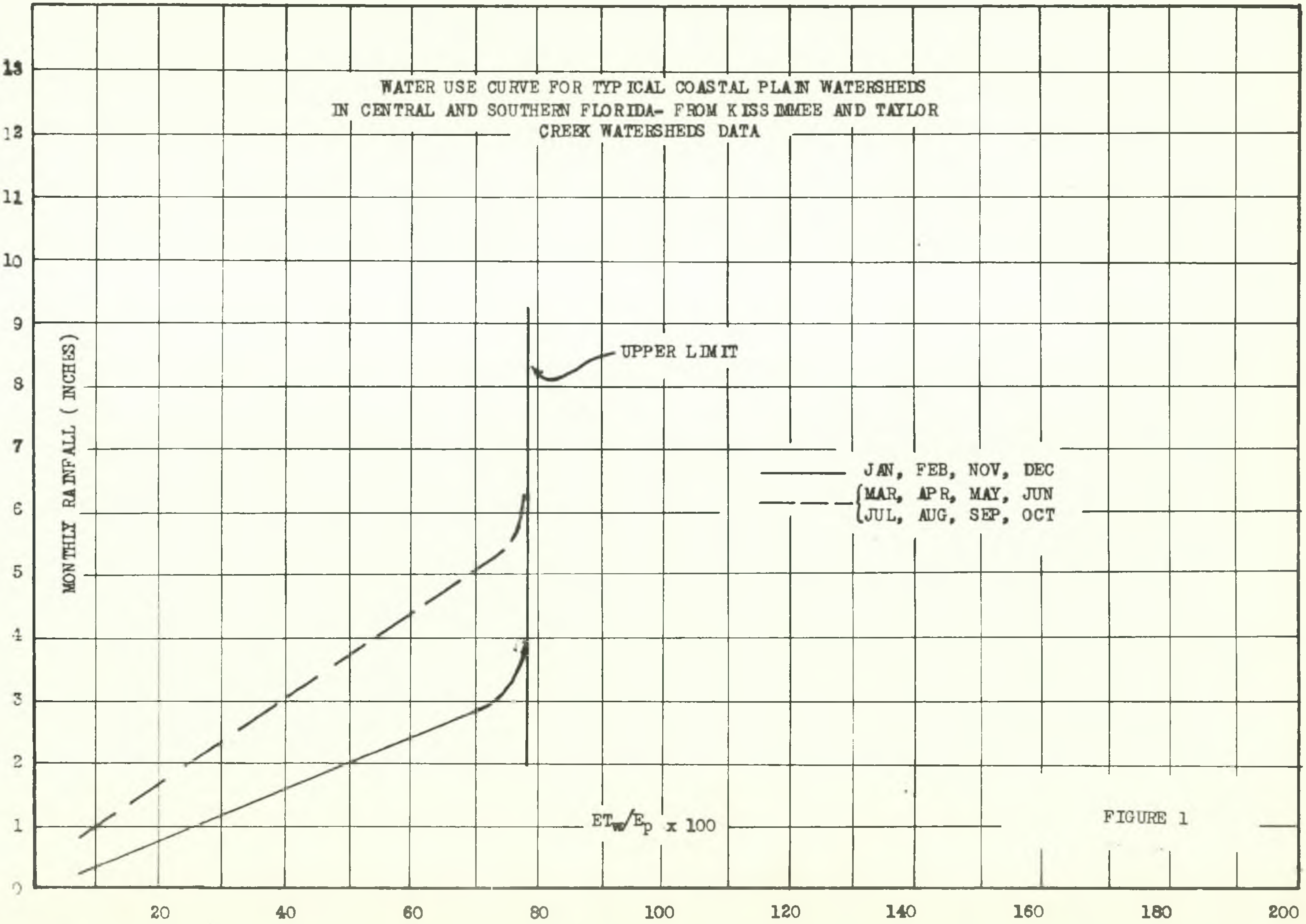
This suspected occurrence of unmeasured flow from Joshua Creek Watershed was discussed with the U.S. Geological Survey, and they concurred with the conclusion that it is very probable water runs from the watershed at high stages, through outlets other than the one at the Nocatee measuring station.

The conclusion then follows that observed runoff figures for months having very high deviations are in error and these deviations should be removed from consideration in the 6-year net deviation. With the elimination of extreme deviations for months of January 1958, July 1959, July 1960, and September 1960, the accumulated deviation is 15.41 inches. Based on computed runoff, this is a 12-percent difference between computed and observed runoff. In hydrologic studies of this type an error of such magnitude is not uncommon.

From the foregoing analysis, it is evident that application to Joshua Creek Watershed of the water-use curve developed from Taylor Creek has not been verified. However, because of erroneous runoff data, elimination from the water balance calculations of extreme deviations for wet periods seems to be justified. With these extreme values eliminated, the total difference between computed and observed runoff is such that it would be reasonable to place greater confidence in application of the water-use curve to other watersheds in central and south Florida.

Summary:

An attempt was made to verify a previously developed water-use curve (see 1960 Annual Report) for determining U.S. Weather Bureau pan coefficients for Florida watersheds. The water budget of Joshua Creek Watershed was computed for six water years from October 1955 to October 1961, using the water-use curve to estimate monthly ET. Insufficient data on runoff during high rainfall periods hindered a complete check of the method. However, with the elimination of suspected erroneous data a fair comparison of cumulative computed and observed runoff provided some basis for confidence in application of the water-use curve to other watersheds in south Florida.



WATER USE CURVE FOR TYPICAL COASTAL PLAIN WATERSHEDS IN CENTRAL AND SOUTHERN FLORIDA- FROM KISSIMMEE AND TAYLOR CREEK WATERSHEDS DATA

FIGURE 1

Table 1. Joshua Creek Watershed Water Balance

Water Year	Rain-fall (in)	Rain-fall carry over (in)	Δ S (in)	Moist. Defic. (in)	E_p (in)	ET_w/E_p	Comp. ET_w (in)	Q_o (in)	$Q_{ob.}$ (in)	Deviation (in)
1955-56										
Oct.	.66		+.16		5.25	.05	.26	.56	.18	+.38
Nov.	.31		+.02	.14	4.67	.10	.47	0	.04	-.04
Dec.	1.40		.00		3.00	.36	1.08	.18	.02	+.16
Jan.	1.22		.00		3.71	.31	1.15	.07	.02	+.05
Feb.	.26		.00	.12	4.23	.09	.38	0	.03	-.03
Mar.	.02		.00	.16	6.48	.01	.06	0	.009	-.01
Apr.	2.98	.71	.00		6.76	.28	1.89	.22	.006	+.21
May	5.33		.00		7.21	.77	5.55	.49	.01	+.48
June	2.88	1.03	.00		6.70	.22	1.47	.38	.005	+.37
July	5.66		.00		7.35	.78	5.73	.96	.02	+.94
Aug.	6.06	.80	-.15	.13	7.08	.74	5.24	0	.07	-.07
Sept.	5.29		-.02		4.97	.77	3.83	2.11	2.05	+.06
Total	32.07		+.01				27.11	4.97	2.47	2.50
1956-57										
Oct.	2.09		+.10		4.40	.26	1.14	1.05	.57	+.48
Nov.	1.05		+.06		3.40	.26	.89	.22	.07	+.15
Dec.	.65		-.01		3.28	.17	.56	.08	.04	+.04
Jan.	2.16		.00		3.11	.52	1.62	.54	.07	+.47
Feb.	4.45		.11		3.84	.78	3.00	1.34	.07	+1.27
Mar.	4.38		+.07		5.11	.59	3.01	1.44	.49	+.95
Apr.	5.97	.71	-.17		5.79	.72	4.17	.92	.61	+.31
May	7.57	.07	-.18		6.31	.78	4.92	3.11	2.02	+1.09
June	4.04	.01	+.13		6.27	.55	3.45	.78	0.67	+.11
July	10.13	.26	-.19		6.90	.78	5.38	4.31	2.60	+1.71
Aug.	8.17		+.01		5.72	.78	4.46	3.98	3.80	+.18
Sept.	11.72	1.52	-.68		5.06	.78	3.95	5.57	7.20	-1.63
Total	62.38		-.97				36.55	23.34	18.21	+5.13
1957-58										
Oct.	4.24	.68	+1.27		4.28	.77	3.30	3.73	3.21	+.52
Nov.	1.79		+.02		3.67	.28	1.03	.10	.09	+.01
Dec.	1.95		-.04		2.96	.66	1.95	.64	.16	+.48
Jan.	7.93		-.40		2.83	.78	2.21	5.32	2.83	+2.49
Feb.	1.91		+.35		3.61	.48	1.73	.53	.47	+.06
Mar.	7.10	.31	-.41		4.58	.78	3.57	2.81	3.05	-.24
Apr.	2.79		+.46		5.53	.40	2.21	1.35	1.11	+.24
May	9.57		-.31		6.34	.78	4.95	4.31	2.51	+1.80
June	8.68	1.74	-.47		7.00	.78	5.46	1.01	1.76	-.75
July	5.16	1.01	+.46		6.78	.77	5.22	1.13	2.80	-1.67
Aug.	5.40		+.25		5.87	.78	4.58	2.08	1.46	+.62
Sept.	4.96		-.15		5.62	.68	3.82	.99	2.72	-1.73
Total	61.43		+1.03				40.03	24.00	22.17	+1.83
1958-59										
Oct.	5.63		+.12		4.65	.76	3.53	2.22	1.29	+.93
Nov.	1.59		+.09		3.33	.40	1.33	.35	.24	+.11
Dec.	3.27	.70	-.09		2.77	.64	1.77	.71	.19	+.52
Jan.	2.09		-.02		3.11	.70	2.18	.59	.35	+.24
Feb.	2.15	.80	+.01		3.28	.35	1.15	.21	.22	-.01
Mar.	6.49		-.07		4.45	.78	3.47	3.75	3.11	+.64
Apr.	1.69		+.21		5.94	.20	1.19	.71	.64	+.07
May	7.99	.74	-.22		6.40	.78	4.99	2.04	.94	+1.10
June	11.87		+.04		6.21	.78	4.84	7.81	6.01	+1.80
July	10.64		+.03		6.27	.78	4.89	5.78	1.40	+4.38
Aug.	10.26	.08	0		5.70	.78	4.45	4.93	4.25	+.68
Sept.	7.97		-.09		4.89	.78	3.31	4.95	5.79	-.84
Total	71.64		+.01				37.60	34.05	24.43	+9.62
1959-60										
Oct.	8.26		-.16		4.79	.78	3.74	4.36	2.60	+1.76
Nov.	2.65		+.33		3.37	.64	2.16	.82	.36	+.46
Dec.	1.96		.00		2.59	.49	1.27	.69	.19	+.50
Jan.	.86	.51	+.04	.03	3.52	.12	.42	0	.11	-.11
Feb.	4.92		-.09		3.57	.78	2.78	2.53	.55	+1.98
Mar.	4.50		-.04		5.18	.62	3.21	1.25	2.30	-1.05
Apr.	3.43		+.03		5.96	.45	2.68	.78	.63	+.15
May	1.84	.51	+.10		6.99	.15	1.05	.38	.28	+.10
June	5.89	1.66	-.31		5.73	.66	3.78	.65	.35	+.30
July	13.06		-1.69		6.91	.78	5.39	7.64	2.64	+5.00
Aug.	5.78	.51	+1.80		5.80	.75	4.35	2.92	3.77	-.85
Sept.	17.05	.78	-.33		4.55	.78	3.55	12.70	8.06	+4.64
Total	70.20		-.32				34.38	34.72	21.84	+12.88
1960-61										
Oct.	3.64	1.13	+.43		4.52	.43	1.94	1.78	2.77	-.99
Nov.	.10		+.09		3.36	.32	1.08	.24	.55	-.31
Dec.	1.25		0		2.81	.32	.90	.35	.11	+.24
Jan.	5.13		-.04		3.15	.78	2.46	2.63	1.13	+1.50
Feb.	.95		+.02	.01	3.90	.25	.98	0	.29	-.29
Mar.	1.84		+.02		6.43	.22	1.41	.44	.17	+.27
Apr.	2.87		+.01		7.63	.37	2.82	.06	.17	-.11
May	4.07		-.14	.34	7.77	.55	4.27	0	.11	-.11
June	5.77		-.06	.13	7.14	.77	5.50	0	.25	-.25
July	3.11		+.13		6.82	.40	2.73	.38	.57	-.19
Aug.	5.71	2.08	-.48		5.35	.48	2.57	.58	.83	-.25
Sept.	1.40		+.53		5.80	.46	2.67	1.34	.89	+.45
Total	35.84		+.51				29.33	7.80	7.84	-.04
	333.71		+.27				205.00	128.88	96.96	31.92

THE BASE STORAGE AND BASE FLOW RELATIONSHIPS AS INFLUENCED BY CLIMATE, CHARACTERISTICS AND CONDITIONS OF AGRICULTURAL WATERSHEDS

Line Project No.: SWC 1-b4, 2-b1, 2-b4 Code No.: FLA PL-5

Prepared by: W. H. Speir

Location of Experiment: Central and southern Florida

Personnel Involved:
ARS - W. H. Speir and W. C. Mills
Central & So. Fla. Flood Control Dist. - J. P. Clawson, R. L. Taylor

Date of Initiation: May 27, 1959

Expected Duration: 5 years

Objectives:

To derive techniques for separating surface runoff, interflow, and base flow from the hydrograph.

To associate the several components of the hydrograph with corresponding storage retained in the watershed.

To correlate interflow and base flow rates with physical characteristics of agricultural watersheds such as size, shape, stream pattern, soil, geology, etc.; and with basin conditions such as land use and treatment, soil moisture and season.

Need for Study: See 1961 Annual Report.

Design of Experiment and Procedure: See 1961 Annual Report.

Experimental Data and Observations:

Daily discharge hydrographs for Water Year 1963 for Indian River Farms (Fla W-1), Upper Taylor Creek (Fla W-2), Upper Taylor Creek (Fla W-3) and Monreve Ranch (Fla W-4) are plotted in Figures 1, 2, 3, and 4.

Figures 5 and 6 show the mean daily ground water depths below ground surface for watersheds W-2 and W-3 for Water Year 1963. Figure 5 is the average of data from seven well sites, and Figure 6 is the average of two sites.

Figure 7 shows the mean daily depth-below-ground-surface of water tables at the recorder sites on Well Lines "A" and "B" in the Upper Taylor Creek Watersheds.

Figures 8 and 9 are monthly means derived from the period of record data on watersheds W-2 and W-3. Figure 8 shows mean monthly depths of water table below ground surface, low and high months of record, and 24 hour maximum and minimum depths of water tables for Watershed W-2. Figure 9 presents the same data for Watershed W-3.

Figure 10 is a composite figure of Upper Taylor Creek (W-2 and W-3) giving iso-depth lines for a mean year (all season) winter months and summer months, together with water surface contours for the mean year.

Figures 11 through 14 show the daily fluctuation of the artesian piezometric surface in the Indian River Farms drainage for the period 1959-1962. These data were based on two capped artesian wells designated as "North" and "South" wells.

Comments and Interpretations:

An examination of the hydrograph for Indian River Farms Drainage District (Fla W-1) shows the usual fluctuations in flows produced by wasted artesian irrigation water. Sector gate controls on the three outfall canals maintain fairly uniform water levels over the District. A comparison of Figure 1 with figures 2 and 3 will demonstrate the diminishing effect of these controls on the range of maximum and minimum flows. Figures 2 and 3 are hydrographs for Water Year 1962-63, Upper Taylor Creek Watersheds W-2 and W-3. For the first time during the study, rainfall was so distributed in time that storm events occurred after periods of drought and had minimal effect on runoff. This is shown by the narrow range of flows for both watersheds: 2-200 cfs for W-2, and 0-105 cfs for W-3.

Figure 4 illustrates the seepage effect that irrigation water has on runoff during periods of no rainfall. "Irrigation Days" refer to days on which significant pumped irrigation occurred, and usually amounted to about .20 inch per day. An examination of the hydrograph in April, when sustained irrigation during a four-week period occurred with no rainfall, shows that seepage contributes about 1 cfs to runoff. Since this amounts to .006 in./area, it can be estimated that approximately three percent of irrigation water is wasted as runoff. This is conservative inasmuch as runoff was increased in the amount of about 1 cfs instead of diminishing along a normal recession rate.

Figures 5 and 6 show the daily mean water-table depths-below-ground surface for watersheds W-2 and W-3 during Water Year 1962-63. It can be seen that average depths were about 2.5-3.0 ft. for both watersheds. At this depth, there is potential groundwater storage in excess of 3 inches which accounts for the small increments of runoff that occurred as interflow and surface runoff for the total water year.

Figure 7 is a water-year plotting of mean daily water-table depths-below-ground-surface for the two recording gages on well lines "A" and "B". These wells are situated so that recordings are average for a 2,000 ft. reach normal to the stream (1962 Annual Report). Well line "A" is in the upper portion of the watershed and normally reflects influent streamflow patterns. Well Line "B" is in the lower portion of the watershed and reflects effluent streamflow conditions due to the backwater stage of the stream above the newly installed control structure. A comparison of the two parallel well-line plottings shows these drainage and irrigation cycles. The wider range of rise and recession in Well Line "B" (backwater stage influence) is readily apparent. The two lines are seven miles apart, but the peaks and troughs show that rainfall is uniformly distributed over the area, and that rises or falls in the water table reflect the same response to rainfall through the same depths in the soil profile.

Figures 8 and 9 show the mean monthly, the low and high months of record, and the 24-hour maximum and minimum water-table depths-below-ground-surface for Upper Taylor Creek Watersheds W-2 and W-3.

A comparison of Figures 8 and 9 with Figure 10 will fairly well characterize ground-water conditions in the two Upper Taylor Creek Watersheds for the period of record.

Figure 10 demonstrates the mean depth of water table during periods of high evapotranspiration - (March, April, May, June, July, August, Sept., Oct.) and low (November, December, January, February) for this latitude. The #4 component of this composite figure shows the all-season water-surface contours.

It is noteworthy that the upper central portion of the watershed seems to have deeper water tables than other areas. This is attributed to the density of drainage canals, overall land development in the area, and its location in relation to the fall line between marine terraces. A comparison of the water surface contours with watershed topography shows that water tables in the watershed are closely parallel to ground surface regardless of slope.

Figures 11 through 14 show the daily fluctuation of the artesian piezometric surface in the Indian River Farms Drainage District from 1959-1962. These four figures demonstrate the periods of heavy demand during the year, and the shortening of use in wet years (1960) and extended use in drought years (1961-62). The expanded use of artesian water in the area is very clearly shown by a close comparison of these figures. From 1959 until 1962 there has been a steady decline in piezometric surface elevation for the area. In 1959 this elevation (height above well outlet) was about 19 ft. It has steadily declined until it stands at about 14 ft. during 1962.

The two wells are situated in relation to each other elevation-wise such that the actual piezometric surfaces would be approximately the same if the reference datum were elevation rather than well outlet. This would indicate that the two wells are faily well representative for the area.

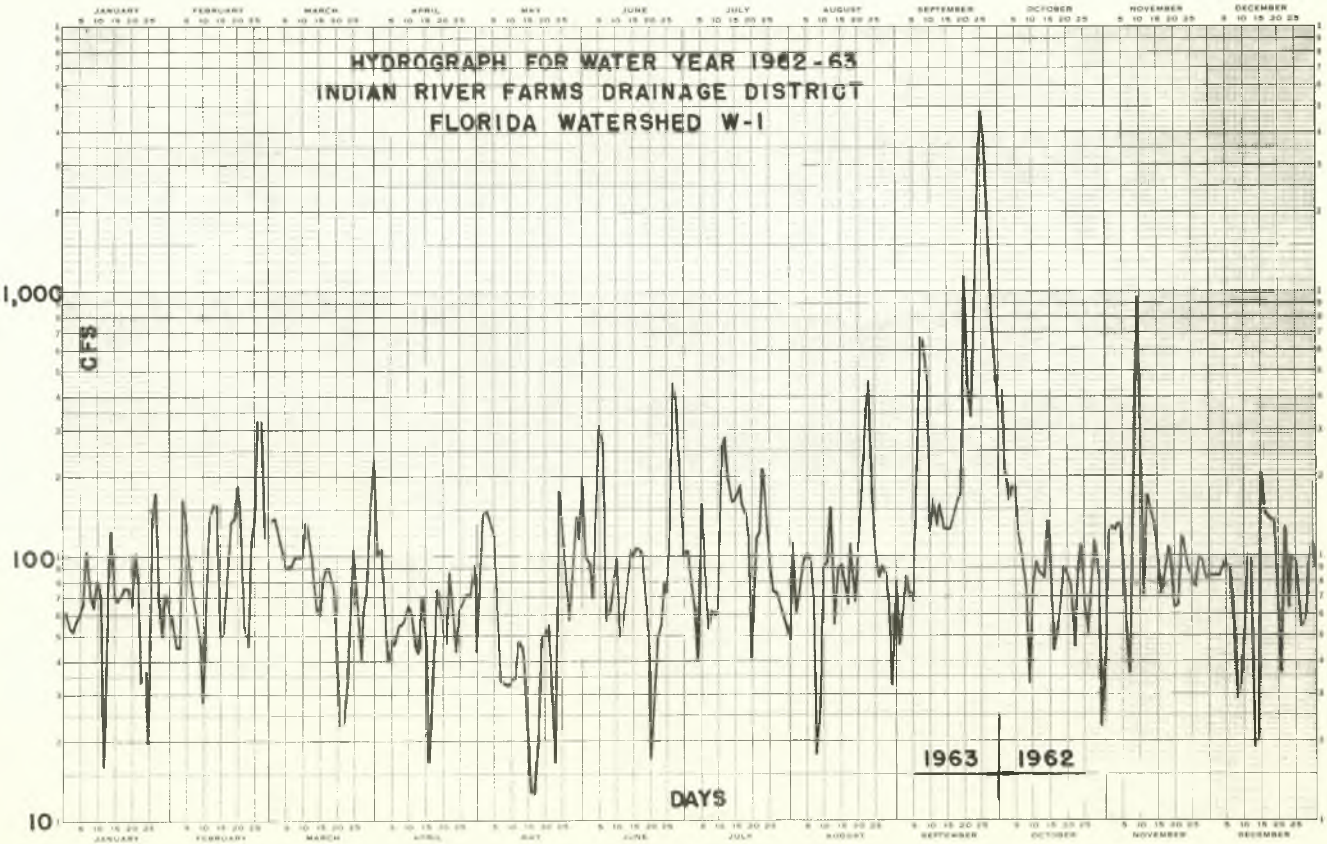
Summary:

Annual daily mean plottings of flow rates from 4 experimental watersheds show the variation in rates of runoff as determined by: area of watershed, degree of development, contributions from pumped and artesian-supplied irrigation, and natural-against-artificial control of runoff.

Ground-water depths as determined from monthly means, monthly maximums and minimums, and 24-hour maximum and minimum are shown graphically in combination with iso-depth contours for an average year, average summer, and average winter for watersheds W-2 and W-3.

An analysis of the hydrograph for Monreve Ranch indicates that approximately 1 cfs runoff is caused by seepage from pumped irrigation water during rainfree periods.

Daily plottings of piezometric surface elevations show a decline of approximately 5 ft. in the artesian pressure head in the Indian River Farms Drainage District between 1958 and 1963 (1959-1962).



HYDROGRAPH FOR WATER YEAR 1962-63
INDIAN RIVER FARMS DRAINAGE DISTRICT
FLORIDA WATERSHED W-1
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
5 10 15 20 25
1,000
100
10
CFS
DAYS
1963
1962

FIG. 1

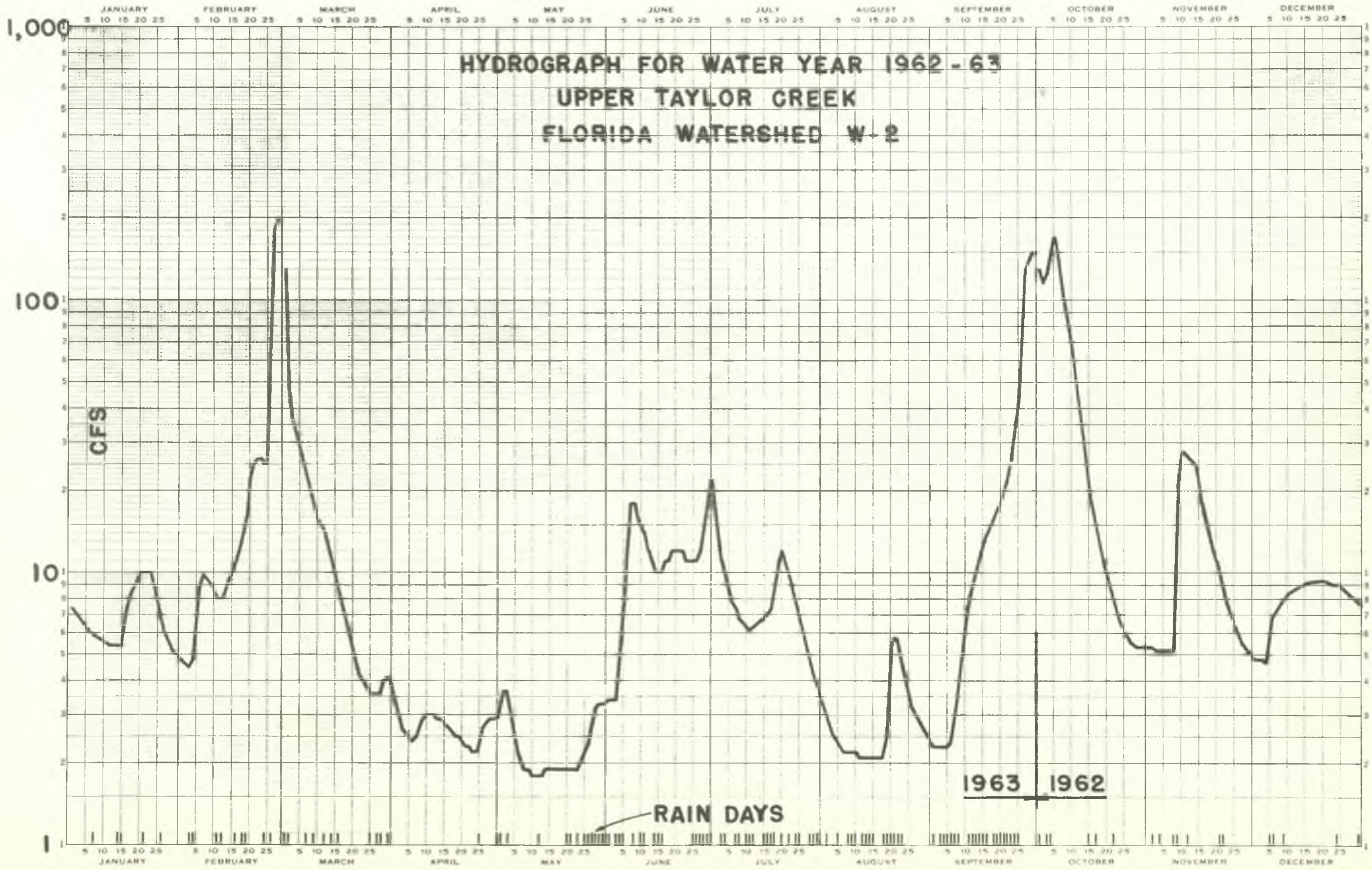

HYDROGRAPH FOR WATER YEAR 1962 - 63
UPPER TAYLOR CREEK
FLORIDA WATERSHED W-2
CFS
1,000
100
10
1
RAIN DAYS
1963
1962
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
5 10 15 20 25

FIG. 2

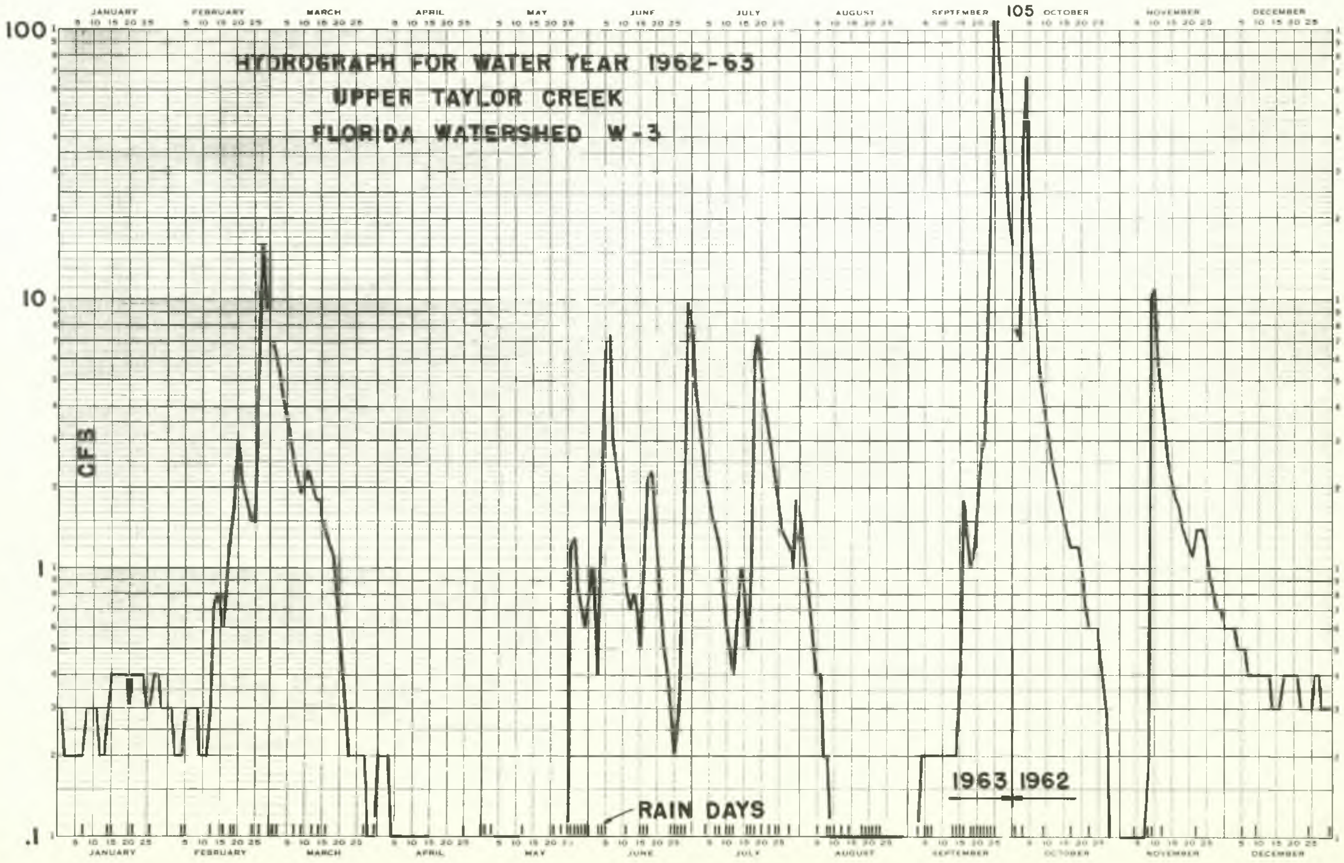

HYDROGRAPH FOR WATER YEAR 1962-63
UPPER TAYLOR CREEK
FLORIDA WATERSHED W-3
CFS
100
10
1
.1
105
RAIN DAYS
1963
1962
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
5 10 15 20 25

FIG. 3

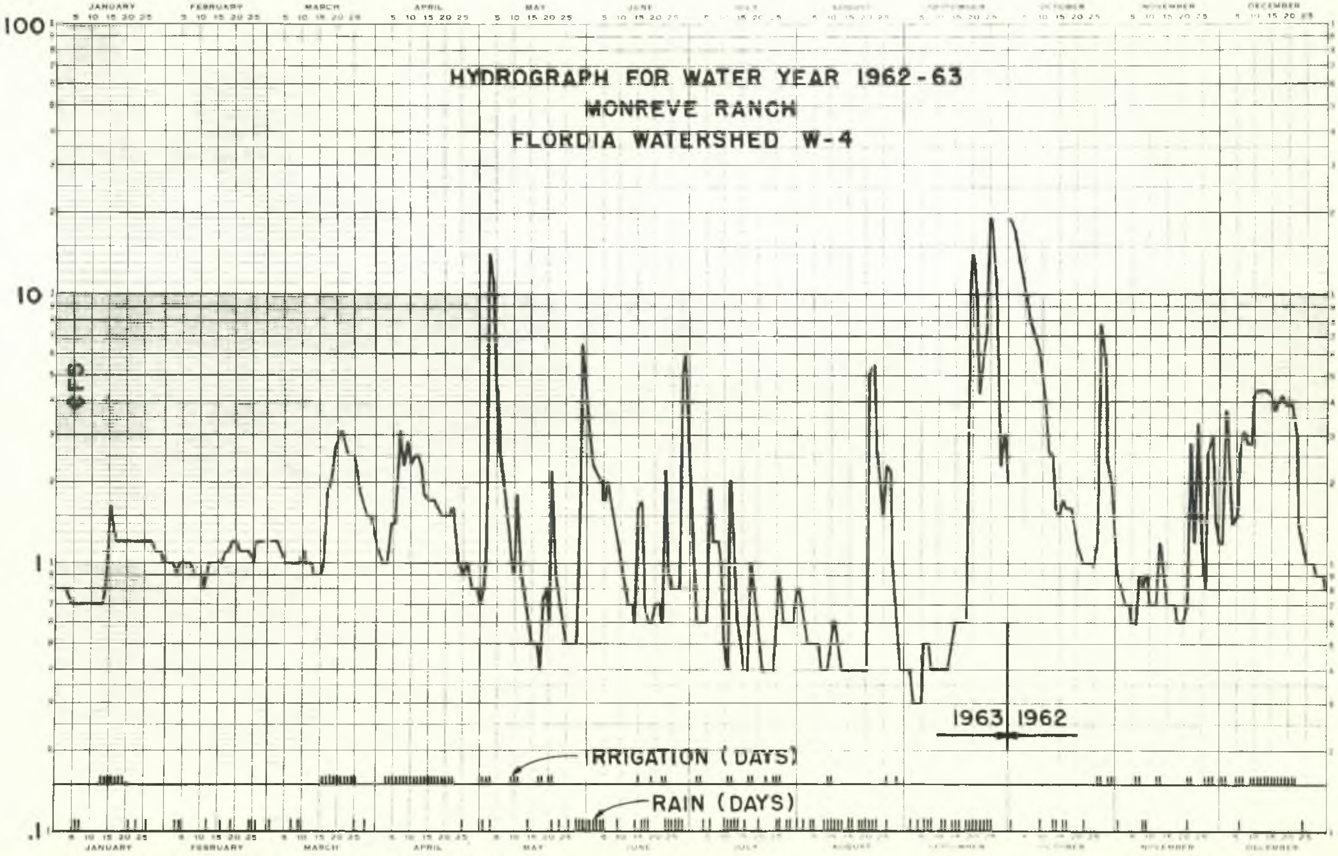
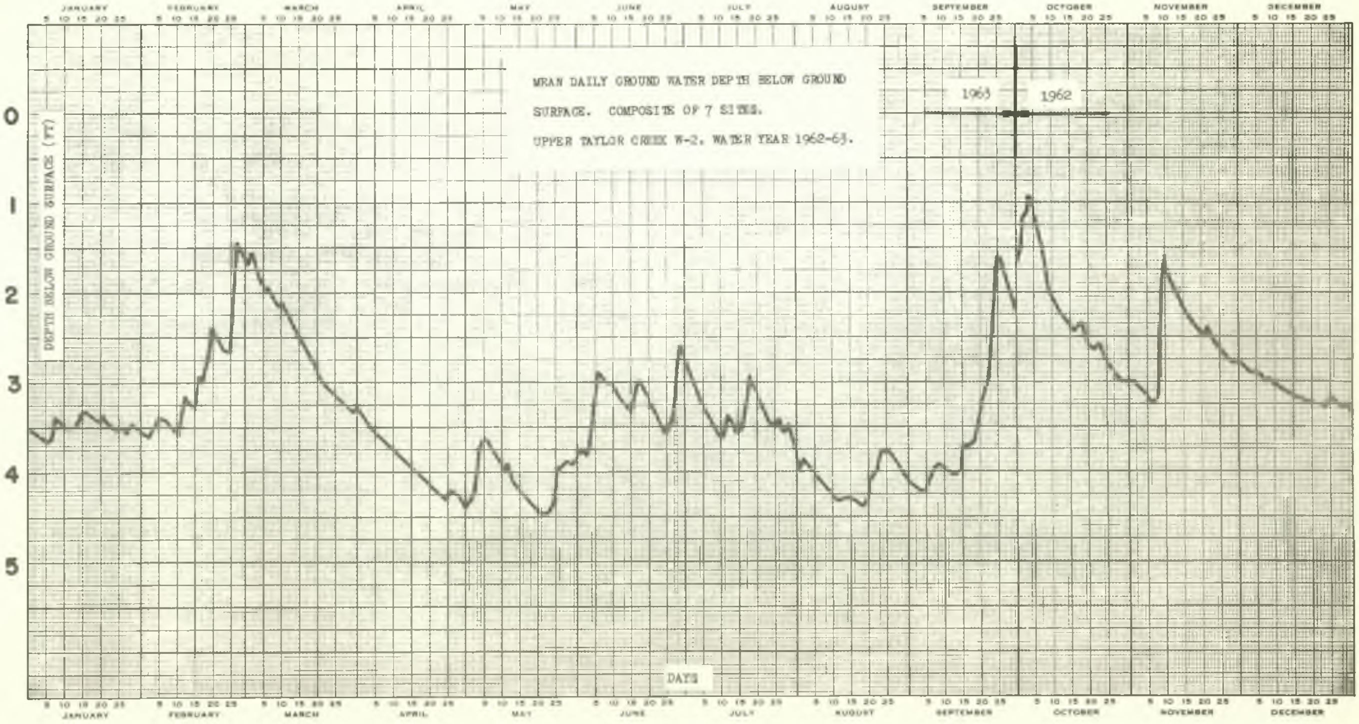

HYDROGRAPH FOR WATER YEAR 1962-63
MONREVE RANCH
FLORDIA WATERSHED W-4
CFS
100
10
1
.1
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
5 10 15 20 25
1963
1962
IRRIGATION (DAYS)
RAIN (DAYS)

Fig. 4



MEAN DAILY GROUND WATER DEPTH BELOW GROUND SURFACE. COMPOSITE OF 7 SITES. UPPER TAYLOR CREEK W-2. WATER YEAR 1962-63.

FIG. 5

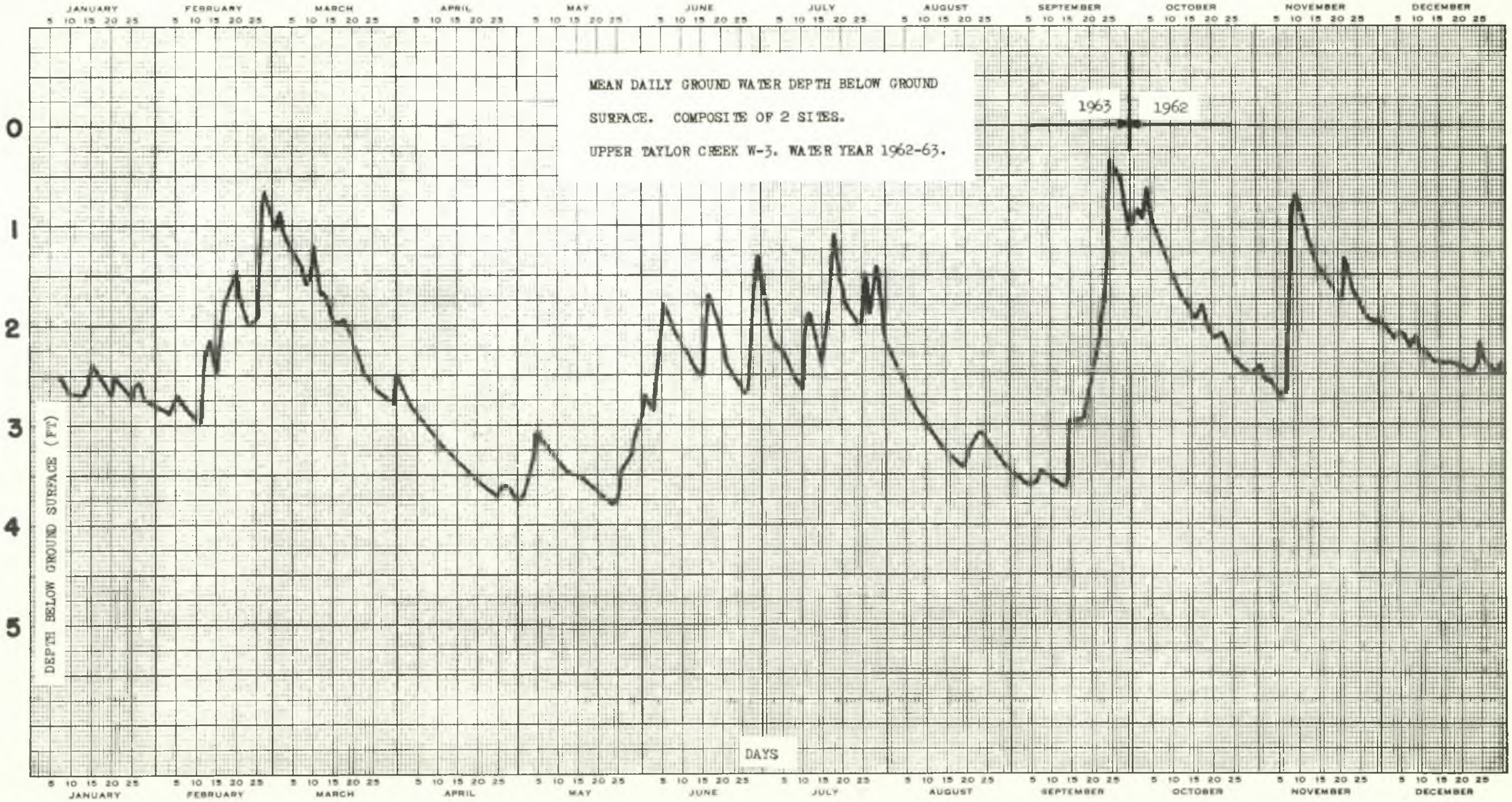

MEAN DAILY GROUND WATER DEPTH BELOW GROUND SURFACE. COMPOSITE OF 2 SITES. UPPER TAYLOR CREEK W-3. WATER YEAR 1962-63.

FIG. 6

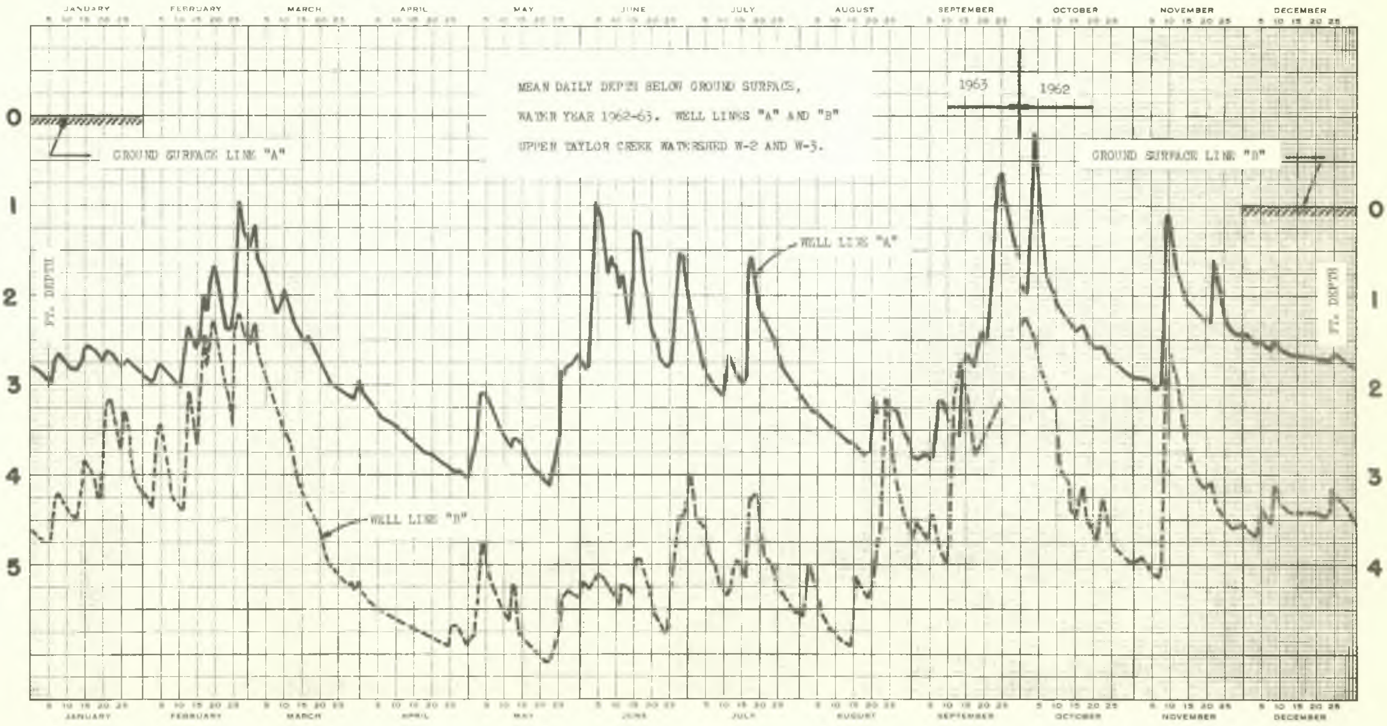

MEAN DAILY DEPTH BELOW GROUND SURFACE,
WATER YEAR 1962-63. WELL LINES "A" AND "B"
UPPER TAYLOR CREEK WATERSHED W-2 AND W-3.
1963
1962
GROUND SURFACE LINE "A"
GROUND SURFACE LINE "B"
WELL LINE "A"
WELL LINE "B"
FT. DEPTH
FT. DEPTH
0
1
2
3
4
5
0
1
2
3
4
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
5 10 15 20 25

FIG. 7

GROUND WATER STAGES UPPER TAYLOR CREEK WATERSHED FLA. W-2, 1959-1962

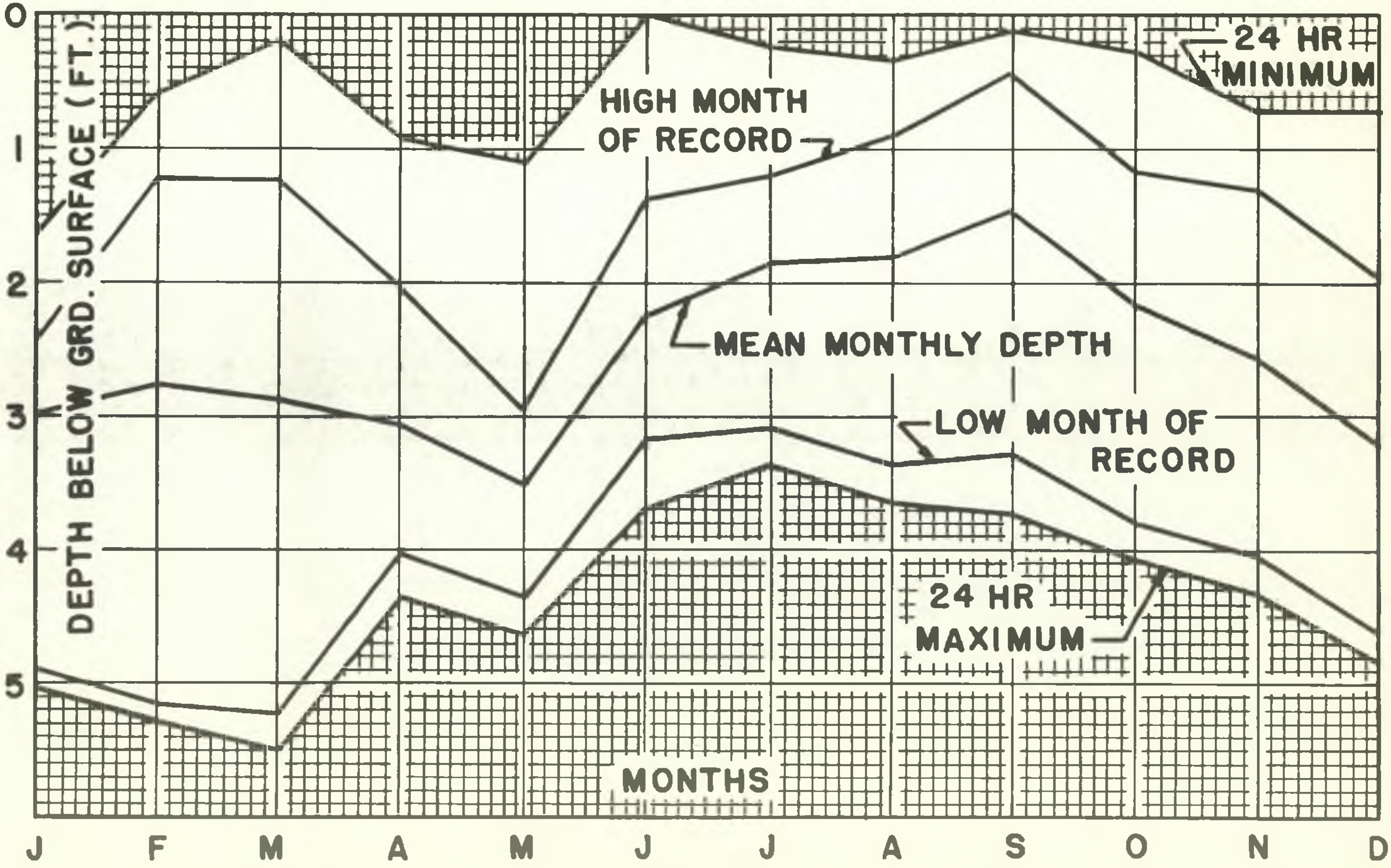


FIG. 8

GROUND WATER STAGES UPPER TAYLOR CREEK WATERSHED
FLA. W-3, 1959 - 1962

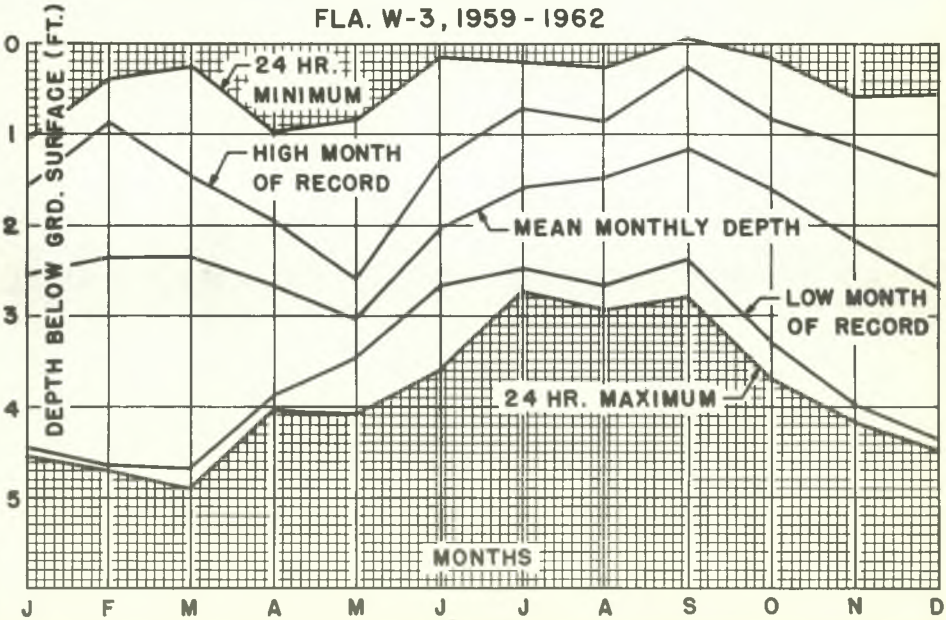
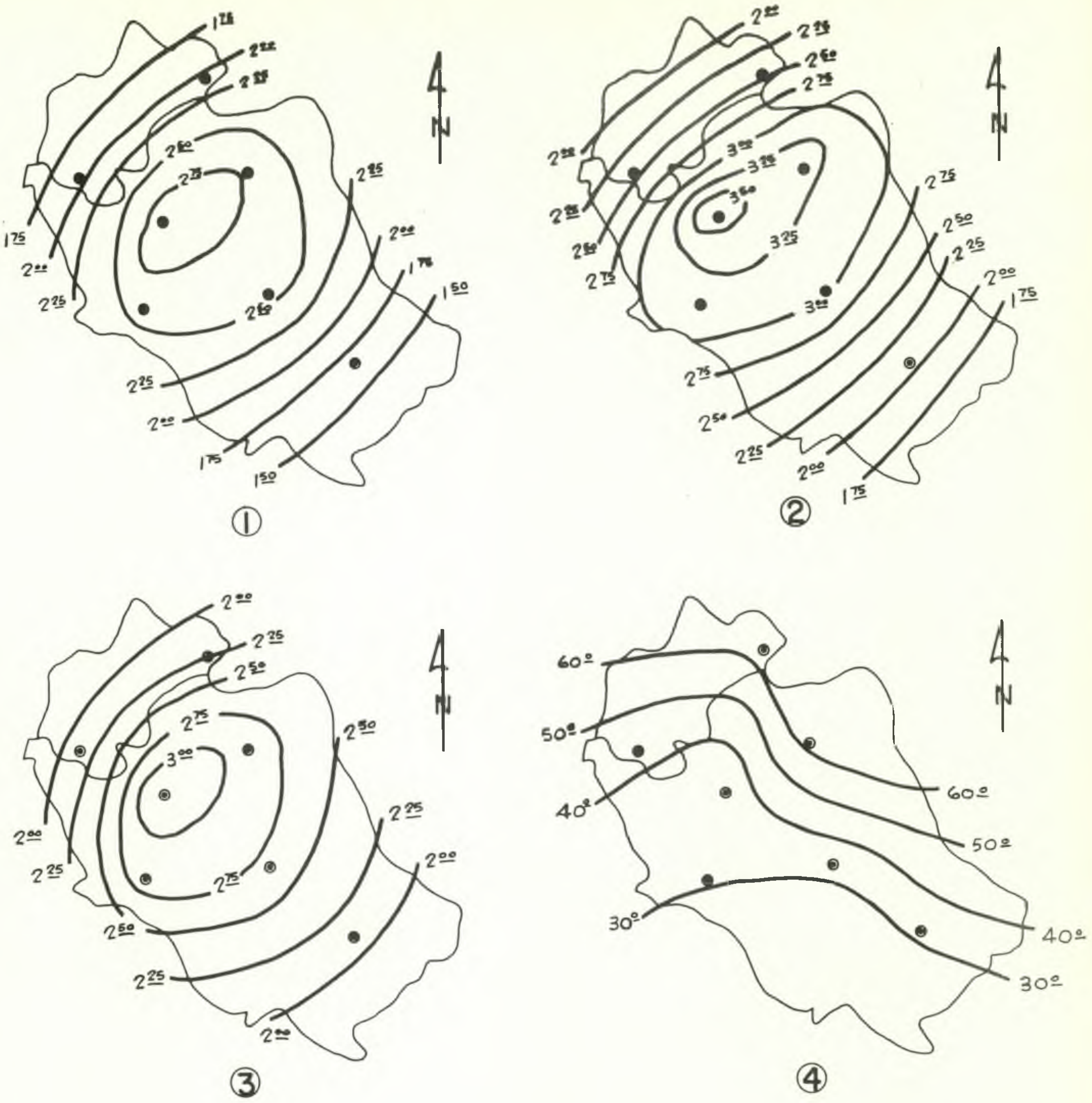


Fig. 9



MEAN GROUND WATER DEPTHS
UPPER TAYLOR CREEK - FLA. W-2, W-3
1959 - 1962

◉ - WELL SITES

① AVG. DEPTH BELOW GROUND SURFACE - MAR., APR., MAY, JUNE, JULY, AUG., SEPT., OCT.
② AVG. DEPTH BELOW GROUND SURFACE - JAN., FEB., NOV., DEC.
③ AVG. DEPTH BELOW GROUND SURFACE - ALL SEASONS
④ WATER SURFACE CONTOURS (FT. MSL) - ALL SEASONS

FIG. 10

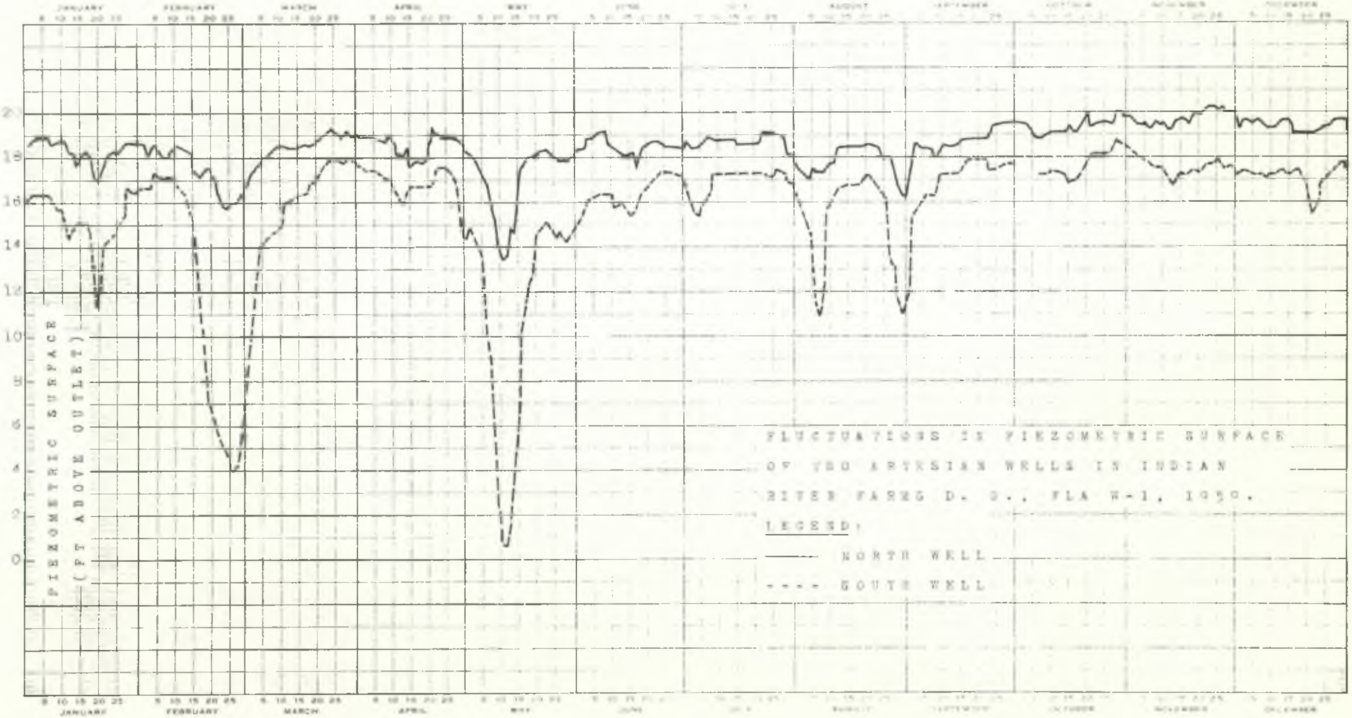
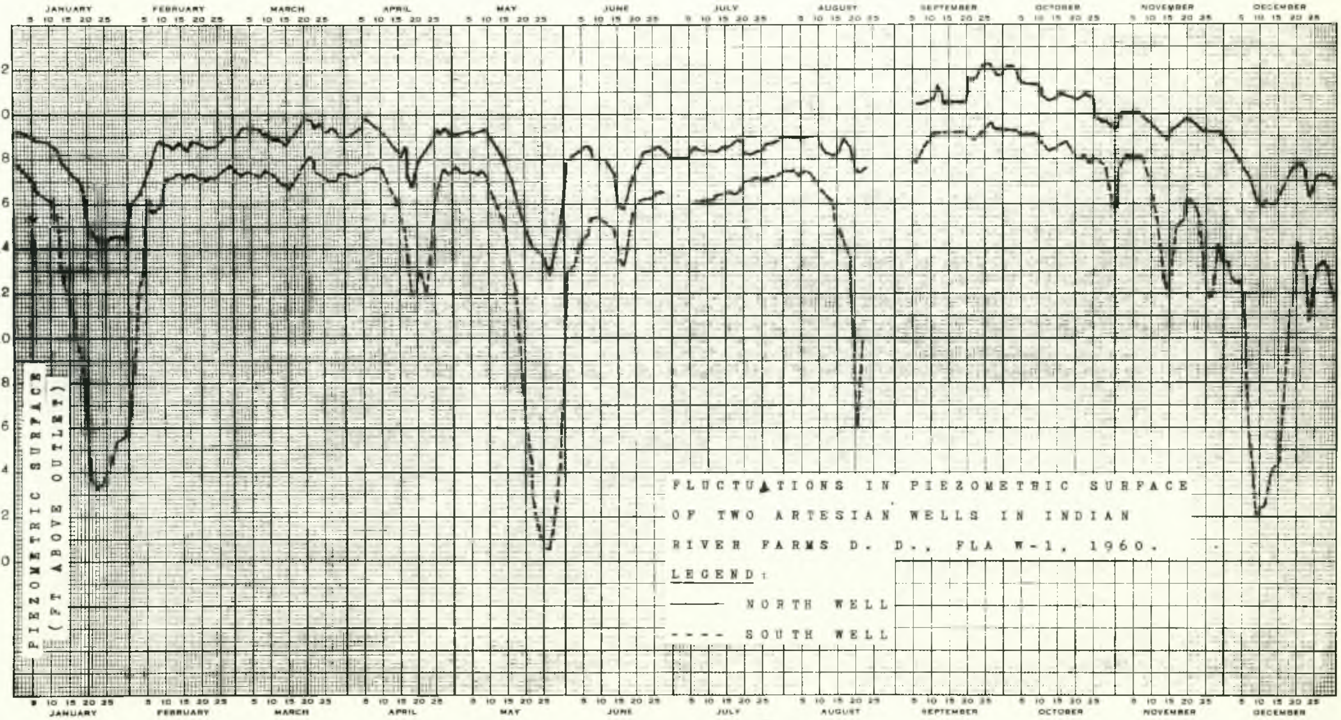

FLUCTUATIONS IN PIEZOMETRIC SURFACE OF TWO ARTESIAN WELLS IN INDIAN RIVER FARMS D. D., FLA W-1, 1950.

FIG. 11



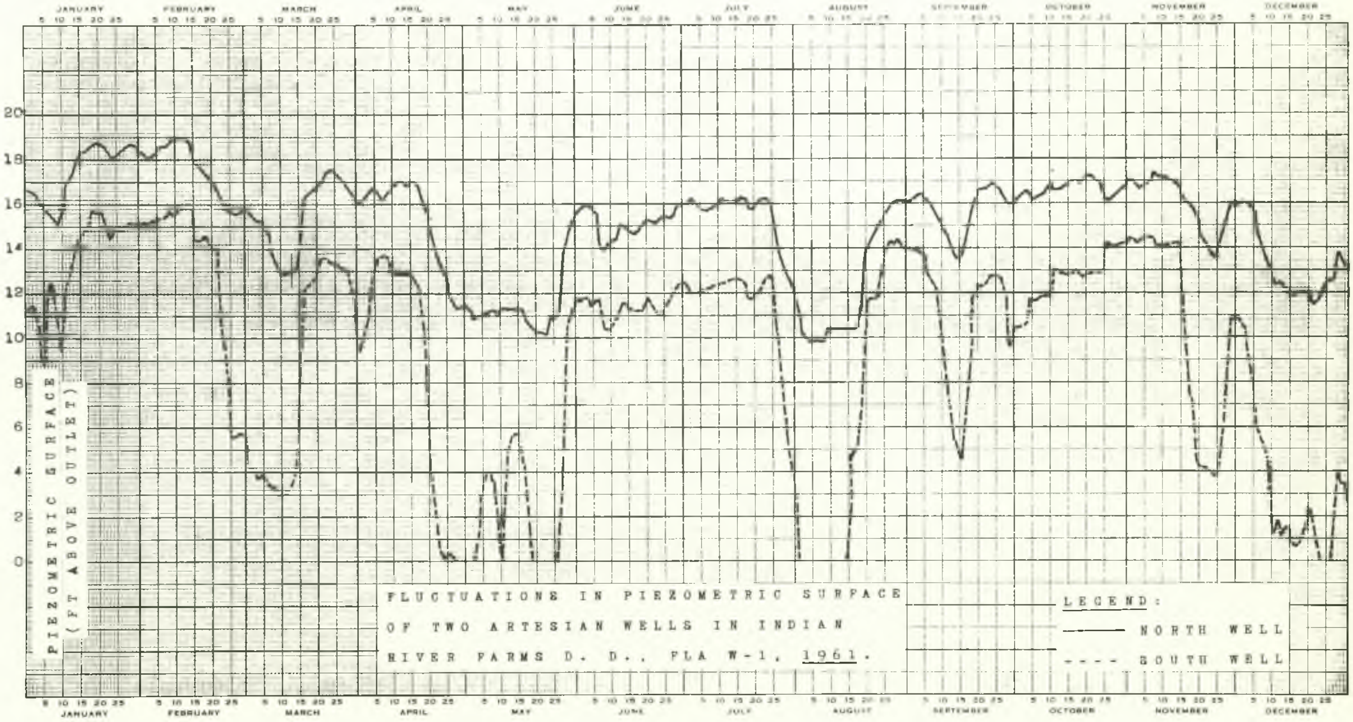
FLUCTUATIONS IN PIEZOMETRIC SURFACE OF TWO ARTESIAN WELLS IN INDIAN RIVER FARMS D. D., FLA W-1, 1960.

LEGEND:

—— NORTH WELL

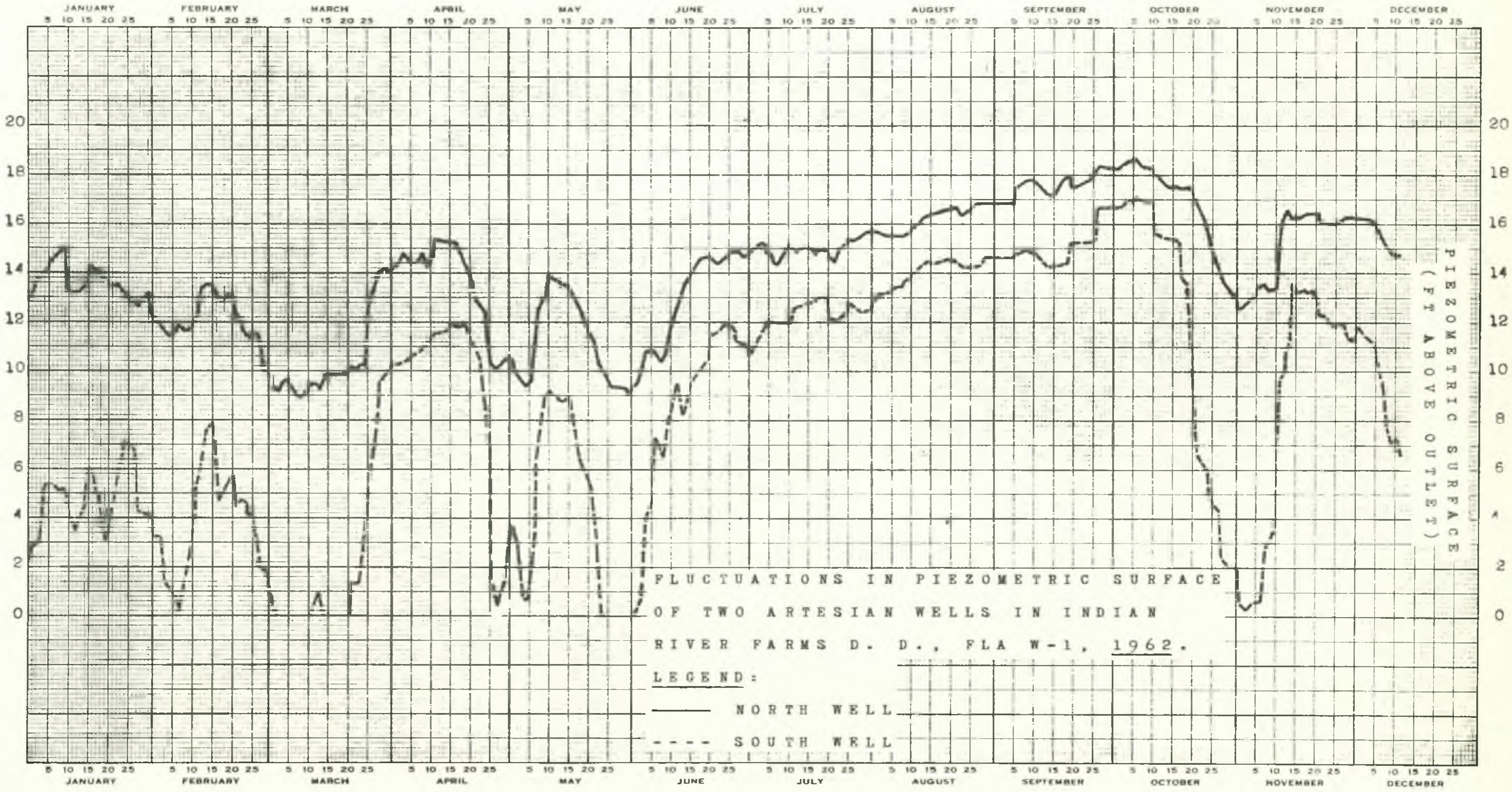
---- SOUTH WELL

FIG. 12



FLUCTUATIONS IN PIEZOMETRIC SURFACE OF TWO ARTESIAN WELLS IN INDIAN RIVER FARMS D. D., FLA W-1, <u>1961</u>.

FIG. 13


FLUCTUATIONS IN PIEZOMETRIC SURFACE OF TWO ARTESIAN WELLS IN INDIAN RIVER FARMS D. D., FLA W-1, 1962.

LEGEND:

—— NORTH WELL

- - - - SOUTH WELL

FIG. 14

RATES AND AMOUNTS OF RUNOFF AS AFFECTED BY CLIMATE, CHARACTERISTICS AND CONDITIONS OF AGRICULTURAL WATERSHEDS

Line Project No.: SWC 2-b1, 2-b4 Code No.: FLA PL-6

Prepared by: W. C. Mills and W. H. Speir

Location of Study: Central and Southern Florida

Personnel Involved:
ARS - W. C. Mills, W. H. Speir, J. C. Stephens, J. H. Howerton, Jr.
Fla. Agr. Exp. Sta. - F. H. Thomas
Central & So. Fla. Flood Control Dist. - J.P. Clawson, R.L. Taylor

Date of Initiation: June 12, 1959

Expected Duration: Continuing

Objectives:

To derive the rainfall runoff relations as affected by climate, characteristics, and conditions of agricultural watersheds as applied to:

(a) Total annual volume of runoff with respect to distribution in time and to type of flow.
(b) Developing procedures for determining rates of storm runoff.
(c) Deriving methods for estimating the frequency of excessive or deficient volume and related rates of runoff.

Need for Study: See 1961 Annual Report.

Design and Procedure: See 1961 Annual Report.

Experimental Data and Observations:

1. Rainfall and runoff data together with information on soil moisture storage and depletion rates for the entire periods of record from Florida experimental watersheds W-1, W-2, and W-3 were used in a study of the Cypress Creek runoff formula. Figure 2 gives yearly maximum 24-hour runoff rates and relation to watershed size. Figure 3 gives these yearly runoff events as represented by corresponding "C" values and their relation to causative rainfall excess amounts.

2. Drought conditions during most of 1963, coupled with the occurrence of storm rainfall on almost record-low water tables created new records of low runoff on all of the experimental watershed but the artesian irrigated W-1. Assuming the previous limits established for the various types of flow for the experimental watersheds, a breakdown of flows for the period of record is shown in Table I. The runoff data for Fla W-1 is known to be provisional and subject to change and will be included in next year's report.

Table II gives a summary of the annual precipitation, runoff, and ET as estimated from precipitation minus runoff relation corrected for basin storage.

Figures 7, 8, 9, and 10 show the accumulative ratio of runoff to rainfall for Watersheds W-1, W-2, W-3, and W-4, with their graphic-ratio line for the periods of record. On W-4, the period of record being short and covering both wet and dry years, no characteristic ratio has yet become apparent. Figures 11 and 12 are flow duration curves for W-2 and W-3 derived from flow distributions for the period 1955-1962.

Comments and Interpretations:

1. Cypress Creek Drainage Formula Studies

Using data from three experimental watersheds in south Florida, a study was made to determine the suitability for drainage design of the Cypress Creek formula ($Q = C M^{5/6}$) and to develop a relation to provide for selection of C values based on probability of occurrence of design storm. In this formula, Q is the peak 24-hour runoff rate for a storm event; M is drainage area in square miles; and C is a coefficient.

This study was reported in a paper by John C. Stephens and W. C. Mills entitled "Use of the Cypress Creek Formula to Estimate Runoff in the Southern Coastal Flatwoods", which was presented at the national A.S.A.E. meeting in Chicago, December 11, 1963. The report as it appears here is a condensed version of that paper.

The three watersheds from which data were collected--Florida Watersheds W-1, W-2, and W-3, are generally representative of soil and slope conditions in the Southern Florida Flatwoods and can be considered characteristic of agricultural watersheds of this area ranging in size from 15 to 100 square miles. They also represent decidedly different stages of drainage and agricultural development. These locations are judged to be similar in many ways to the Gulf and Atlantic Coast Flatwoods, and level sandy parts of the Southern Coastal Plains. Figure 1 gives location of the experimental watersheds in relation to applicable major land resource areas.

Storm events causing annual maximum 24-hour runoff rates were used as a basis in this study of the Cypress Creek drainage formula. These runoff rates and dates of occurrence were found from an 11-year record on Indian River Farms Drainage District (W-1) and six-year records on the two Taylor Creek watersheds (W-2 and W-3).

In comparing runoff rates for the three watersheds, it was first necessary to obtain the rainfall excess for each storm event.

Soil moisture was found to decrease during rain-free periods in accord with the equation $I_t = I_o K^t$, where I_o is the initial amount of water in storage, I_t is the reduced amount t days later, and K is a recession factor. Values of $K = 0.96$ for winter months and 0.94 for other months were obtained from observed ground water recession curves and laboratory-determined desorption curves. Water stored in the soil was then calculated on a daily basis, assuming the water table was at ground surface with 5 inches of evaporable water in storage 30 days prior to storm runoff. This assumption was, of course, not strictly true in most cases; however, over a 30-day period the effect of this error was negligible. The rainfall excess was found by subtracting water storage available in the soil at the beginning of a storm event from the total storm rainfall.

A graphical analysis of the equation $Q = C\ M^x$ was made by plotting on log-log graph paper peak 24-hour runoff rates against watershed areas for annual maximum storms. Figure 2 shows the resultant regression equations fitted to peak daily flows from rainfall excess amounts of 7, 5, and 2 inches. Corresponding individual total storm-rainfalls were approximately 10, 8, and 5 inches. Since most of the storms had durations of about 24 hours, such events were estimated from U.S. Weather Bureau rainfall frequency charts to occur on an average of once in 50, 10, and 2 years at the watershed sites.

The best fitting equation $Q = 131\ M^{.83}$ was obtained from peak 24-hour runoff following the largest storms of record. The two lower lines, $Q = 115\ M^{.79}$ and $Q = 97\ M^{.63}$, were located by interpolation for computed rainfall excess amounts of 5 and 2 inches.

The validity of the exponential term $M^{5/6}$ in the Cypress Creek Formula for the 50-year frequency storm is indicated by the excellent fit of the regression line $Q = 131\ M^{.83}$. The trend shown by the interpolated regression lines for lesser storms connotes a decreasing exponent for decreasing storm size. However, the actual plotted points give too much scatter for these two regression lines to be significantly meaningful in contrast to the good fit of the upper-envelope line of Figure 2.

It is therefore considered prudent to accept the upper-enveloping line $Q = 131\ M^{5/6}$ as the proper form for expressing flow from these watersheds. Thus, it is recommended that the exponential value of 5/6 be retained as a constant, and the value of the coefficient C be adjusted to give proper runoff rates for lesser storms. That is to say, the formula $Q = C\ M^{5/6}$ will give reasonably accurate runoff values for watersheds of different size with appropriate values of C.

A method for selecting C values was developed from experimental watershed data by evaluating the coefficient C in terms of rainfall excess, and then relating both to probable storm recurrence periods.

Values of the coefficient C for annual maximum 24-hour runoff events were obtained by direct substitution of these runoff rates and corresponding watershed areas into the Cypress Creek formula. These C values were then plotted as a function of rainfall excess. (See Figure 3). Based on 20 runoff events, the regression equation $\hat{y} = 16.24 + 14.75\ x$ was computed by the method of least squares. Here $\hat{y}$ is the predicted value of the coefficient C, and x the rainfall excess (inches) for individual storm periods.

The coefficient of regression r, coefficient of determination r^2, and the 50 and 95 percent confidence levels were also determined and are shown on the graph.

The probability of occurrence or return frequency of rainfall excess, shown superimposed on the x-axis in Figure 3, was established from the relation of rainfall excess to total storm-rainfalls and the statistical frequency of the latter. Available storage in the soil prior to rainfall events was assumed to be three inches and this amount was added to rainfall excess to obtain corresponding total rainfall. This available storage naturally varied somewhat, depending on antecedent rainfall, but the 3-inch value gave best and surprisingly good fit. Probability of occurrence for the vicinity of experimental watersheds in South Florida of total 24-hour rainfall was then obtained from U. S. Weather Bureau rainfall frequency charts.

This method of obtaining return frequency of various size runoff events from storm frequencies was checked by the Hazen Method; that is, peak 24-hour runoff rates for maximum annual storm events were plotted on logarithmic, normal-probability paper. Resulting annual flood frequency lines indicated the size flood expected for the various probabilities of occurrence. Values of C computed by the two methods compared favorably for the 11-year Vero Beach (W-1) record, but were very different for the 6-year records of both Taylor Creek watersheds (W-2 and W-3). Since Benson (M. A. Benson. Evolution of Methods for Evaluating the Occurrence of Floods. U.S. Geol. Sur., W.S. Paper 1580-A, Washington, D. C., 1962.) found a minimum record of 12 years is needed to establish the mean-annual flood (return frequency of 2.33 years) within an accuracy of 25 percent, at the 95 percent confidence level, it is no surprise to find results from the 6-year records at variance. However, when the 6-year Taylor Creek records were normalized by using the maximum runoff of 1956 as the 50-year event (as established on nearby streams with longer records), flow frequencies were reasonably in line with the Vero Beach results, and consequently with the concomitant C values shown on the graph in Figure 3, derived purely from rainfall frequency.

In drainage design, the degree of flood protection planned is usually based upon economic considerations and is directly related to the probability of occurrence of a design storm. Once the degree of protection and design storm probability of occurrence have been decided upon, values of the coefficient C can then be determined from the relations of Figure 3 for areas where soil and rainfall conditions are similar to those at the experimental sites.

The prediction equation of Figure 3, which involves only C values and rainfall excess amounts, can also be applied to other flatwoods areas that differ from the experimental area in soil storage and rainfall probabilities. The relationship showing probability of occurrence of various rainfall excess amounts would have to be adjusted for these other areas. Such adjustment would require a knowledge of occurrence probability of various 24-hour rainfall amounts and storage to be subtracted from total rainfall. Local soil conditions would determine available storage; however, for much of the flatwoods areas soil storage would be expected to be approximately the same as that of the experimental watersheds. The occurrence probability of various 24-hour rainfall amounts can be obtained from U.S.W.B. rainfall frequency charts, such as Figure 4.

Figure 4 is an isopluvial map, adapted from the U. S. Weather Bureau (D. M. Hershfield. Rainfall Frequency Atlas of the United States. Tech. Paper No. 40, U.S. Dept. of Commerce, Weather Bur., Washington D.C., 1961.), which shows expected 10-year, 24-hour rainfall for the region under discussion. The experimental watersheds are seen to be in an area of medium high rainfall intensity between the Atlantic and Gulf Coast regions. From this and similar isopluvial maps the 2-, 10-, 25-, and 50-year frequency 24-hour rainfalls at the experimental sites were found to be 4.75, 7.50, 8.50, and 10 inches; from which the inches of rainfall excess of Figure 3 have been related by abstracting the 3 inches of infiltration storage normally available.

The 10-year isopluvial map, Figure 4, shows maximum 24-hour rainfalls for the lower Gulf Coast are several inches higher, and for the South Atlantic Coast several inches lower than at the Florida experimental sites. The same trend holds for storms ranging from the 2- to 100-year return frequency. Therefore, other conditions being equal, values of the coefficient C in the Cypress Creek formula would normally increase along the lower Gulf Coast and decrease along the South Atlantic Coast in accord with differences in the probable maximum 24-hour storm rainfall.

To illustrate, and adopting a 100-square-mile watershed as standard for comparative purposes, the 24-hour flow rates for the Southern Florida Flatwoods may be computed from C values in Figure 3 for the mean annual $Q_{2.33}$; the 10-year Q_{10}; and the 25-year Q_{25} frequency as follows:

$$Q_{2.33} = 44 \times 100^{.833} = 2{,}040 \text{ cfs/day}$$
$$Q_{10} = 83 \times 100^{.833} = 3{,}850 \text{ cfs/day}$$
$$Q_{25} = 98 \times 100^{.833} = 4{,}550 \text{ cfs/day}$$

For the same size watershed in the lower Coastal Plains of North Carolina, the 2-year isopluvial line is approximately 1 inch less than at the Florida sites; the 10-year line (Figure 4) is 1½ inches less, and the 25-year line also 1½ inches less. When infiltration capacity is the same, the corresponding C values are found from Figure 3 by shifting toward lower readings on the x-axis by 1, 1½, and 1½ inches to give the resulting computed flows:

$$Q_{2.33} = 30 \times 100^{.833} = 1{,}390 \text{ cfs/day}$$
$$Q_{10} = 61 \times 100^{.833} = 2{,}830 \text{ cfs/day}$$
$$Q_{25} = 76 \times 100^{.833} = 3{,}530 \text{ cfs/day}$$

For a similar watershed along the Gulf Coast in Northwest Florida, near the Alabama State Line, where the 2-, 10-, and 25-year, 24-hour storm rates are increased by 1¼, 2, and 2½ inches, the C values are found by advancing these amounts on the x-axis, projecting an upward, vertical line to meet the regression line, and then a horizontal line to the y axis to obtain C. Computed flows are:

$$Q_{2.33} = 61 \times 100^{.833} = 2{,}830 \text{ cfs/day}$$
$$Q_{10} = 112 \times 100^{.833} = 5{,}280 \text{ cfs/day}$$
$$Q_{25} = 137 \times 100^{.833} = 6{,}360 \text{ cfs/day}$$

Thus, by simply adjusting for differences in rainfall intensity, the predicted flow rates for the Atlantic Coastal Flatwoods are about 75 percent, and for the Gulf Coastal Flatwoods about 140 percent of those indicated for a 100-square-mile watershed in the Southern Florida Flatwoods in the Lake Okeechobee-Vero Beach area.

As a check, flow rates computed by the Cypress Creek approach were compared with those computed by the regional flood frequency method, developed by the U.S. Geological Survey (T. Dalrymple. Flood Frequency Analyses. U.S. Geol. Sur. W.S. Paper 1543-A, Washington, D.C. 1960)

Essentially the regional flood frequency method applies statistical and hydrologic theory to past flood records of selected stream basins to define: (a) Curves relating the mean annual, $Q_{2.33}$, index flood to basin characteristics, and (b) composite curves relating discharge, expressed as a dimensionless ratio, of the index flood to recurrence intervals for streams in certain areas. That is, specific historical stream records are generalized to represent the flood regime for broad, related hydrologic areas. This method is completely different from the Cypress Creek approach.

The flow rates for the standard 100-square-mile basin calculated by the regional flood frequency method are shown for the Coastal Plains of North Carolina, South Carolina, Georgia, Florida, and Alabama in Table 1. These were computed from material in individual state reports, which follow* plus correspondence (Personal communication, A.E. Johnson, Dist. Engr., U.S. Geol. Sur., Water Resources Div., Surface Water Br., Columbia, S.C., Sept. 1963), and combined as shown.

*Peiree, L.B. Floods in Alabama - Magnitude and Frequency. Geol. Sur. Cir. 342, Washington, D.C., 1954
Forest, W.E., and Speer, P. R. Floods in N.C. - Magnitude & Frequency. USGS open file report, Raleigh, N.C., 1961
Bunch, C. M. & McGlone, P. Floods in Ga. - Magnitude and Frequency, USGS open file report, Atlanta, Ga. 1962
Pride, R. U. Floods in Fla. - Magnitude and Frequency, USGS open file report, Ocala, Fla., 1958

The 18 individual areas delineated in Figure 5 represent separate hydrologic areas, considered homogeneous because of reasonably common flood characteristics. They are defined on a broad-scale, drainage-basin pattern, and while they are generally related to major physiographic provinces and land resource areas, it is not uncommon for them to cut across the lesser geomorphological units.

For comparison later with examples worked out by the Cypress Creek method, the mean annual flood, $Q_{2.33}$; the probable 10-year flood, Q_{10}; and the probable 25-year flood, Q_{25}; still for a 100-square-mile watershed, are shown for each area. However, these are maximum instantaneous flows, whereas the Cypress Creek formula estimates the maximum 24-hour flow rate, so the two may not be strictly comparable.

The amount the instantaneous peak rate exceeds the 24-hour rate depends on watershed size and storm magnitude. For large watersheds and high-volume storms the two rates are not much different, but the spread becomes greater as watershed size and 24-hour storm intensities decrease. The effect of watershed size is shown in the graph, Figure 6, for the several previously described experimental watersheds, plus an additional nearby watershed of approximately 6 square miles with a short-term record. In this case the 75-square-mile Vero Beach watershed, drained by an interconnected network of ditches through three main outfall canals, has been arbitrarily divided into three equal basins of 26 square miles each. The resulting graph in Figure 6 gives a smooth curve with increasing spread of the 95 percent confidence limits as the watersheds become smaller.

The ratio of the instantaneous to the 24-hour peak rate for the 100-square-mile watershed has been accepted, from the curve, as 1.14. This value is used in Table 2 to revise upward the Cypress Creek rates previously computed for the South Florida, Northwest Florida, and North Carolina areas, for comparison with those computed by the regional flood frequency method.

The ratios in Table 2 show reasonably favorable comparison between the two methods except for the North Carolina area, where the Cypress Creek approach gave double the flows estimated by the regional flood frequency method. While data are not available to calculate the coefficient of variation using the regional flood frequency method, the appreciable difference in computed flows frequently shows between two adjacent downstream hydrologic areas, separated only by a state line, illustrates the wide range to be expected.

In general, the two methods are judged to give comparable results for most Coastal Plain areas in Florida, Georgia, and Southeast Alabama within the limits of chance inherent with hydrologic variables. On the other hand, the extreme disparity indicated by the ratio of computed flows for the Coastal Plains of North Carolina and South Carolina shows a significant difference between the two methods. The differences could result from a greater infiltration capacity in the Carolinas as compared to Florida. Or, it may result from the relatively few small agricultural watershed records available for flood frequency analyses, which could give biased results. Other variables could, of course, contribute, but in view of the relative similarity of the coastal flatwoods regions, plus the high coefficient of determination, $r^2 = .82$ between flood flows and excess rainfall, the most probable explanation is either (a) a meaningful difference in rainfall excess between the Southern Florida and North Carolina Flatwoods, or (b) a scarcity of stream-flow records for analyses in the Coastal Plains of the Carolinas. Further studies are needed to clarify these differences and establish the most accurate method for computing flood peaks in these areas.

2. Flow Components and Runoff-Rainfall Ratios

Table I gives the breakdown, by years, of base flow, interflow, and overland flow (surface runoff) as defined within the limits characteristic of watersheds Fla. W-1, W-2, and W-3. Florida W-4, Monreve Ranch, has not been included due to the fact that pumped irrigation during dry periods hinders the preparation of a base storage curve for the upper limit of base flow. This pumped irrigation water sustains flows by seepage during normal rainfree flow recessions.

The runoff data furnished by the U.S. Geological Survey from Fla. W-1, Indian River Farms Drainage District, is known to be in error for the 1963 Water Year, and was provided only at our request for the provisional data on hand. The corrected data will appear in next year's report.

It is noteworthy that 100 percent of the runoff from Fla. W-2, Upper Taylor Creek, 63,100 acres, occurred as base flow. Low water tables during the major portion of the year provided soil storage to the extent that mean daily flow rates never exceeded the flow rate of 333 cfs, the upper limit of base flow. For W-3, the upper limit of base flow was reached only one time during the year until the last week of September when 8.62 inches of rain used up the available soil storage during the month. As usual, for Fla. W-1, wasted artesian irrigation water dampened any influence that areal or time distribution of rainfall would have had on runoff.

Table 2 gives a summary of the annual precipitation, runoff, and ET as estimated from the P - R values corrected for basin storage.

A comparison of the rainfall, runoff, and P - R, figures for W-2, W-3, and W-4 shows a low value for P - R for W-4, while the runoff is disproportionately high in view of the smaller amount of rainfall. This is explained by the 7.91 inches of irrigation water which contributed both to ET (P - R) and runoff -- in what proportions is not known at this time.

Figures 7, 8, 9, and 10 demonstrate the double mass plotting technique for finding gross changes in the runoff-rainfall relations of the four experimental watersheds. In plotting runoff against causative rainfall, accumulatively, in figures 8 and 9 (Fla. W-2 and W-3) it is apparent that the overall graphic mean line would take the course giving a mean r/p ratio of 32% for W-2 Watershed, and 27% for W-3. Wet years and drought years have caused abrupt deviations; but as the years of record increase, the ratio approaches a straight line relation. In Figure 10 (Monreve Ranch, W-4) the period of record is short, and drought years coupled with pumped irrigation have influenced the ratio to the extent that no characteristic alignment can be detected.

In Figure 7 (Indian River Farms Drainage District, Fla. W-1) the straight line ratio of 43% was maintained from 1951 until 1959, when an increase in the runoff ratio began to be apparent. The graphic mean line of this ratio from 1959 through 1964 has assumed an alignment of 55%.

This change is apparently due to urban development beginning in 1958 and expanding rapidly, and the installation of many new artesian wells which are allowed to run continuously for decorative waterfalls and artificial ponds and lakes.

Figures 11 and 12 are flow-duration curves for W-2 and W-3 which have been computed from daily mean flows from 1955 through 1962 for both watersheds.

Summary:

1. Data from Watersheds W-1, W-2, and W-3 were analyzed to determine the suitability of the Cypress Creek Formula ($Q = C M^{5/6}$) for drainage design, and to develop a method for selecting values of the coefficient C according to probable flood recurrence frequency. The formula appears to be suitable for estimating required drainage capacity in the flatwoods areas of the Southeast if appropriate values of the coefficient C are applied. C values were found to be related to rainfall excess by the regression equation $C = 16.24 + 14.75 \times$ Rainfall Excess. Probability of occurrence of various rainfall excess amounts depends upon occurrence probability of total rainfall and portion of total absorbed by soil storage.

2. Urban development and increased use of artesian water for irrigation in the Indian River Farms Drainage District since 1958 has changed the mean ratio of runoff to rainfall from 43% to 55%. This ratio has remained fairly consistent at 32% and 27% for Upper Taylor Creek Watershed W-2 and W-3.

Time distribution of rainfall in 1963 caused record lows on runoff from both W-2 and W-3 Watersheds with no interflow or surface runoff from W-2, and only negligible amounts from W-3.

Pumped irrigation water caused a distortion in runoff and P - R values when compared to rainfall for drought year 1963 on Watershed W-4.

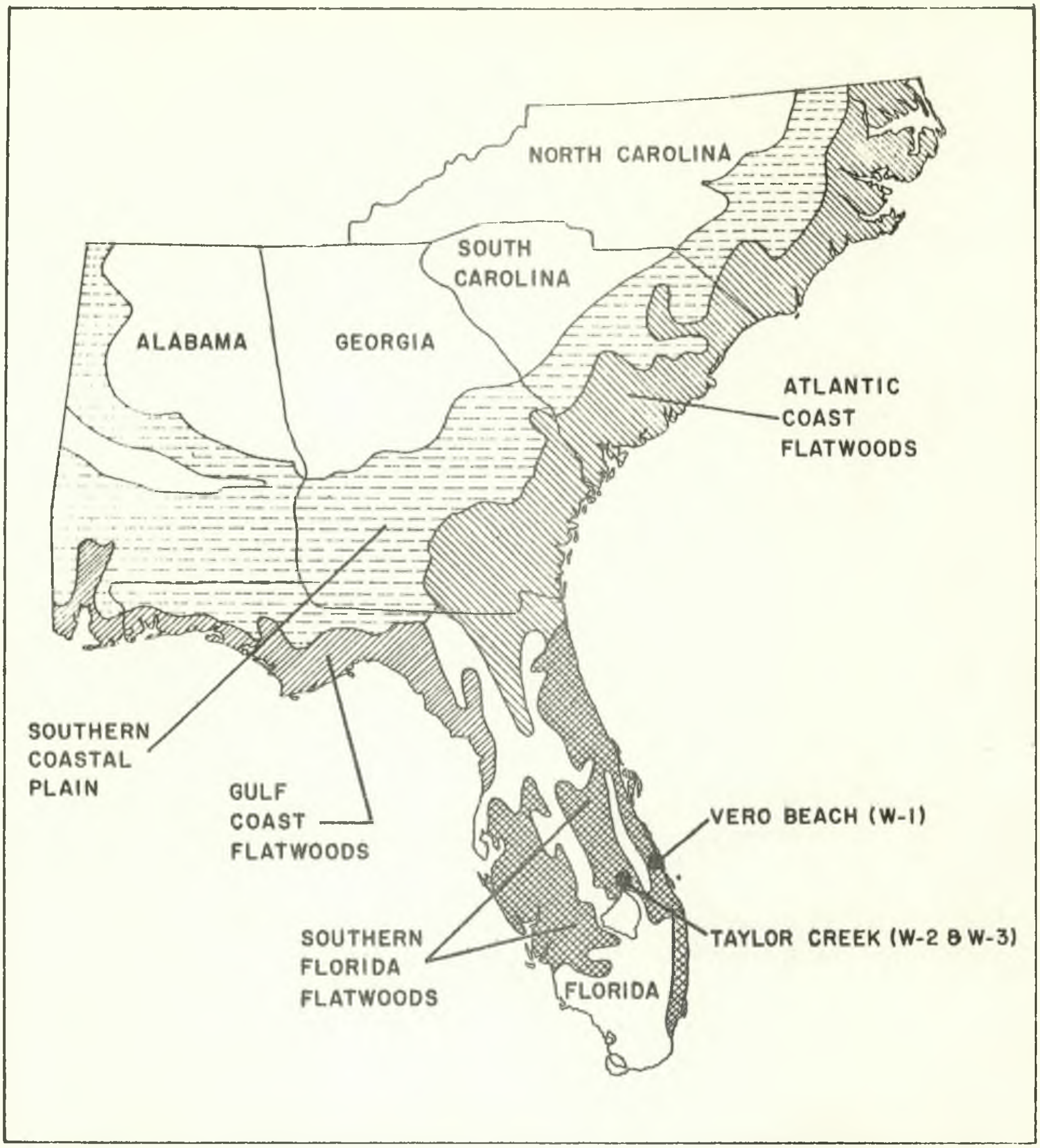


FIGURE 1. LOCATION OF EXPERIMENTAL WATERSHEDS IN RELATION TO ASSOCIATED MAJOR LAND RESOURCE AREAS.

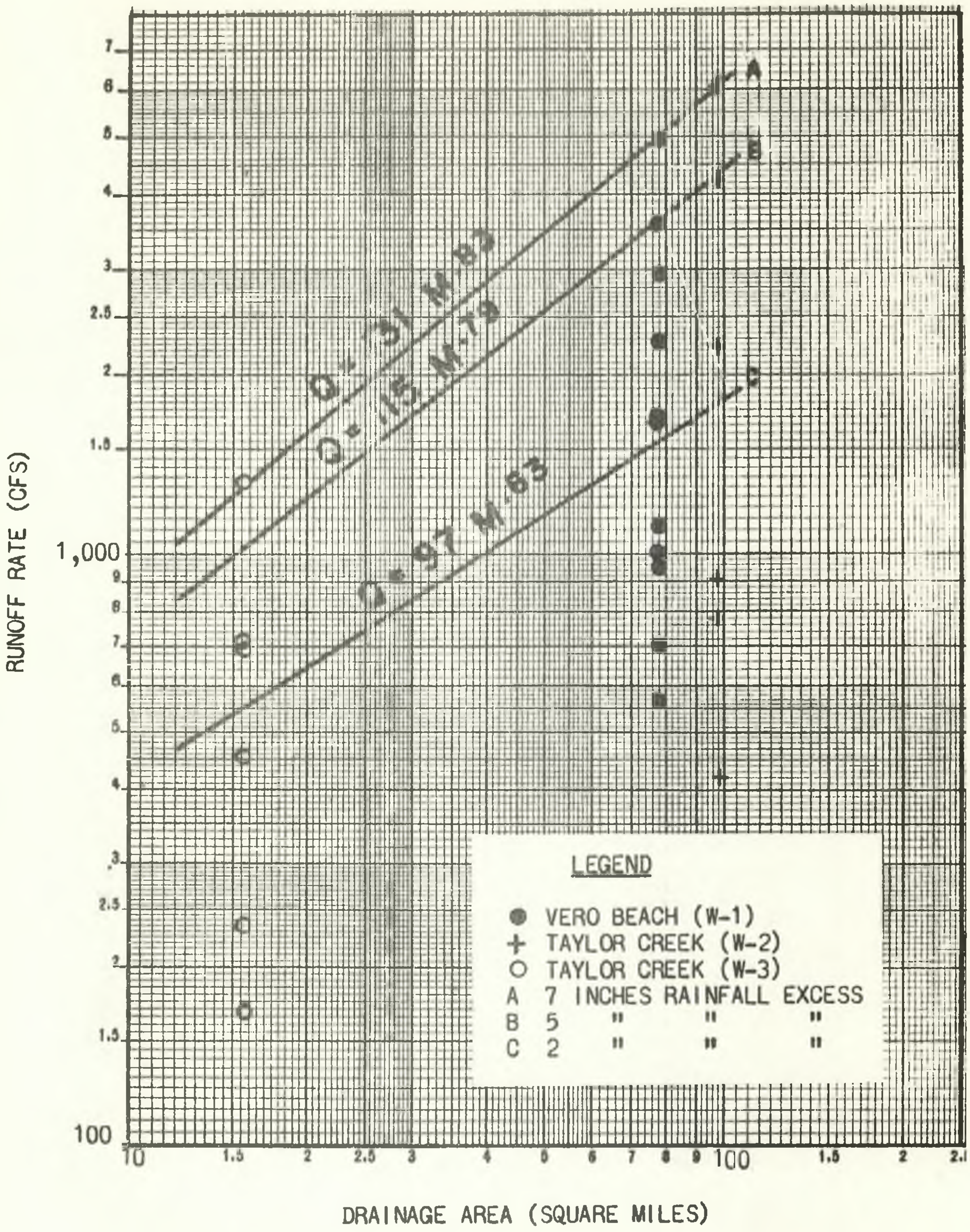


FIGURE 2. RELATION OF ANNUAL PEAK 24-HOUR RUNOFF RATE TO DRAINAGE AREA FOR THREE EXPERIMENTAL WATERSHEDS IN SOUTH FLORIDA.

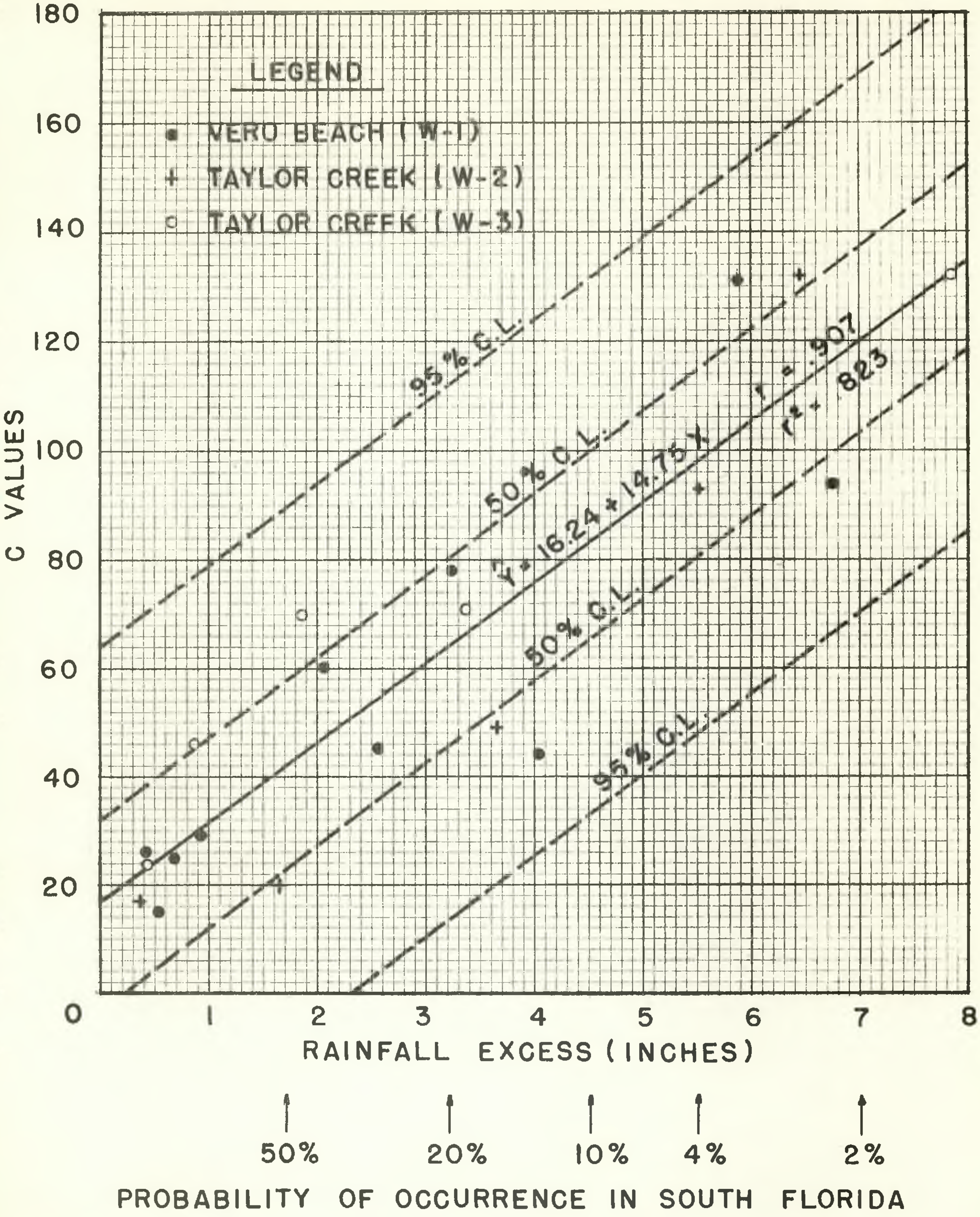


FIGURE 3. VALUES OF C, IN THE CYPRESS CREEK FORMULA $Q = CM^{5/6}$, VERSUS RAINFALL EXCESS FOR THREE EXPERIMENTAL WATERSHEDS IN SOUTH FLORIDA.

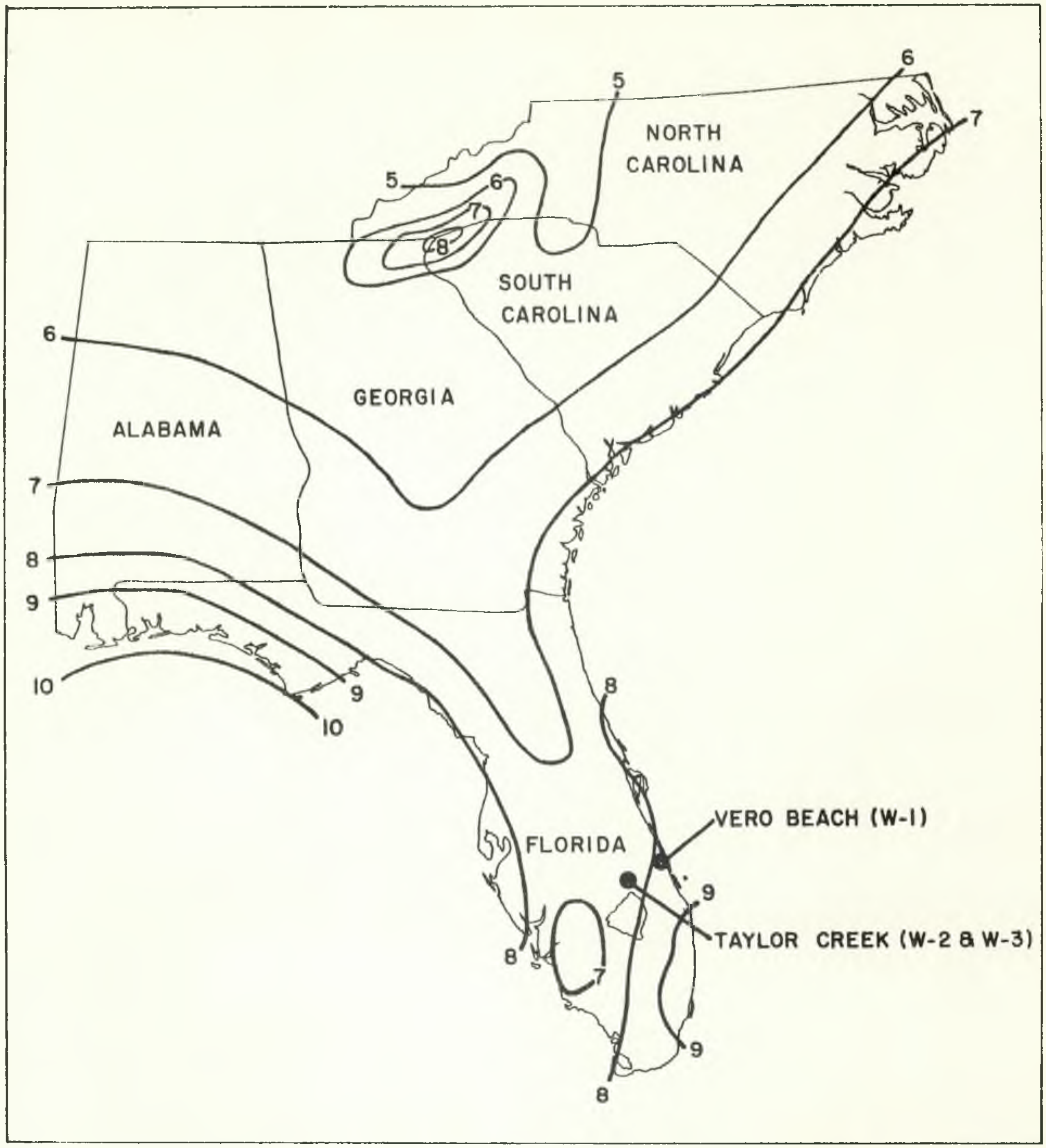


FIGURE 4. MAXIMUM 24-HOUR RAINFALL AMOUNTS (INCHES)
FOR EXPECTED 10 YEAR RECURRENCE INTERVAL.

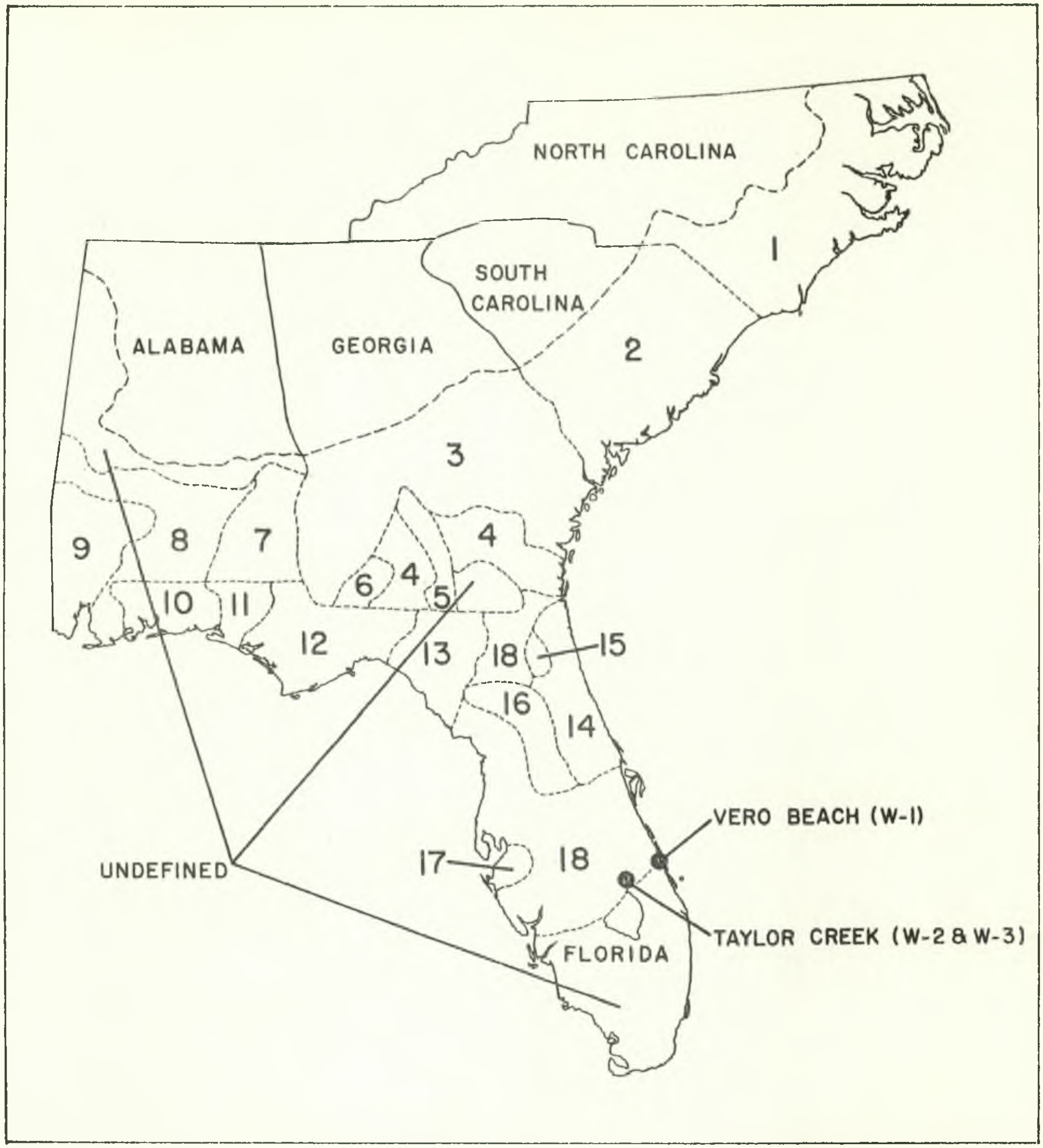


FIGURE 5. HYDROLOGIC AREAS AS DESIGNATED BY USGS ACCORDING TO COMMON FLOOD CHARACTERISTICS.

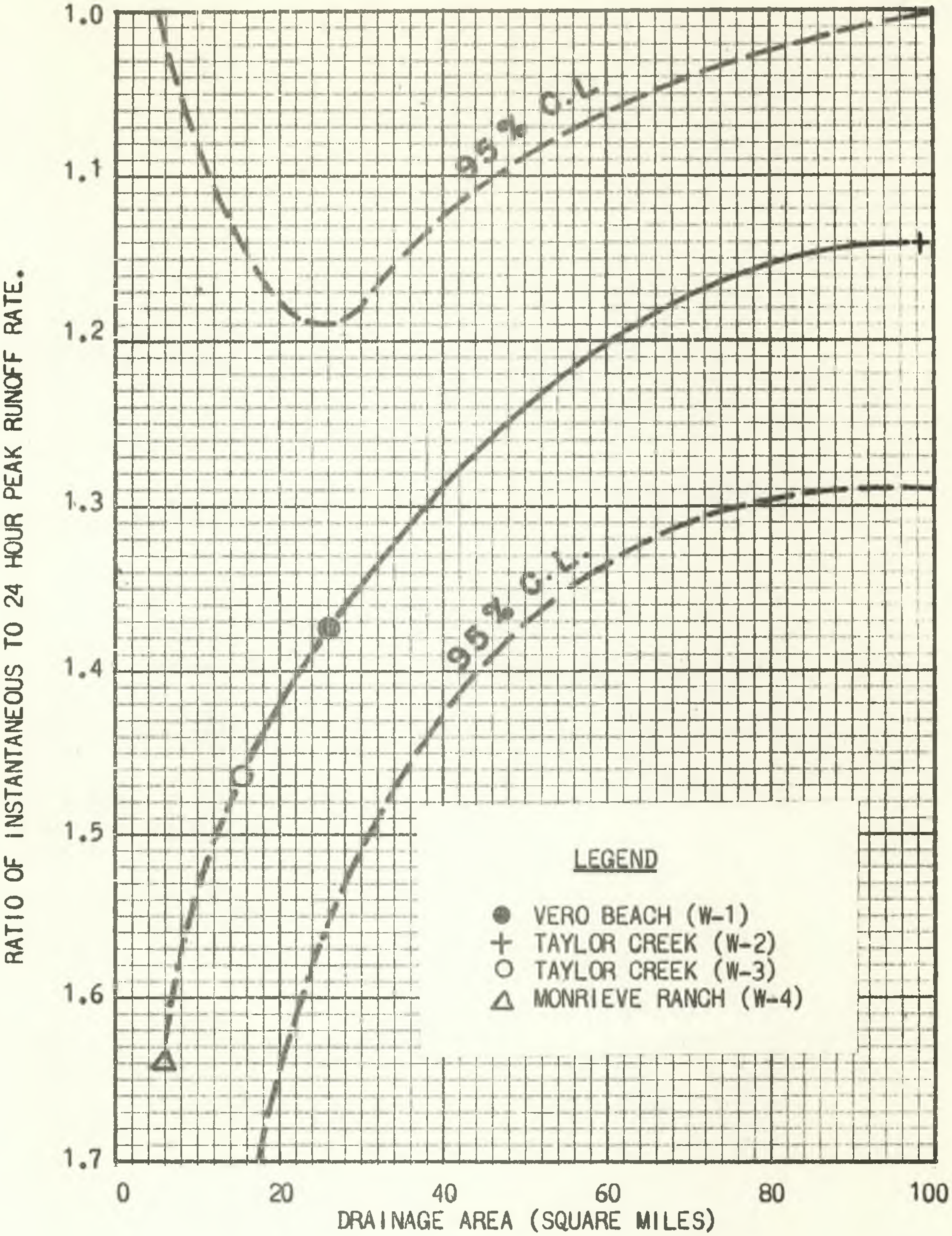


FIGURE 6. COMPARISON OF ANNUAL MAXIMUM INSTANTANEOUS TO 24 HOUR PEAK RUNOFF RATES IN RELATION TO DRAINAGE AREA FOR FOUR EXPERIMENTAL WATERSHEDS IN SOUTH FLORIDA.

Table 1. Peak flow rates in cfs as computed by USGS Regional Flood Frequency Method for 100-square-mile watershed

Hydrologic Areas*	Recurrence Interval		
	Q2.33 (2.33 yr)	Q10 (10 yr)	Q25 (25 yr)
1	800	1,560	2,140
2	830	1,580	1,780
3	1,170	2,620	3,010
4	1,170	2,800	3,910
5	1,370	3,270	4,560
6	2,800	6,690	9,352
7	2,340	5,030	6,460
8	3,100	6,660	8,560
9	5,000	10,750	13,800
10	3,400	7,515	10,370
11	2,620	5,790	8,000
12	1,320	2,920	4,020
13	1,000	2,210	3,050
14	1,900	3,225	4,180
15	3,700	6,480	8,140
16	1,200	2,100	2,640
17	3,700	8,180	11,280
18	1,900	4,200	5,800

* See Figure 5.

Table 2. Comparison of maximum flood flows computed by the Cypress Creek approach and the regional flood frequency method for selected hydrologic areas in Florida and North Carolina for a 100-square-mile watershed

	South Florida Hydrologic Area No. 18			Northwest Florida Hydrologic Area No. 10			North Carolina Hydrologic Area No. 1		
Recurrence-Interval	Cypress Creek x 1.14	Regional Flood Frequency	Ratio of Cypress Creek to Regional Flood Frequency	Cypress Creek x 1.14	Regional Flood Frequency	Ratio of Cypress Creek to Regional Flood Frequency	Cypress Creek x 1.14	Regional Flood Frequency	Ratio of Cypress Creek to Regional Flood Frequency
	cfs	cfs		cfs	cfs		cfs	cfs	
$Q_{2.33}$	2,330	1,900	1.23	3,230	3,400	0.95	1,580	800	1.98
Q_{10}	4,390	4,200	1.05	6,020	7,520	.80	3,230	1,560	2.07
Q_{25}	5,190	5,800	.90	7,250	10,370	.70	4,020	2,140	1.88

TABLE I

*	1951		1952		1953		1954		1955		1956		1957		1958		1959		1960		1961		1962		1963	
A	(in)	%	(in)	%	(in)	%	(in)	%	(in)	%	(in)	%	(in)	%	(in)	%	(in)	%	(in)	%	(in)	%	(in)	%	(in)	%
1	8.48	89	16.72	86	19.78	82	23.10	77	17.22	89	13.30	85	24.24	78	18.31	93	22.18	80	26.87	61	17.00	95	24.43	94		**
2	.72	7	1.32	7	2.68	11	3.42	11	1.51	8	.83	5	3.07	10	.96	5	2.50	9	5.30	12	0.72	4	0.89	4		
3	.33	4	1.36	7	1.56	7	3.69	12	.68	3	1.45	10	3.82	12	.36	2	3.17	11	12.03	27	0.14	1	0.50	2		
T	9.33	100	19.40	100	24.02	100	30.21	100	19.41	100	15.58	100	31.13	100	19.63	100	27.85	100	44.20	100	17.86	100	25.92	100		
B																										
1											4.31	98	18.83	63	11.14	90	11.14	57	19.53	58	3.34	68	10.74	63	2.04	100
2											.07	2	6.09	20	1.29	10	4.35	22	11.89	35	1.44	30	6.09	36	0	0
3											0	0	5.06	17	0	0	4.07	21	2.39	7	0.10	2	0.14	1	0	0
T											4.38	100	29.98	100	12.43	100	19.56	100	33.81	100	4.88	100	16.97	100	2.04	100
C																										
1											2.14	41	5.67	25	5.36	54	3.87	33	4.77	15	1.34	63	3.26	23	1.37	63
2											1.93	37	4.66	21	3.19	33	2.52	22	10.70	33	0.78	37	5.68	40	0.59	36
3											1.11	22	12.12	54	1.30	13	5.19	45	16.54	52	0.00	0	5.22	37	0.20	1
T											5.18	100	22.45	100	9.85	100	11.58	100	32.01	100	2.12	100	14.16	100	2.16	100

*

A - Indian River Farms D.D. FLA W1
1 Base Flow (less than 350 CFS)
2 Interflow (350 to 670 CFS)
3 Overland Flow (over 670 CFS)

B - Upper Taylor Creek Watershed FLA W2
1 Base Flow (less than 333 CFS)
2 Interflow (333 to 1100 CFS)
3 Overland Flow (Over 1100 CFS)

C - Upper Taylor Creek Watershed FLA W3
1 Base Flow (less than 15 CFS)
2 Interflow (15 - 65 CFS)
3 Overland Flow (over 65 CFS)

T - Total Runoff

**

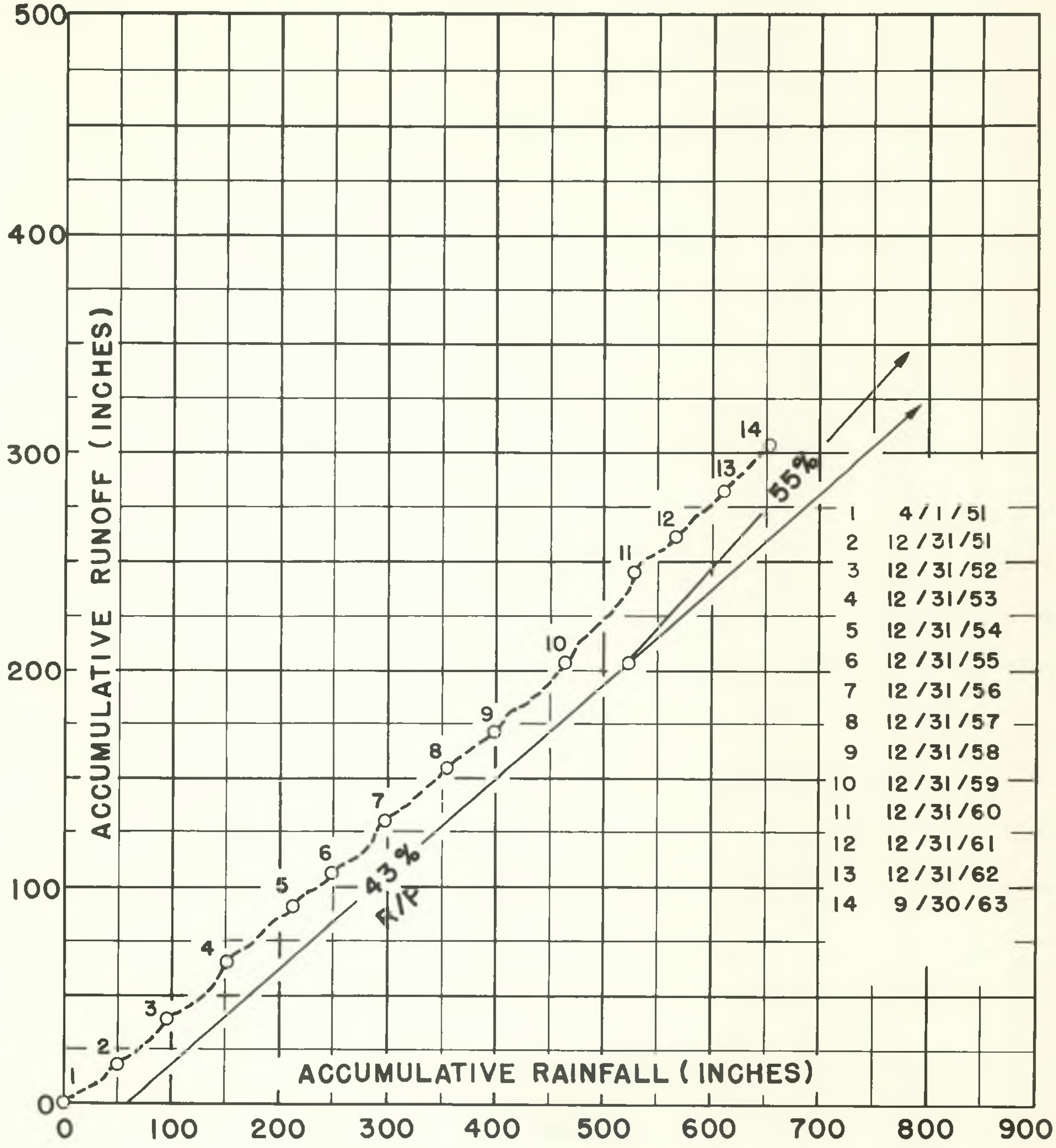
Provisional data only.

TABLE II

Water Year	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963
Indian River Farms D.D. - (W1)												
A	48.03	51.78	63.11	45.75	38.32	63.63	46.29	60.20	73.12	35.11	44.09	*
B	19.40	24.02	30.21	19.41	15.58	31.13	19.63	27.85	44.20	17.86	25.92	
C	29.13	28.16	33.50	26.74	22.55	32.00	27.36	32.15	26.74	18.61	18.17	
D	7.37	8.44	3.00	9.76	13.95	4.50	9.14	4.35	9.76	17.89	18.33	
Upper Taylor Creek (W2)												
A					41.12	66.98	49.27	54.37	68.61	29.90	51.68	34.93
B					4.38	29.98	12.43	19.56	33.81	5.12	16.97	2.03
C					36.41	36.53	37.58	34.61	33.08	26.76	34.21	32.90
Upper Taylor Creek (W3)												
A					40.02	64.57	50.20	47.33	72.32	31.29	48.06	38.59
B					5.18	22.45	9.85	11.58	32.03	2.12	14.16	2.17
C					34.83	42.09	40.39	35.74	39.87	29.64	33.90	36.42
Monreve Ranch (W4)												
A									76.60	40.74	55.97	33.27
B									36.03	10.94	14.03	4.22
C									40.57	**	33.77	29.05
E									2.06	5.31	8.17	7.91

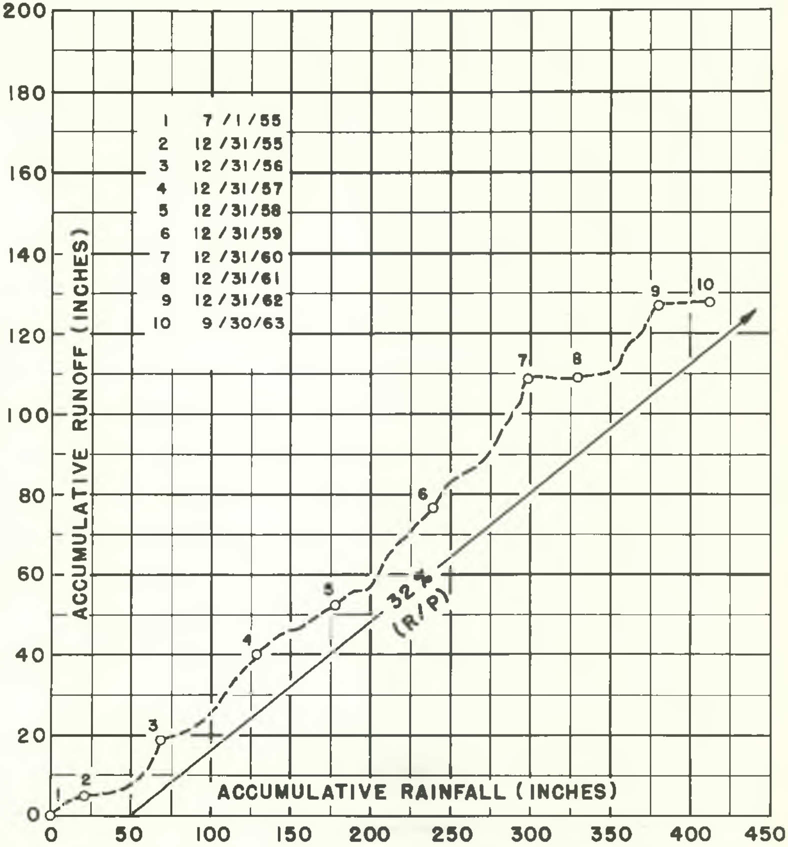
A - Precipitation (inches)
B - Runoff (in/A)
C - P-r, corrected for storage change
D - Est. Artesian inflow (36.5 in. [Est. ET] minus [P-R])
E - Irrigation (inches)

* Provisional data only.
** Base storage curve not yet derived.



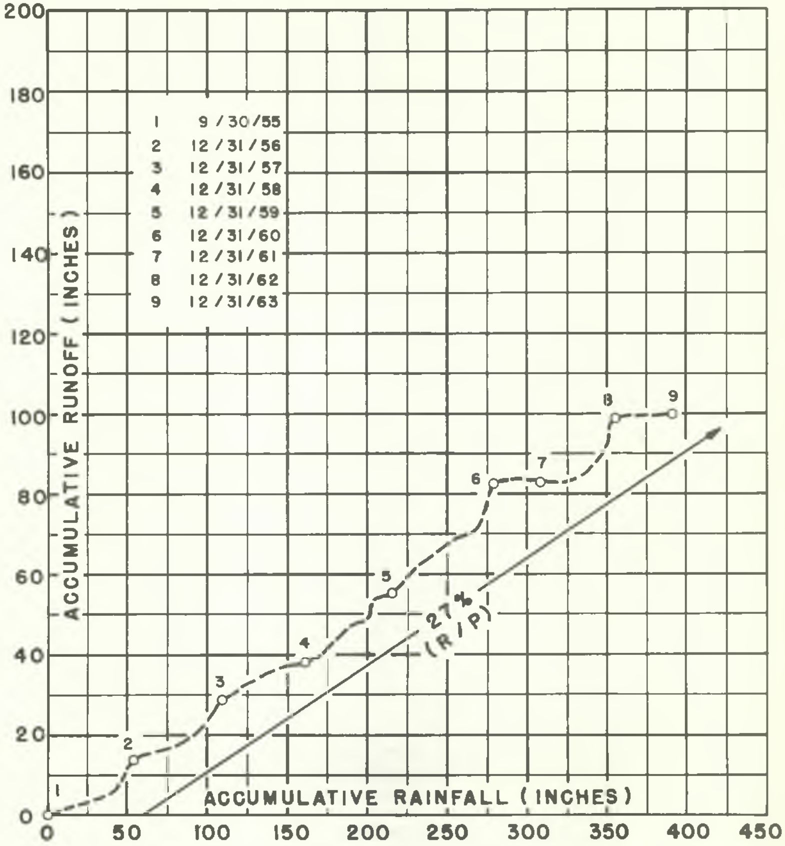
RAINFALL VS RUNOFF
INDIAN RIVER FARMS D.D.
FLORIDA WATERSHED W-1
49,915 ACRES

FIG. 7



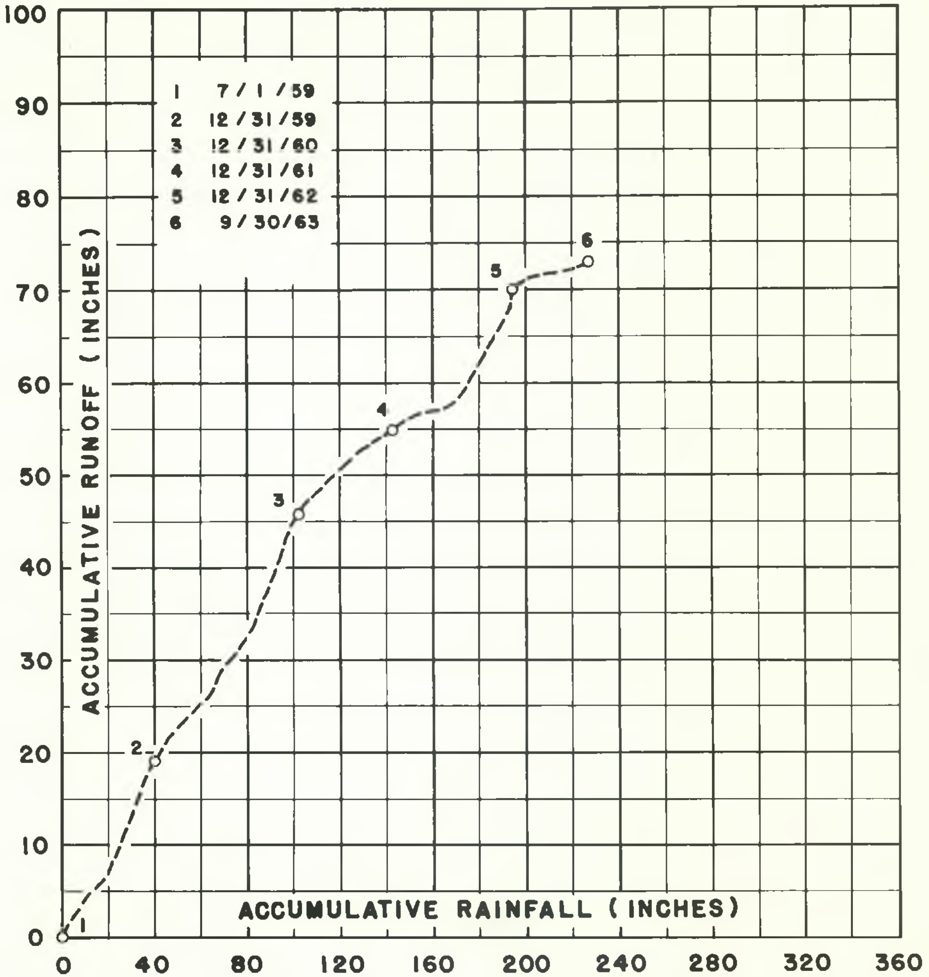
RUNOFF VS RAINFALL - UPPER TAYLOR CREEK WATERSHED
FLORIDA WATERSHED W-2 - 63,100 ACRES

FIG. 8



RUNOFF VS RAINFALL - UPPER TAYLOR CREEK WATERSHED
FLORIDA WATERSHED W-3 - 10,000 ACRES

FIG. 9



RUNOFF VS RAINFALL - MONREVE RANCH WATERSHED
FLORIDA WATERSHED W-4 - 4,000 ACRES

FIG. 10

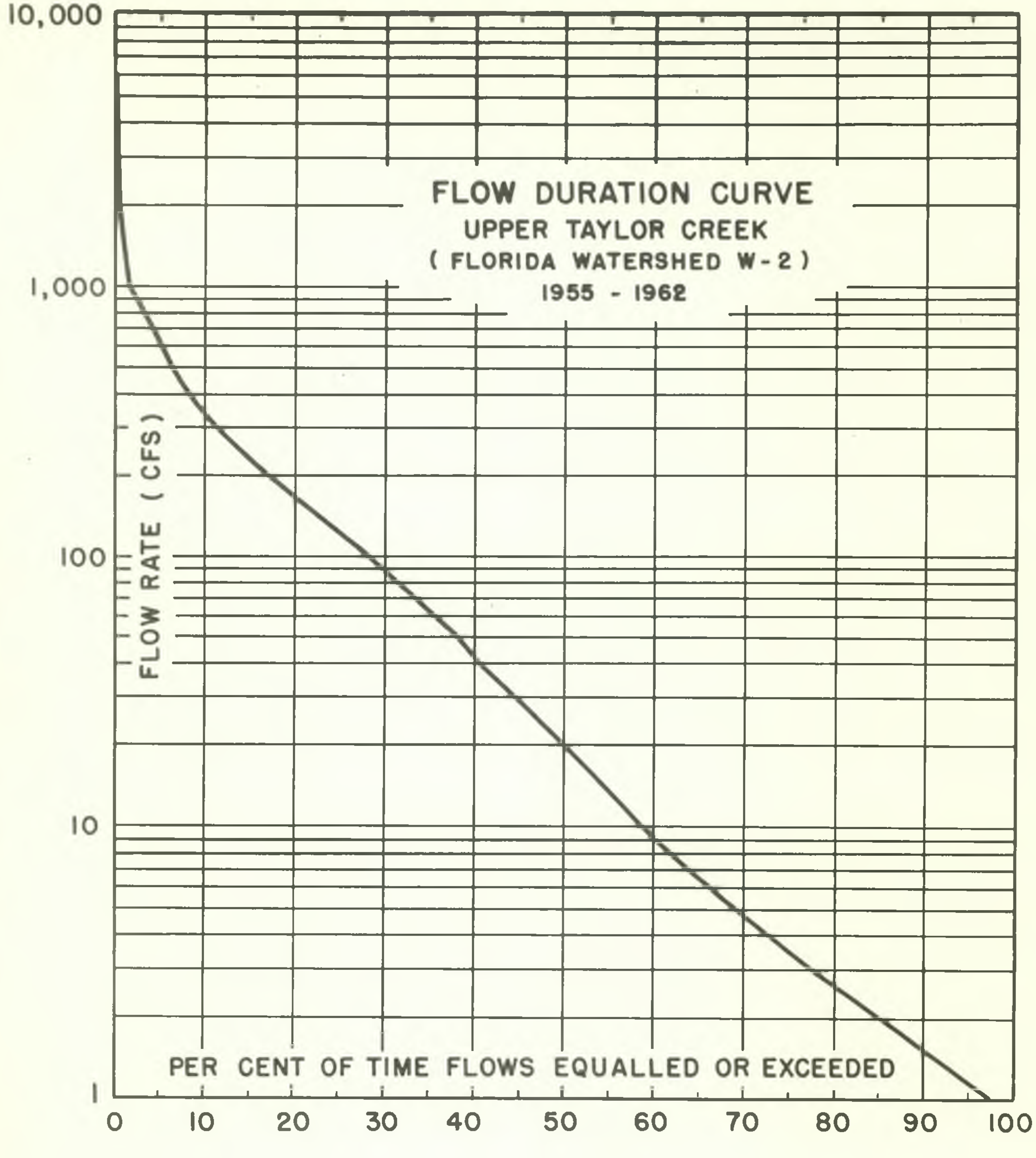

FLOW DURATION CURVE
UPPER TAYLOR CREEK
(FLORIDA WATERSHED W - 2)
1955 - 1962
FLOW RATE (CFS)
10,000
1,000
100
10
1
PER CENT OF TIME FLOWS EQUALLED OR EXCEEDED
0
10
20
30
40
50
60
70
80
90
100

FIG. 11

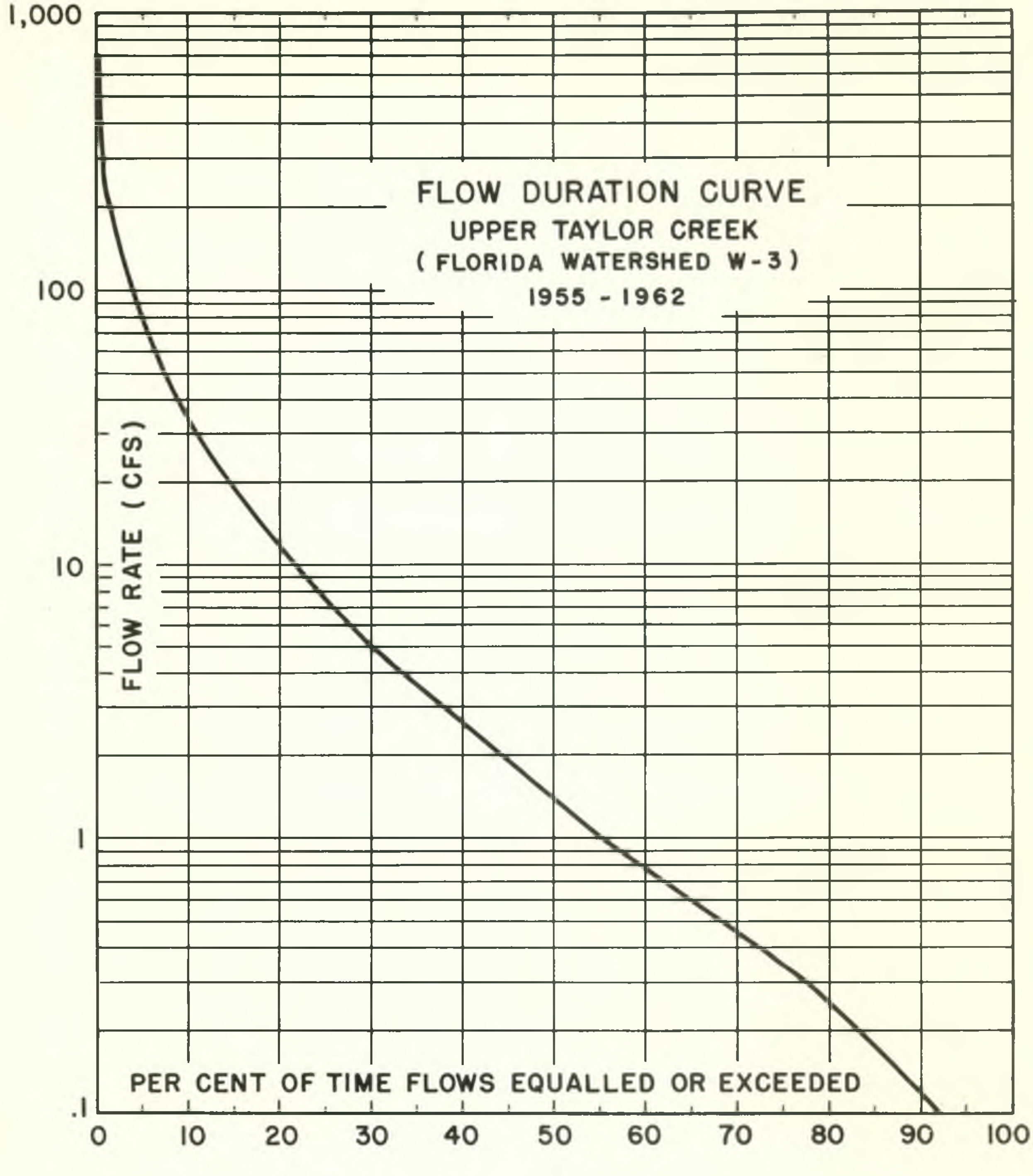

FLOW DURATION CURVE
UPPER TAYLOR CREEK
(FLORIDA WATERSHED W-3)
1955 - 1962
FLOW RATE (CFS)
PER CENT OF TIME FLOWS EQUALLED OR EXCEEDED
1,000
100
10
1
.1
0
10
20
30
40
50
60
70
80
90
100

FIG. 12

INVESTIGATIONS OF SANDY TROUBLE SPOTS IN DUG WATER CONTROL CHANNELS, FLORIDA

Line Project No.: SWC 1-b4 Code No.: FLA PL-7

Prepared by: William H. Speir

Location of Experiment: Fisheating Creek and Taylor Creek Watershed Areas of Florida

Personnel Involved:

ARS Sedimentation Lab., Oxford, Miss. - Earl Grissinger, D. A. Parsons, G. Stanford, H. R. Turner, and R. B. Wilson

ARS, SWC, Fort Lauderdale, Fla. - W. H. Speir, E. H. Stewart, W. C. Mills, and J. E. Browning

SCS - J. Luke, Lake Placid, Fla.; S. McCollum, Stuart, Fla.; and E. Vanatta, Sebring, Fla.

Date of Initiation: May 1961

Expected Duration: 3 years

Objectives:

To observe and study the unstable channel bank problems along dug water control channels in the Fisheating Creek Area.

To obtain representative soil samples from the areas and determine various physical and moisture characteristics that may contribute information concerning the unstable conditions.

Need for Study:

Unstable banks of dug water control channels cause considerable trouble in maintaining adequate channels for movement of water in watershed management and for irrigation and drainage management on farms. Factors contributing to these unstable conditions need to be determined and possible solutions formulated and tested.

Experimental Data and Observations:

Two lines of groundwater observation wells were established in October, 1961, at selected points along Taylor Creek in the watershed area north of Okeechobee, Fla. One is located upstream (Well Line "A") from Potter Road in a channel reach where evidence exists of sand troubles in old channel dredgings; and one downstream (Well Line "B") in a place where soil auger samples show deep sand with probably enough clay present to make stable channel banks.

The well lines at each site are at right angles to the stream channel with the wells placed 10, 38, 104, 535, and 2000 feet from the stream edge. A continuous water level recorder was installed at Station 70 on well line "A" and at station 535 on well line "B" in June 1962. These locations were selected for the recorder sites after preliminary water-table data indicated they most nearly represent the mean water table for each line of wells.

Water-table data of well lines "A" and "B" from the weekly observations for the year are listed in Table 7, Page 36.

Graphic plottings of water-table depth below ground surface for well lines "A" and "B" are shown in Figure 7, FLA PL-5, Page 51.

Comments and Interpretations:

A comparison of daily mean depths below ground surface from well lines "A" and "B" for water year 1962-63 show that rainfall is uniformly distributed cver the area and that rise or fall in the water table reflect the same response to rainfall through the same depths in the soil profile.

Summary:

None to be made at this time.

SUBIRRIGATION OF SOD WITH POROUS TILE

Line Project No.: SWC 5-bl

Code No.: FLA PL-8

Location of Experiment: Plantation Field Laboratory, Ft. Lauderdale, Fla.

Personnel Involved: ARS - E. H. Stewart, J. R. Carreker, and J. H.
Howerton, Jr.
Fla. Agr. Exp. Station - E. O. Burt and F. T. Boyd

Date of Initiation: October 1961

Expected Duration: 3 years

Objectives:

To determine:

1. Effectiveness of porous tile for subirrigation of sod crops (Tifway bermudagrass) in comparison to sprinkler and water-table irrigation;
2. Water consumption of each of four methods of installation of porous tile in sandy soils;
3. Water flow characteristics of porous tile as affected by water quality.

Need for Study: See 1962 Annual Report

Experimental Design and Procedure: See 1962 Annual Report

Experimental Data and Observations:

Table 1 shows the average monthly irrigation flow rate of the porous tile by monthly periods and placement of the tile.

Figure 1 and 2 present graphic data on the flow rate of the porous tile as influenced by various tile treatments and quality of the irrigation water.

Comments and Interpretations:

The subirrigation flow rate of the installed porous tile has decreased very slowly but continuously during the year except when treated to increase the flow as indicated in Table 1. In January the irrigation lines were treated with sulfur dioxide gas and allowed to stand for 48 hours, after which the lines were flushed and put back into operation. This resulted in an average flow increase of about 73 percent to a flow rate of about 0.045 in. per day. Although a definite improvement, this still was not adequate to meet the water requirements of the bermudagrass. Laboratory tests were then undertaken in an attempt to determine the nature of the trouble and possible solutions. Four representative tiles were selected that had initial flow rates ranging from 0.32 to 3.96 inches per day with distilled water at a 24-inch head. These tiles were soaked and left submerged in the distilled water for 3 days and then rechecked and found to have increased in flow rate by 50 percent. This indicated that the decreased flow experienced with the installed tile was not associated with relatively pure water. However, when these same tiles were tested with tapwater from the laboratory the flow rate dropped about 70 percent within 24 hours and leveled off at about 0.08 in. per day within three weeks.

Another approach was tried whereby a porous tile was used as a pre-filter under regular tapwater pressure of 40 to 70 psi. This failed to increase the flow rate in the test tiles indicating the pre-filter was ineffective. In fact, the tile under tapwater pressure clogged in a short time and failed to supply sufficient water to the irrigation system.

The raw materials that are used in the manufacture of the porous tiles tested are silica sand, talc (soapstone), bentonite and wood flour. Water mixtures of these materials (2.5 to 1.0) had the following Ph readings: wood flour, 4.8; silica sand, 6.9; bentonite, 8.5; and talc, 9.5. Distilled water passing through the tiles was found to have a pH well over 9.0 after 10 days of continuous running. Undoubtedly the talc and bentonite was contributing to the high pH condition. Since the water used in the irrigation system is highly mineralized it is likely that chemical precipitation occurs in the tiles under the high alkaline condition that existed. Such a condition may have been one of the contributing factors causing the reduced flow rates.

A laboratory study was made to determine the effect of acid treating the tiles before hand, as well as lowering the pH of the source water, on the flow rate. Figure 1 presents graphic data of the results. Pretreatment of the tiles with dilute nitric acid (3-normal) greatly increased the initial flow rates but within 17 days the flow rate was essentially the same as the untreated tile, N-10 vs N-1 and N-2. Adjusting the pH of the source water from slightly alkaline to 4.0 result in maintaining the tile flow rate approximately 0.10 in. higher than that from the untreated water, N-11 vs N-1 and N-2, Figure 1. However, a slow decrease in flow rate was indicated over a period of six weeks for both systems.

A second set of tiles was used to determine the effect of lowering the pH of the irrigation water to pH 2.0 on maintaining flow as well as clearing up the clogged tiles after the rate had dropped to an undesirable level. Figure 2 shows the results of this test. It appears that the flow rate of the water can be maintained at a desirable level by adjusting the pH to 2.0. Also, a significant increase in flow rate was obtained by adjusting the pH of the water to 2.0 after the flow rate had dropped to about 0.07 in. per day. The flow rate was increased to about 0.15 in. per day which would meet the moisture requirements of the bermudagrass most of the time. However, when this procedure was used on the installed tile system the flow rate was not increased adequately. The problem of getting the installed porous tile line flowing adequately still has not been solved. Further efforts will be made to find a practical method of correcting this situation. In the meantime, to avoid future problems of this nature it may be more practical to explore the possibility of making the porous tile with some other type material that will not have these undesirable characteristic features.

Summary:

1. Flow rate of porous tile installed for subirrigation of Tifway bermudagrass continued to decrease slowly during the year.

2. Treating the porous tile with sulfur dioxide gas and dilute nitric acid increased the flow rate significantly but not sufficiently under field conditions to meet the moisture needs of the bermudagrass.

3. Laboratory trials showed some success with maintaining tile flow rate by lowering the pH of the irrigation water.

Table 1. Irrigation flow rate of porous tile placed over various materials in sandy soil

Flow period month	Placement of tile[1]				
	Organic soil	Sandy soil	Pea soil	Plastic sheeting	Average
	Inches per day				
Jan. 1-18	0.025	0.023	0.027	0.029	0.026
Jan. 21-31	.040[2]	.052[2]	.046[2]	.043[2]	.045
February	.040	.049	.047	.043	.045
March	.039	.046	.048	.042	.044
April	.037	.044	.046	.042	.042
May	.035	.041	.044	.036	.039
June	.033	.040	.047	.040	.040
July	.032	.038	.043	.039	.038
August	.032	.037	.064[3]	.038	.036[4]
September	.028	.035	.066	.037	.033
October	.028	.033	.060	.034	.032
November	.026	.031	.053	.031	.027
December	.034[3]	.043[3]	.045	.043[3]	.040

---

[1] Tile placed 36 inches apart on centers and 10 inches below the soil surface. Organic soil, pea gravel, and plastic sheeting placed under tile in bands 18 inches wide for the full length of the plot. Organic soil and pea gravel are 3 inches in depth.

[2] Tile system treated with sulfur dioxide gas.

[3] Tile system treated with dilute nitric acid.

[4] Average from August through December does not include the third column.

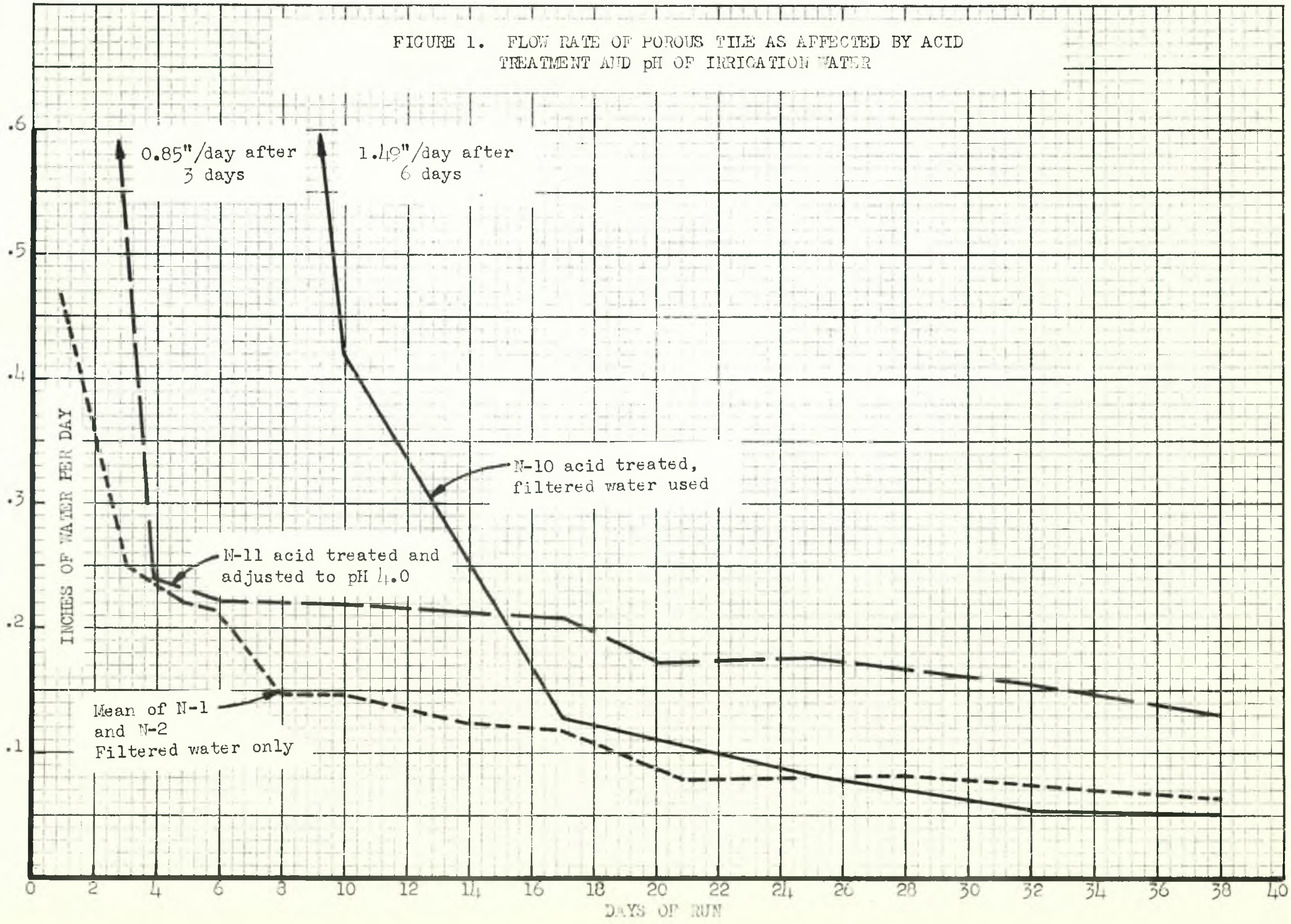


FIGURE 1. FLOW RATE OF POROUS TILE AS AFFECTED BY ACID TREATMENT AND pH OF IRRIGATION WATER

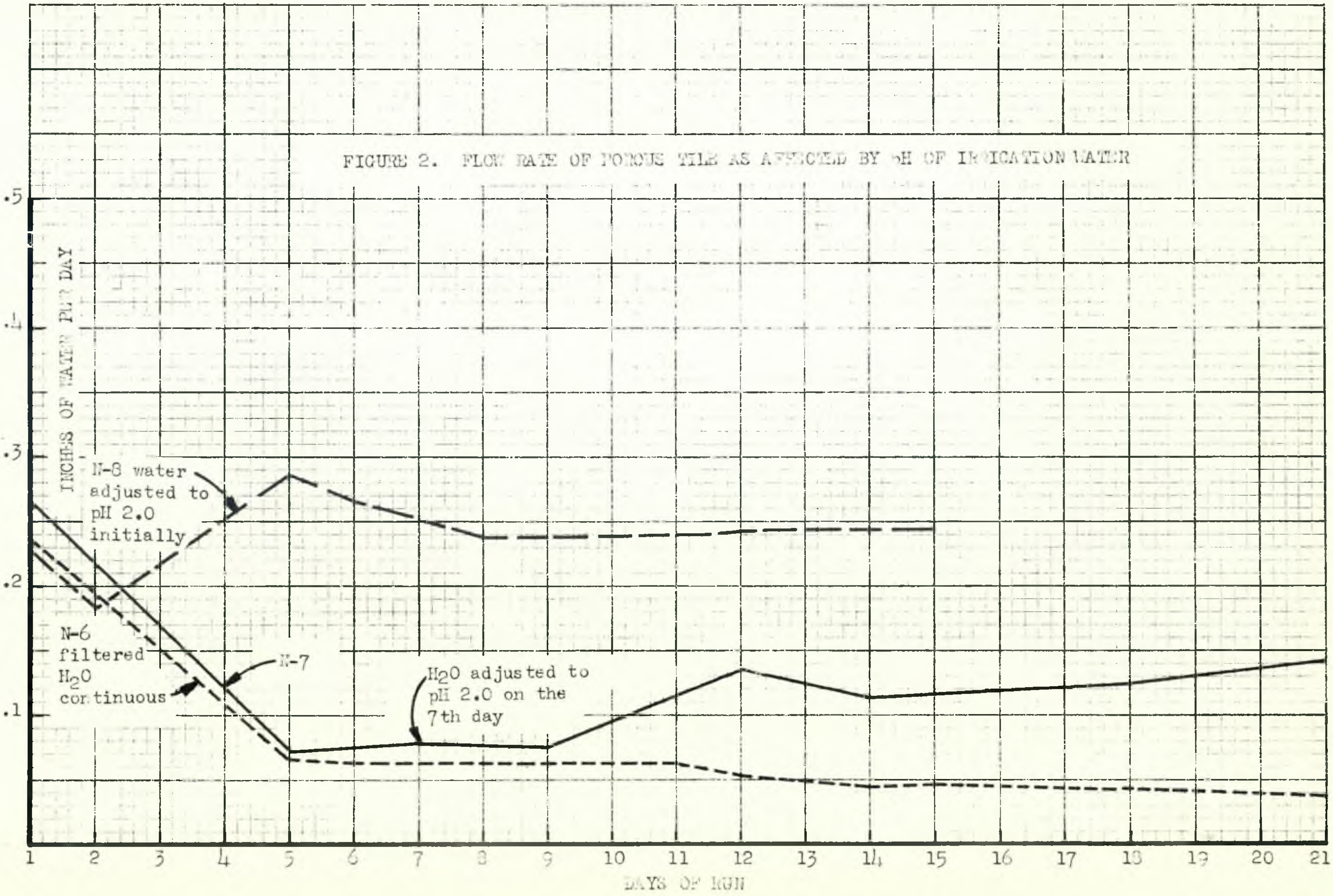


FIGURE 2. FLOW RATE OF POROUS TILE AS AFFECTED BY pH OF IRRIGATION WATER

STRONTIUM-90 ACCUMULATION ON PLANT FOLIAGE FROM DRY FALLOUT AND RAINFALL

Line Project No.: SWC 11-b4 Code No.: FLA PL-9

Prepared by: Ernest H. Stewart

Location of Experiment: Everglades Experiment Station, Belle Glade, Fla.

Personnel Involved:
ARS - Ronald G. Menzel, Ernest H. Stewart, and J. H. Howerton, Jr.
Fla. Agr. Exp. Station - Victor Guzman and F. T. Boyd

Date or Duration of Experiment: Expected duration 1 year.

Objectives:

To study the accumulation of strontium-90 on plant foliage in order to determine the magnitude of direct contamination from fallout during dry weather and during rainy weather.

Need for Study: See the 1962 Annual Report.

Experimental Design and Procedure: See the 1962 Annual Report.

Experimental Data and Observations:

No data are to be presented in this report. The results were published and the experiment terminated in 1963. See the publication list in this report for source of publication.

Comments and Interpretations:

In way of a brief summary, accumulation of strontium-90 in field-grown crops was measured during the spring of 1962, a period with a high rate of fallout. Each rainfall markedly increased the strontium-90 content of the crops, except when they were very small. Accumulation between rains was comparatively small, about equal to the expected uptake from the soil.

Summary:

See comments above.

MISCELLANEOUS

At the request of Dr. W. T. Forsee, Jr. and Dr. F. T. Boyd of the Florida Agricultural Experiment Station, surveys were made, topography maps were prepared, and a drainage plan proposed for the new 100-acre Field Laboratory site at Forman Field.

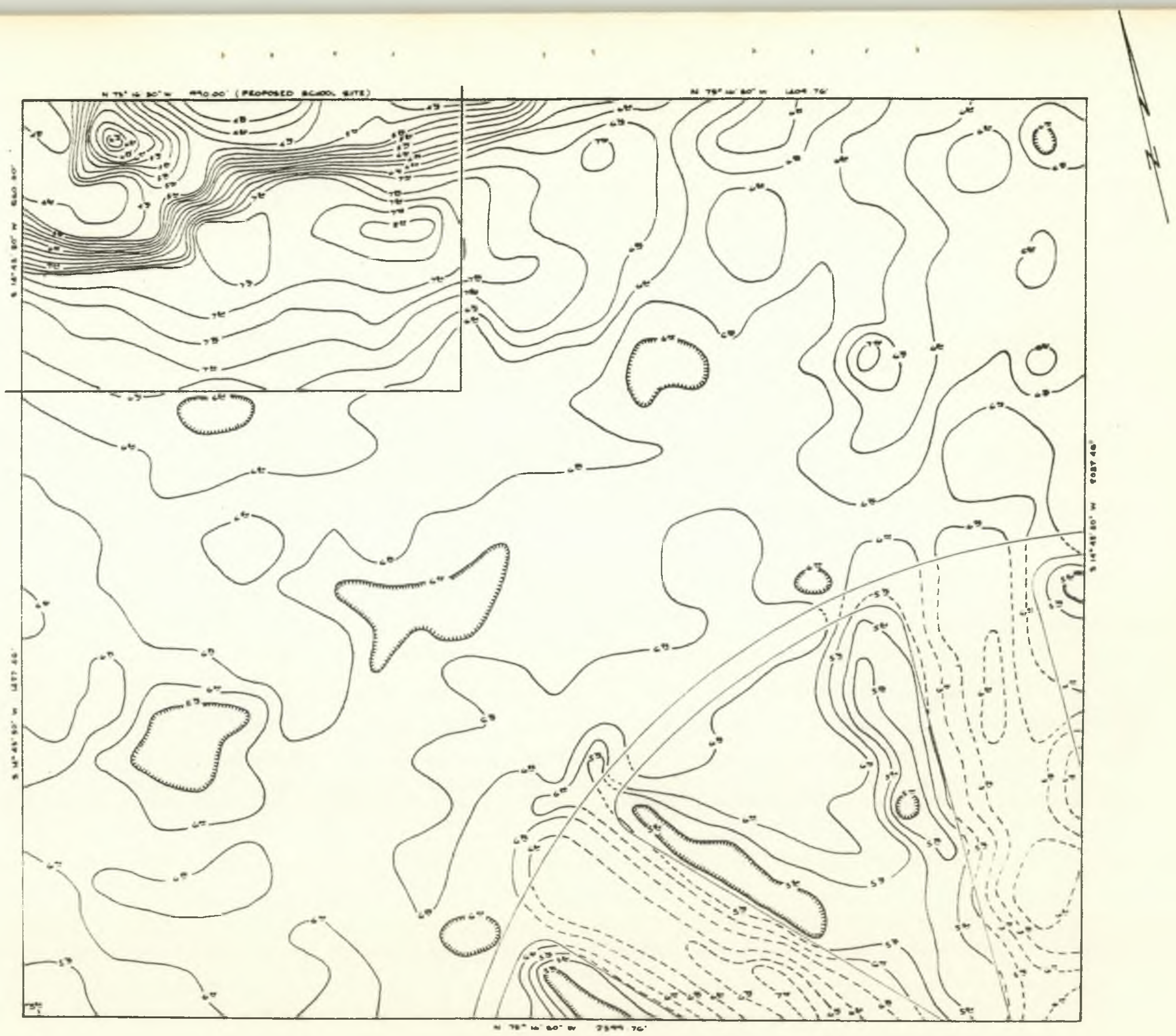
At Dr. Forsee's request, space-allocation buildings were planned to meet the desired needs of State and Federal staff members of the Plantation Field Laboratory.

The following four figures are maps of the new experiment station site, and show ground surface contours, rock surface contours, iso-depth contours, and a proposed drainage plan. The next two figures are floor-plan layouts of the proposed office building and service building for State and Federal employees now housed at Plantation Field Laboratory.

The next five figures are plans and specifications for construction with operational details of a constant-head multiple-sample permeameter that was designed at this station and has been in use for several years.

The drawings should give enough detail for constructing a similar apparatus. Specifications can be varied to make use of material on hand.

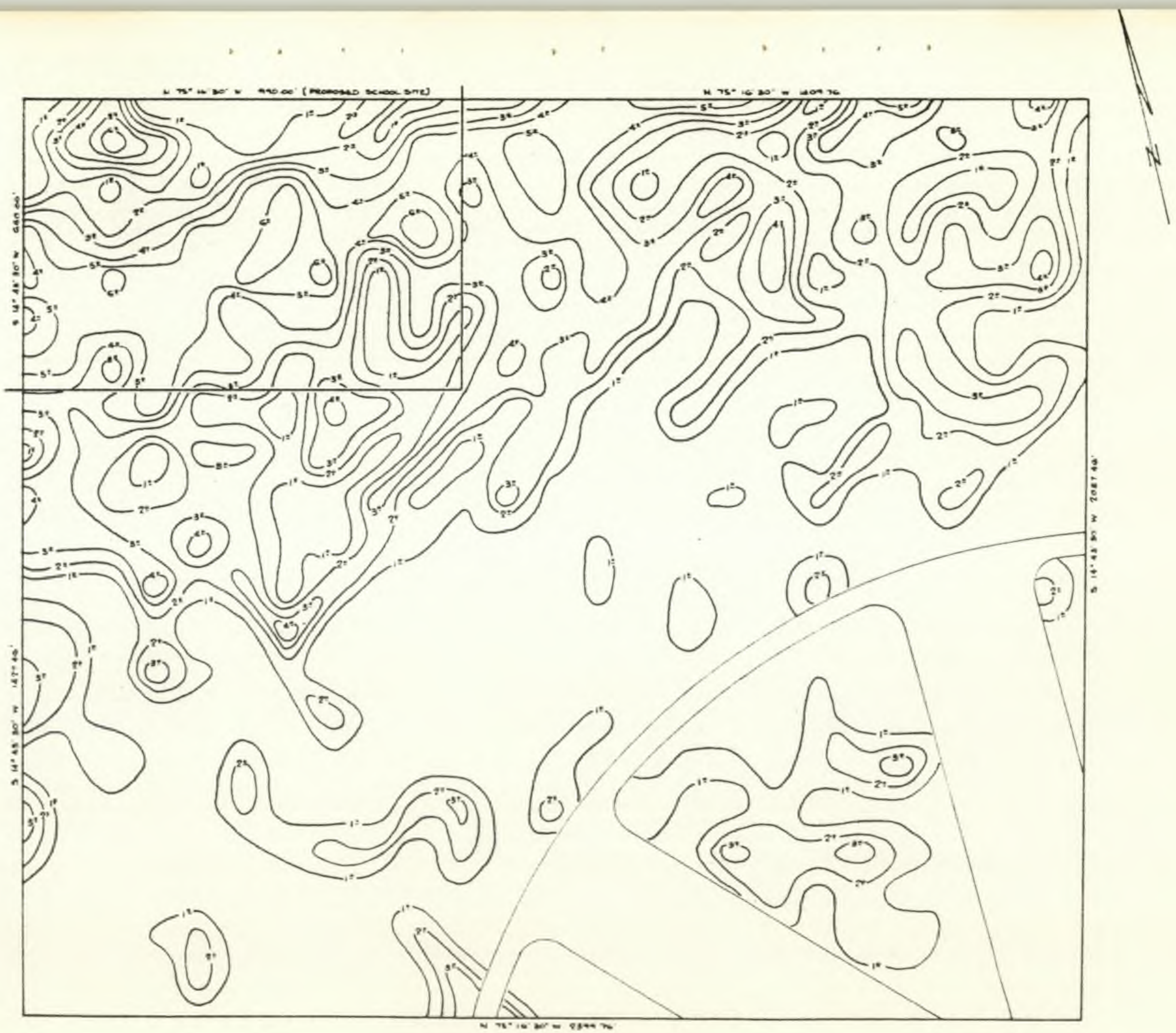
The actual operation is quite simple: with the sandy soils tested locally, the bottom of each 3-inch core sample is covered with cheese cloth to keep the sand from flowing through the supporting screen (#20 in drawing). An empty 3-inch aluminum core container is set on top of each sample and made water-tight with masking tape (#15). Graduated beakers (optional, but preferable) (#19) are then placed under each sample. A small piece of cheese cloth is placed on top of, and in the center of, each sample to prevent washing from the end of the syphon tube. The syphons are then placed in position in the empty cylinders (11, 12, 14) and then primed as described and allowed to run until the flow rate through the samples has reached equilibrium. During this operation the head on each sample (#17) is checked through cut-out (#10) to see that all syphons are functioning properly. Using a stopwatch, each beaker is then emptied and reinserted under each sample at one-minute intervals. After a sufficient time interval (15 minutes for most of the samples) the beakers are then removed in the same order, at one-minute intervals, and the volume of water measured.



GROUND SURFACE CONTOURS (FT. MSL)
PLANTATION FIELD LABORATORY
FORMAN FIELD SITE

SCALE 1" = 100'

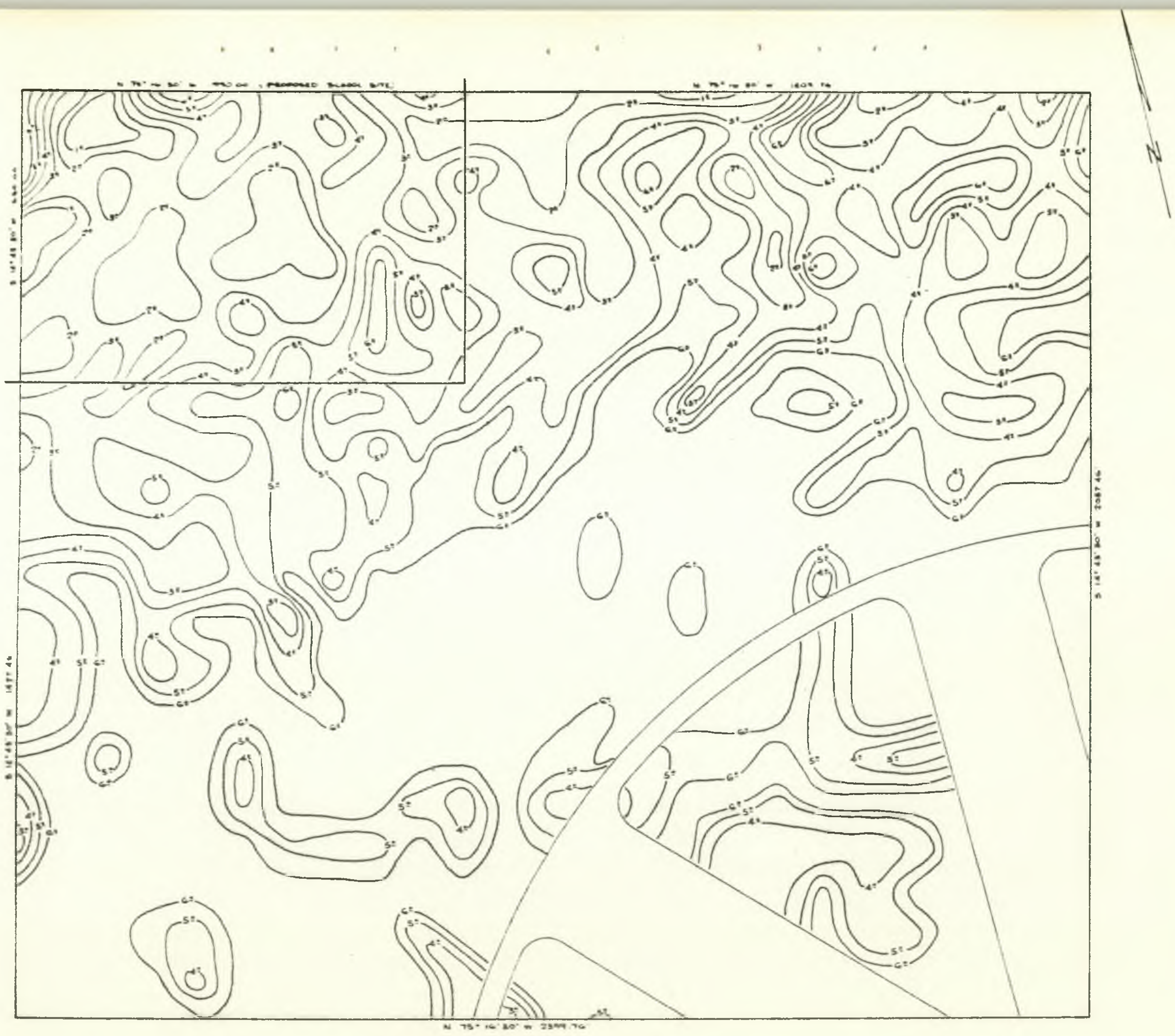
SURVEYED AND DRAWN SEPT., 1963
W.H. SPEIR – U.S.D.A., ARS, SWC



ROCK SURFACE CONTOURS (FT. MSL)
PLANTATION FIELD LABORATORY
FORMAN FIELD SITE

SCALE 1" = 100'

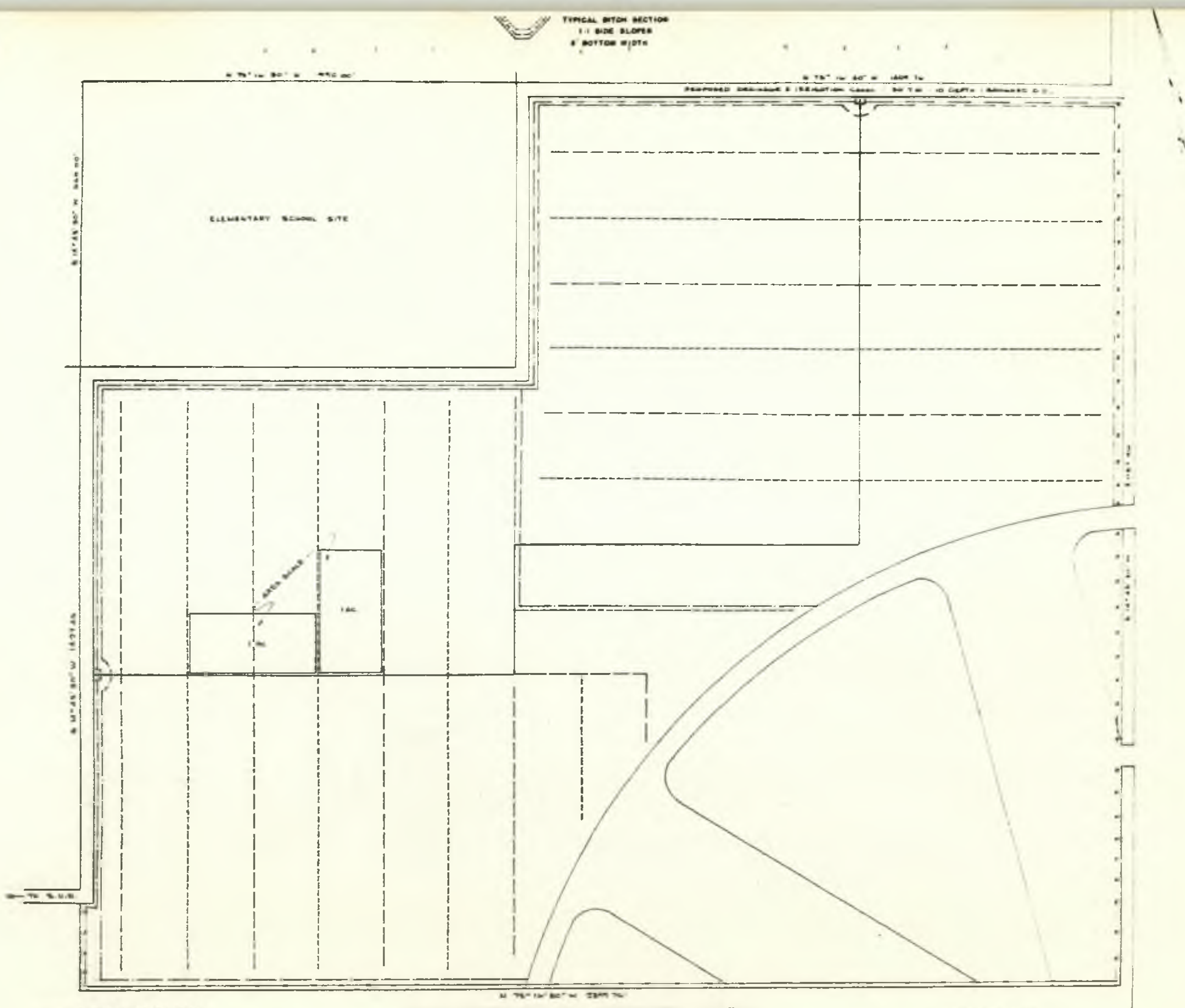
SURVEYED AND DRAWN SEPT., 1983
W.H. SPEIR – U.S.D.A., ARS, SWC



LINES OF EQUAL SOIL DEPTH TO ROCK
PLANTATION FIELD LABORATORY
FORMAN FIELD SITE

SCALE 1" = 100'
DEPTH IN FT.

SURVEYED AND DRAWN SEPT., 1963
W.H. SPEIR – U.S.D.A., ARS, SWC

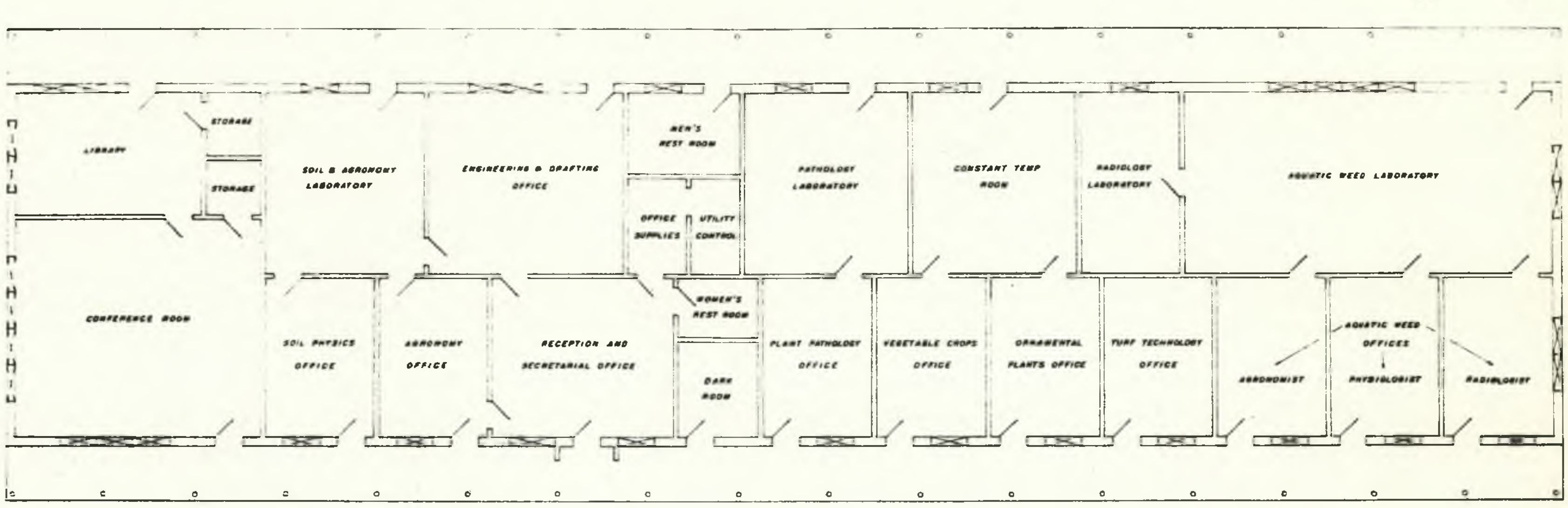


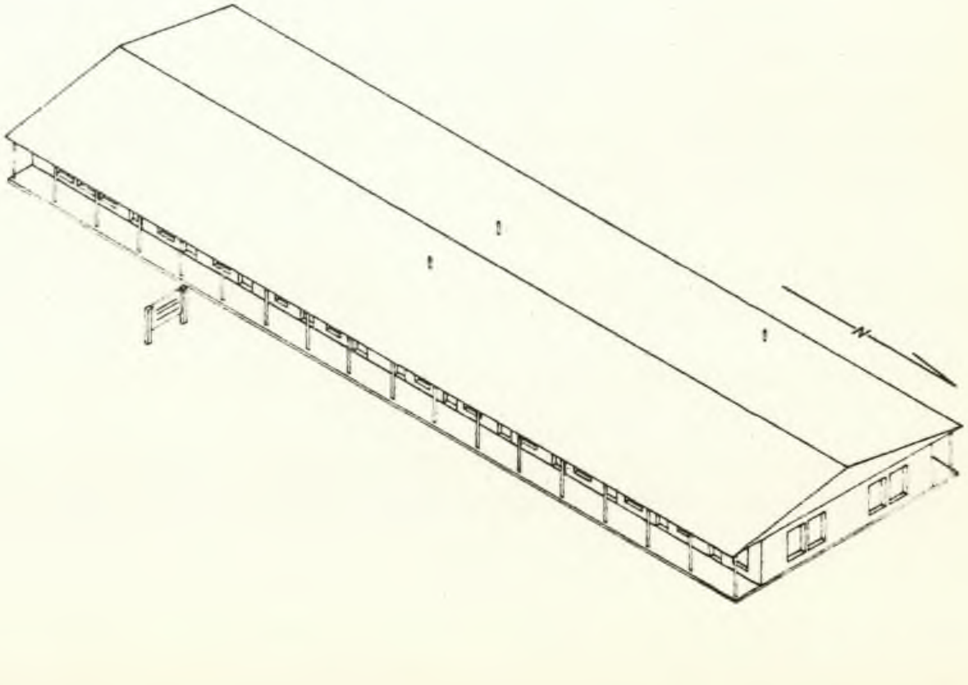
TYPICAL DITCH SECTION
1:1 SIDE SLOPES
8' BOTTOM WIDTH
ELEMENTARY SCHOOL SITE
PROPOSED DRAINAGE & IRRIGATION CANAL
AREA SCALE
1 AC.
1 AC.
# SUPPLY DITCH (5' DEPTH)
# FIELD LATERAL (4' DEPTH)
# FIELD LATERAL (5' DEPTH)
# ACCESS ROAD
℄ LEVEE (9.00' MSL - 10' TOP WIDTH)
DRAINAGE PUMP
IRRIGATION PUMP
FENCE

AREA DRAINAGE AND IRRIGATION SYSTEM
PLANTATION FIELD LABORATORY
FORMAN FIELD SITE
FORT LAUDERDALE , FLORIDA

SCALE 1" = 100'

DESIGNED AND DRAWN SEPT., 1963
W.H. SPEIR - U.S.D.A., ARS, SWC

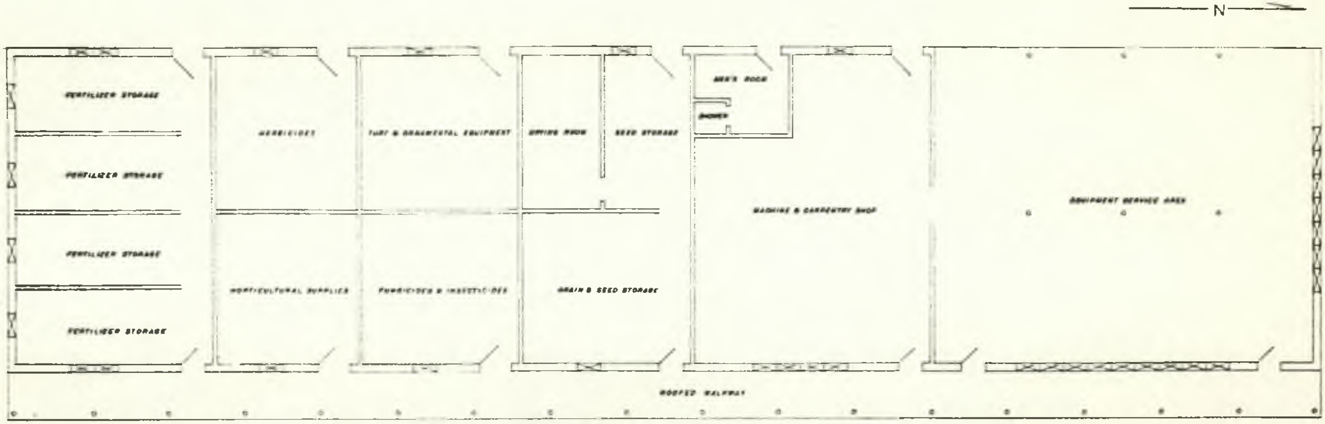




PROPOSED FLOOR PLAN AND ISOMETRIC VIEW
OF OFFICE AND LABORATORY FACILITIES
FOR PLANTATION FIELD LABORATORY
FORMAN FIELD SITE
FORT LAUDERDALE, FLORIDA

W H SPEIR

5 0 5
SCALE FT



PROPOSED FLOOR PLAN
FOR SERVICE AND STORAGE BUILDING
PLANTATION FIELD LABORATORY
FORMAN FIELD SITE
FORT LAUDERDALE, FLORIDA

W. H. SPEIR

5 0 5
SCALE · FT

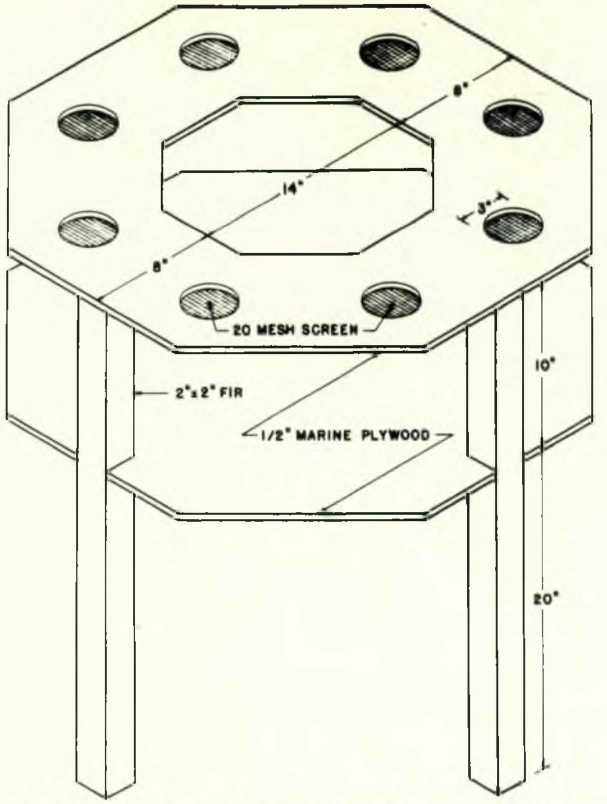
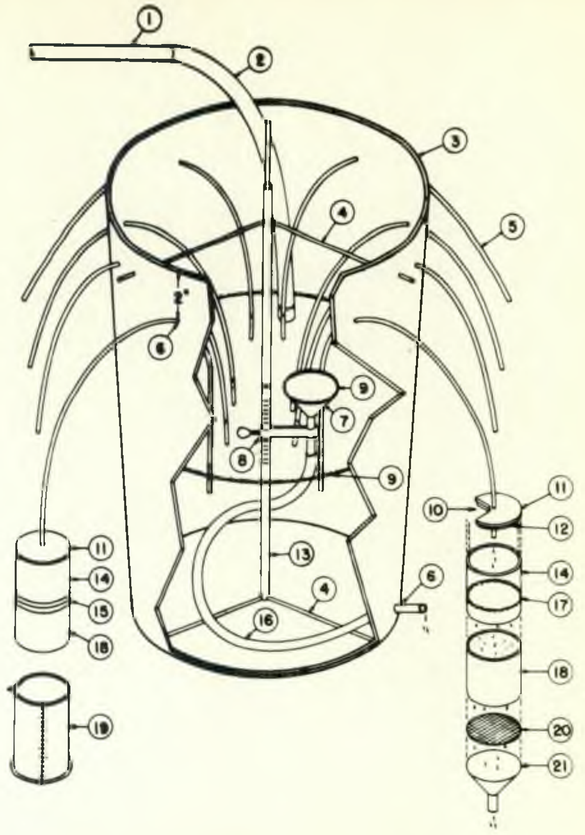
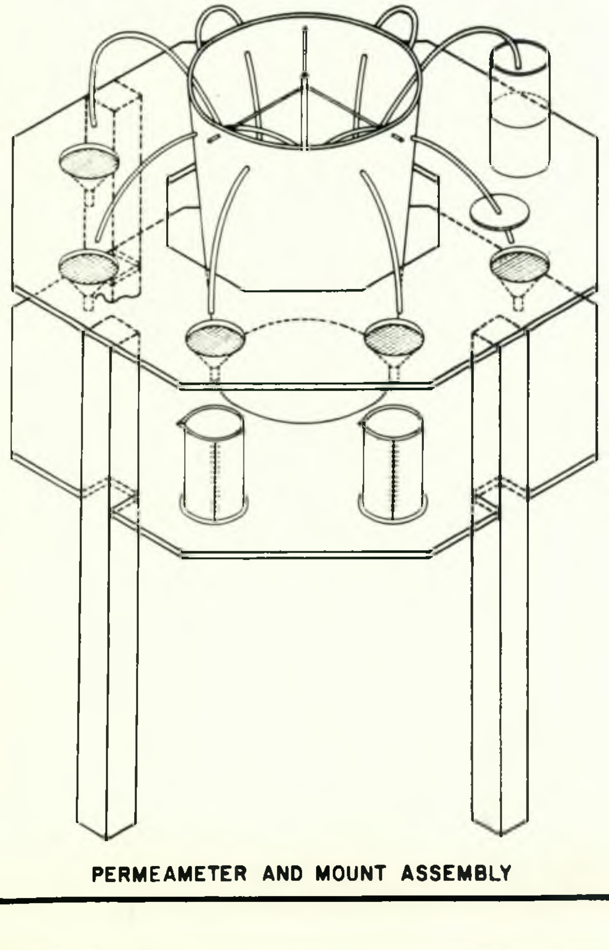


TABLE MOUNT FOR CONSTANT HEAD PERMEAMETER



CUTAWAY VIEW OF PERMEAMETER TANK
WITH EXPLODED VIEW OF SAMPLE ASSEMBLY



PERMEAMETER AND MOUNT ASSEMBLY

CONSTRUCTION AND OPERATIONAL DETAIL OF CONSTANT-HEAD MULTIPLE-SAMPLE PERMEAMETER

LEGEND:

① REGULATED WATER SOURCE
② 1/2" RUBBER HOSE
③ PLASTIC CONTAINER 18" HIGH WITH 12" I.D. TOP AND 9" I.D. BOTTOM (OR EQUIVALENT)
④ 1/4" ALUMINUM TUBING
⑤ 1/8" I.D. PLASTIC TUBE SYPHONS
⑥ ALL PERFORATIONS SEALED WITH PLASTIC CEMENT
⑦ 4" I.D. ALUMINUM FUNNEL FOR LEVEL OVERFLOW
⑧ METAL CLAMP FOR ADJUSTING CONSTANT HEAD LEVEL
⑨ WATER LEVEL FIXED BY OVERFLOW
⑩ CUT-OUT FOR MEASURING HEAD IN CYLINDER (OPTIONAL)
⑪ 1/4" x 3-1/4" PLYWOOD CAP
⑫ 1/4" x 2-7/8" PLYWOOD CYLINDER INSERT
⑬ 1/2" ALUMINUM TUBING
⑭ STANDARD 3" ALUMINUM CYLINDER FOR UHLAND SAMPLER
⑮ 2" MASKING TAPE SEAL
⑯ 3/8" OVERFLOW WASTE-WATER RUBBER HOSE
⑰ FIXED HEAD ON SAMPLE
⑱ UNDISTURBED 3" SOIL CORE IN CYLINDER
⑲ GRADUATED BEAKER FOR FLOW DETERMINATION
⑳ 20 MESH COPPER SCREEN
㉑ 4" I.D. ALUMINUM FUNNEL

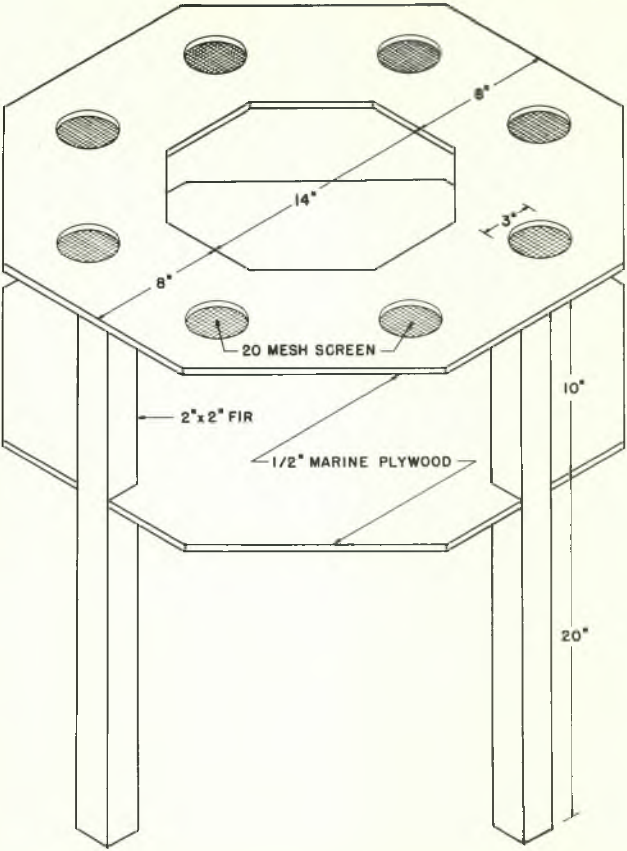
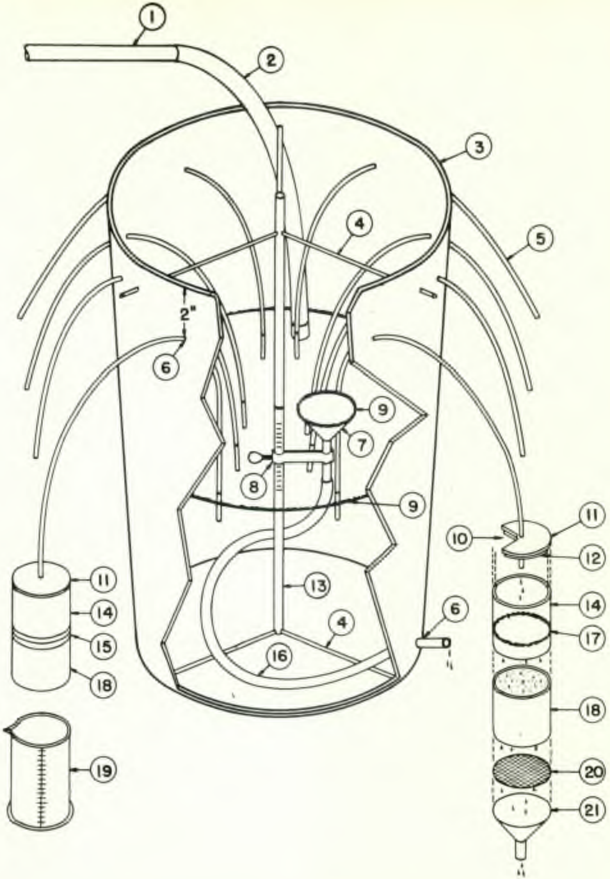
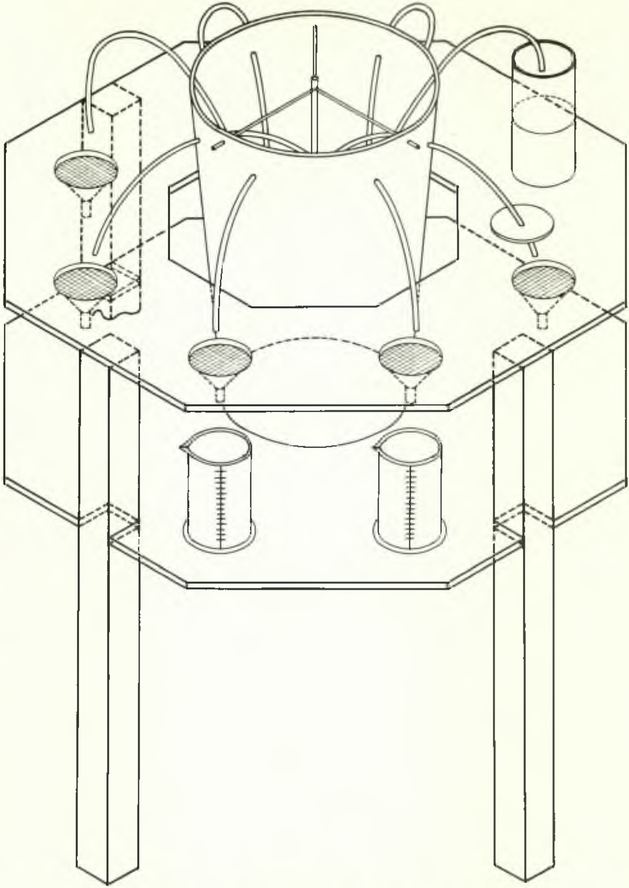


TABLE MOUNT FOR CONSTANT HEAD PERMEAMETER



CUTAWAY VIEW OF PERMEAMETER TANK
WITH EXPLODED VIEW OF SAMPLE ASSEMBLY



PERMEAMETER AND MOUNT ASSEMBLY

CONSTRUCTION AND OPERATIONAL DETAIL OF CONSTANT-HEAD MULTIPLE-SAMPLE PERMEAMETER

LEGEND:

① REGULATED WATER SOURCE

② 1/2" RUBBER HOSE

③ PLASTIC CONTAINER 18" HIGH WITH 12" I.D. TOP AND 9" I.D. BOTTOM (OR EQUIVALENT)

④ 1/4" ALUMINUM TUBING

⑤ 1/8" I.D. PLASTIC TUBE SYPHONS

⑥ ALL PERFORATIONS SEALED WITH PLASTIC CEMENT

⑦ 4" I.D. ALUMINUM FUNNEL FOR LEVEL OVERFLOW

⑧ METAL CLAMP FOR ADJUSTING CONSTANT HEAD LEVEL

⑨ WATER LEVEL FIXED BY OVERFLOW

⑩ CUT-OUT FOR MEASURING HEAD IN CYLINDER (OPTIONAL)

⑪ 1/4" x 3-1/4" PLYWOOD CAP

⑫ 1/4" x 2-7/8" PLYWOOD CYLINDER INSERT

⑬ 1/2" ALUMINUM TUBING

⑭ STANDARD 3" ALUMINUM CYLINDER FOR UHLAND SAMPLER

⑮ 2" MASKING TAPE SEAL

⑯ 3/8" OVERFLOW WASTE-WATER RUBBER HOSE

⑰ FIXED HEAD ON SAMPLE

⑱ UNDISTURBED 3" SOIL CORE IN CYLINDER

⑲ GRADUATED BEAKER FOR FLOW DETERMINATION

⑳ 20 MESH COPPER SCREEN

㉑ 4" I.D. ALUMINUM FUNNEL

SUMMATION OF SIGNIFICANT FINDINGS BY LINE PROJECTS

SWC 2-b1

The Cypress Creek formula ($Q = C M^{5/6}$) appears to be suitable for estimating peak 24-hour rates of runoff from various size drainage areas of the 15 to 100 square-mile range in flatwoods areas of the Southeast. The coefficient C in this formula is related to rainfall excess by the empirical equation $C = 16.24 + 14.75 \times$ Rainfall Excess. Rainfall excess depends upon available soil storage (approximately three inches for experimental watershed area) subtracted from total 24-hour rainfall. Probability of occurrence of various runoff rates can be obtained by considering the foregoing relationships and the occurrence probability of total 24-hour rainfall amounts. (Fla PL-6)

SWC 2-b4

Analysis of the hydrograph for Monreve Ranch, FLA W-4, shows that pumped irrigation during rainfree periods contributes approximately .006 inch to daily runoff by seepage. (Fla PL-5)

Analysis of artesian pressure data from two artesian wells in the Indian River Farms Drainage District, W-1, shows that artesian piezometric surface elevations have declined approximately five feet in the four-year period 1959-1962. (Fla PL-5)

Increased use of artesian water wasted to runoff, and urban development, in the Indian River Farms Drainage District has changed the normal ratio of runoff to rainfall from 43% prior to 1958 to 55% since 1958. (Fla PL-5)

SWC 5-b1

Flow rate of porous tile installed for subirrigation of Tifway bermudagrass continued to decrease slowly during the year. Treating the tile with sulfur dioxide gas or dilute nitric acid increased the flow rate significantly but not sufficiently under field conditions to meet the moisture needs of the bermudagrass. (Fla PL-8)

SWC 6-b1

Seepage through the rock strata underlying a peaty-muck soil at the Everglades Experiment Station appears to be an important factor affecting water-table control. (Fla PL-2)

Surveys over established subsidence lines on the organic soils of the Florida Everglades in 1963 show that the average rate of subsidence since 1912 has been .0959 ft./yr. (Fla PL-2)

During an extended dry period of 6 weeks evapotranspiration of bermudagrass was about 23 percent less for a 36-inch water table than for a 12-inch water table on an Arsdell fine sandy soil. (Fla PL-1)

SWC 11-b4

Strontium-90 in field-grown crops was markedly increased by each rainfall during the spring of 1962, a period with a high rate of fallout. Accumulation was comparatively small when the plants were very small and between rains in later growth stages. (Fla PL-9)

Summation of Significant Findings by Line Projects, continued

SWC 1-b4

No significant findings to be reported at this time. However, data are still being taken on two well lines. Studies will be re-established after the drainage ditches are constructed on the Taylor Creek Watershed.

PUBLICATIONS

Technical papers and research reports published or prepared for publication by personnel of the Everglades Project, Soil and Water Conservation Research Division, So. Branch, Agricultural Research Service - 1963.

Published

Menzel, Ronald G., Howard Roberts, Jr., Ernest H. Stewart, and Arnold J. MacKenzie. Strontium-90 Accumulation on Plant Foliage During Rainfall. Science. Vol. 142, No. 3592. Pp. 576-577. Nov. 1, 1963.

Speir, William H. Installation and Operation of Non-Weighing Lysimeters. Soil and Crop Science Society of Florida Proceedings, Volume 22. Fla. Agr. Exp. Sta. Journal Series No. 1629. 1962.

Stephens, John C. I. Resources . . . 2. Water, a. Ground Water; IV. Services . . . E. Central & So. Fla. Flood Control District. Progress by Design, Diamond Jubilee Anniversary edition of Sunshine State Agricultural Research Report, Vol. 8, No. 1, March 1963.

Stephens, J. C., R. D. Blackburn, D. E. Seaman, and L. W. Weldon. Flow Retardance by Channel Weeds and Their Control. Proc. Paper 3550. Irrigation and Drainage Div., American Society of Civil Engineers Journal, Vol. 89, No. IR 2, Pp. 31-53. June 1963.

Stephens, John C., and Ernest H. Stewart. A Comparison of Procedures for Computing Evaporation and Evapotranspiration. Publication No. 62 of the I.A.S.A. Comm. for Evaporation, Transactions of IUGG, Pp. 123-133. Fla. Agr. Exp. Sta. Journal Series No. 1664. August 1963.

Stewart, Ernest H., David P. Powell, and Luther C. Hammond. Moisture Characteristics of Some Representative Soils of Florida. ARS 41-63. April 1963.

Annual Progress Report. E. H. Stewart, W. H. Speir, and W. C. Mills. Multilithed (100 copies) for limited distribution. 1962.

Approved for Publication

Menzel, Ronald G., Howard Roberts, Jr., Ernest H. Stewart, and Arnold J. MacKenzie. ABSTRACT, Strontium-90 Accumulation on Plant Foliage During Rainfall, as published in Science, Nov. 1963. Modern Medicine, The Journal of Diagnosis and Treatment. U.S. and Foreign Editions. 65th at Valley View Rd., Southdale Park, Minneapolis 24, Minn.

Bardsley, C. E., Suman, R. F., and Stewart, E. H. The Sulfur Status of South Carolina Crops and Soils. Approved for publication, Div., Oct. 15, 1963, S.C. Exp. Sta. Tech. Bul.

Approved for Presentation

Stephens, J. C., and W. C. Mills. Use of the Cypress Creek Formula to Estimate Runoff in the Southern Coastal Flatwoods. ASAE Winter Meeting, Chicago, Ill. Dec. 11, 1963.

In Preparation

Carreker, J. R., O. L. Bennett, B. D. Doss, J. O. Sanford, G. N. Sparrow, E. H. Stewart, and R. E. Williamson. Evapotranspiration from Crops in the Southeast. USDA Bulletin.

Speir, William H., and Ernest H. Stewart. Moisture Tension and Hydraulic Conductivity Measuring Apparatus. "Instrument News" type release, ASAE Journal, or similar publication.

Speir, William H., John C. Stephens, and Wm. C. Mills. The Hydrology of Two Florida Watersheds; a Progress Report, Oct. 1, 1955 thru Sept. 30, 1962. ARS-41 Series.

APPENDIX

Part I - Monthly Hydrologic Data, Indian River Farms Drainage District (W-1), 10/1/62 - 9/30/63.

Part II - Monthly Hydrologic Data, Upper Taylor Creek (W-2), Upper Taylor Creek (W-3), 10/1/62 - 9/30/63.

Part III - Monthly Hydrologic Data, Monreve Ranch (W-4), 10/1/62 - 9/30/63.

Part IV - Monthly Hydrologic Data, Plantation Field Laboratory - 1963.

Division 1 - Rainfall, Air Temperature, Wind, Relative Humidity

Division 2 - Solar Radiation, Standard Pan Evaporation, Water Temperature

Division 3 - Evapotranspiration of Tifway Bermudagrass at 12-, 18-, 24-, and 36-inch depth - 12/14/62 - 12/31/63

Part V - Monthly Hydrologic Data, Everglades Experiment Station - 1963.

Division 1 - Rainfall, Air Temperature, Wind

Division 2 - Standard Pan and Land Tank Evaporation

Part VI - Daily Mean Ground Water Stage - Upper Taylor Creek Watershed (W-2), (W-3)

PART I

Monthly Hydrologic Data

Indian River Farms Drainage District (W-1)

10/1/62 - 9/30/63

U.S.D.A - AGRICULTURAL RESEARCH SERVICE - FORT LAUDERDALE, FLORIDA

COOPERATING WITH

CENTRAL AND SOUTHERN FLORIDA FLOOD CONTROL DISTRICT &
UNIVERSITY OF FLORIDA, AGRICULTURAL EXPERIMENT STATION

U.S.D.A., A.R.S., APRIL 1961
REVISED JAN. 1962

MONTHLY HYDROLOGIC DATA INDIAN RIVER FARMS DRAINAGE DISTRICT
FLORIDA WATERSHED W—1

*NOTE: Runoff data provisional only.

DATE OCT MONTH 1962 YEAR	RAINFALL: MEASURED RAINFALL (INCHES) GAGE 1 P	2 A	3 C	4 O	5 R	WEIGHTED RAINFALL (INCHES) GAGE 1 14%	2 16%	3 26%	4 19%	5 25%	TOTAL WEIGHTED RAINFALL (INCHES)	STAGE (FT. M.S.L.) MAIN CANAL	NORTH RELIEF CANAL	SOUTH RELIEF CANAL	DISCHARGE (SEC. FT.) MAIN CANAL	NORTH RELIEF CANAL	SOUTH RELIEF CANAL	TOTAL DISCHARGE (SEC. FT.)	TOTAL DISCHARGE (Q x .00047) (IN. OVER DISTRICT)	PAN EVAP. (INCHES)
1												10.15	3.91	2.80	303	107	13	423	.195	.06
2	.30	.21				.04	.03				0.07	9.41	3.29	2.80	141	53	13	207	.097	.15
3												9.20	3.18	2.79	106	49	11	161	.076	.15
4												9.25	3.21	2.80	126	46	11	183	.086	.22
5			.10					.03			0.03	9.33	3.19	2.80	127	49	11	182	.085	.17
6												9.08	2.79	2.80	88	18	10	116	.054	[illegible]
7												9.01	2.58	2.80	78	6.7	9.6	94.3	.044	[illegible]
8												8.83	2.60	2.80	60	7.0	9.1	76.1	.036	.17
9												8.90	2.62	2.82	16	7.7	9.6	33.3	.016	.19
10												8.89	2.63	2.84	57	7.7	10	74.7	.035	.14
11												9.01	2.63	2.85	75	7.7	10	95.7	.045	.27
12			.05					.01			0.01	8.43	2.66	2.86	68	8.4	10	86.4	.041	.32
13		.35	.10	.35	.15		.06	.03	.07	.04	0.20	8.40	2.64	2.89	64	7.7	11	82.7	.035	.25
14												9.29	2.69	2.89	120	7.4	10	137.4	.065	[illegible]
15												8.40	2.65	2.88	69	7.7	9.6	86.3	.041	
16												8.55	2.72	2.87	26	10	8.0	44.0	.021	.31
17	.05	.05	.05	.05		.01	.01	.01	.01		0.04	8.63	2.70	2.90	34	7.4	9.1	52.5	.025	[illegible]
18												8.83	2.69	2.91	56	7.0	9.1	72.1	.034	
19												8.99	2.61	2.91	76	6.1	8.5	90.6	.043	[illegible]
20												8.93	2.59	2.92	63	5.4	8.5	81.9	.038	
21												8.91	2.59	2.92	65	5.4	8.0	78.4	.037	
22	.07	.14	.11	.20	.16	.01	.02	.03	.04	.04	0.14	8.57	2.58	2.95	31	5.1	9.1	45.2	.021	
23												8.91	2.60	2.95	73	5.8	8.5	87.3	.041	
24												9.14	2.59	2.97	97	5.4	9.1	111.5	.052	
25												8.77	2.60	2.98	49	5.5	9.1	63.9	.030	
26												8.66	2.61	2.99	37	6.1	9.1	52.2	.024	
27												8.71	2.61	3.00	65	6.1	9.1	80.2	.038	
28												9.16	2.60	3.01	[illegible]	5.8	9.1	119.9	.054	[illegible]
29												8.85	2.60	3.04	68	5.5	10	83.8	.039	[illegible]
30												8.25	2.61	3.05	[illegible]	6.1	10	22.7	.011	[illegible]
31												8.49	2.66	3.08	24	7.7	11	41.7	.020	[illegible]
TOTAL	.42	.75 (.50)	.41	.60	.31	.06	.12	.11	.12	.08	0.99	—	—	—	[illegible]	485.0	303.2	3,162.8	1.487	[illegible]

DATE NOV MONTH 1962 YEAR	RAINFALL: MEASURED RAINFALL (INCHES) GAGE 1 P	2 A	3 C	4 O	5 R	WEIGHTED RAINFALL (INCHES) GAGE 1 14%	2 16%	3 26%	4 19%	5 25%	TOTAL WEIGHTED RAINFALL (INCHES)	STAGE (FT. M.S.L.) MAIN CANAL	NORTH RELIEF CANAL	SOUTH RELIEF CANAL	DISCHARGE (SEC. FT.) MAIN CANAL	NORTH RELIEF CANAL	SOUTH RELIEF CANAL	TOTAL DISCHARGE (SEC. FT.)	TOTAL DISCHARGE (Q x .00047) (IN. OVER DISTRICT)	PAN EVAP. (INCHES)
1												9.12	2.81	3.08	94	15	11	120	.056	.16
2	.05	.02	.05	.05	.05	.01	.00	.01	.01	.01	0.04	9.21	2.73	3.08	108	11	10	129	.061	.21
3		.02					.00				0.00	9.19	2.72	3.07	104	10	10	124	.058	.23
4	.05	.02	.05	.05		.01	.01	.01	.01		0.04	9.24	2.72	3.10	112	10	10	132	.062	.45
5												9.13	2.72	3.10	96	10	9.6	115.6	.054	.16
6												8.55	2.69	3.10	33	[illegible]	9.1	51.0	.024	.18
7		.02					.00					8.42	2.69	3.11	18	8.9	9.1	36.0	.017	.19
8	1.10	.84	.90	.75	.90	.15	.13	.23	.14	.22	0.87	9.23	2.77	3.14	111	12	10	133	.062	.27
9	1.45	2.06	2.30	1.55	2.30	.20	.23	.60	.29	.58	1.90	10.81	4.20	4.67	524	170	250	944	.443	.17
10												9.54	3.50	3.90	193	85	137	415	.195	.26
11												8.65	2.54	2.72	43	6.1	21	70.1	.033	.15
12												9.43	2.61	2.75	[illegible]	8.4	18	172.4	.080	.16
13												9.32	2.62	2.92	[illegible]	[illegible]	16	[illegible]	.070	.15
14												9.22	2.61	2.85	109	8.4	14	131.4	.062	.19
15												8.99	2.60	2.85	76	8.0	14	98.0	.046	.22
16												8.77	2.58	2.96	51	7.4	13	71.4	.034	.18
17												8.74	2.58	2.95	67	7.4	12	86.4	.042	.07
18		.02					.00				0.00	9.09	2.59	2.94	90	7.7	11	108.7	.051	.16
19												8.98	2.60	2.94	74	8.5	11	93.0	.044	.17
20												8.72	2.60	2.94	45	8.0	11	64.0	.030	.05
21	.05	.03	.10	.05	.05	.01	.01	.03	.01	.01	0.07	8.26	2.59	2.82	48	7.7	10	65.7	.031	.14
22	.20	.30	.22	.35	.05	.03	.05	.06	.07	.01	0.22	9.13	2.67	2.83	96	11	11	118	.055	.20
23												9.05	2.63	2.82	88	8.9	9.6	106.5	.050	.24
24												8.95	2.63	2.82	70	8.7	9.6	88.5	.042	.19
25												8.90	2.63	2.83	64	8.4	9.6	82.0	.039	.19
26												8.85	2.64	2.81	59	[illegible]	9.6	76.5	.036	.15
27												9.62	2.64	2.83	80	8.9	9.6	98.5	.046	.23
28												9.01	2.67	2.94	78	9.8	9.6	97.4	.046	.14
29												8.70	2.67	2.92	64	[illegible]	8.5	[illegible]	.039	.20
30		.01					.00				0.00	8.93	2.66	[illegible]	68	[illegible]	[illegible]	84.9	.040	.04
31																				
TOTAL	2.90	3.34 (3.20)	3.62	2.80	3.35	.41	.43	.94	.53	.83	3.14	—	—	—	[illegible]	510.8	721.7	4,145.2	[illegible]	5.60

U.S.D.A. - AGRICULTURAL RESEARCH SERVICE - FORT LAUDERDALE, FLORIDA

COOPERATING WITH

CENTRAL AND SOUTHERN FLORIDA FLOOD CONTROL DISTRICT &
UNIVERSITY OF FLORIDA, AGRICULTURAL EXPERIMENT STATION

U.S.D.A., A.R.S., APRIL 1961
REVISED JAN [illegible]

MONTHLY HYDROLOGIC DATA INDIAN RIVER FARMS DRAINAGE DISTRICT
FLORIDA WATERSHED W—1

*NOTE: Runoff data provisional only.

DATE FEB MONTH 1963 YEAR	RAINFALL MEASURED RAINFALL GAGE 1 P (INCHES)	2 A	3 C	4 O	5 R	WEIGHTED RAINFALL GAGE 1 14% (INCHES)	2 16%	3 26%	4 19%	5 25%	TOTAL WEIGHTED RAINFALL (INCHES)	STAGE MAIN CANAL (FT. M.S.L.)	NORTH RELIEF CANAL	SOUTH RELIEF CANAL	DISCHARGE MAIN CANAL (SEC. FT.)	NORTH RELIEF CANAL	SOUTH RELIEF CANAL	TOTAL DISCHARGE (SEC. FT.)	TOTAL DISCHARGE (Qx.00047) (IN. OVER DISTRICT)	PAN EVAP. (INCHES)
1	—	T										867	273	305	37	61	19	571	.027	.27
2												861	2.73	298	31	61	75	446	.021	.11
3	.42	.64	70	.50	40	.06	.10	.18	.10	10	054	860	2.73	294	34	61	53	454	.021	11
4	.69	.63	60	55	.95	.10	.16	.16	.10	.11	057	947	277	300	150	74	90	1654	.078	.15*
5		T										927	278	299	116	77	69	1306	.061	.14
6		T										9.03	277	298	80	74	58	932	.044	.13
7												888	275	297	60	67	53	72.0	.034	[illegible]
8												875	2.76	298	45	70	53	57.3	.027	22
9												864	275	298	24	67	45	455	.021	.24
10												843	276	277	16	70	44	278	.013	[illegible]
11												897	2.76	300	72	70	53	843	.040	[illegible]
12	1.55	94	1.05	1.07	.88	.22	.15	.27	.20	22	1 06	927	291	305	119	89	75	1354	.064	.17
13												934	296	[illegible]	127	21	53	1533	.072	.15*
14												902	354	312	78	70	49	1528	.072	.16
15												866	278	309	36	77	38	495	.023	[illegible]
16	.53	.16	.60	50	.50	.07	.07	.16	.10	.12	052	868	2.75	366	38	67	64	51.1	.024	
17												899	278	307	74	77	64	88.1	.041	[illegible]
18		T										927	277	366	117	74	53	1117	.052	[illegible]
19	1.13	.63	1.00	.85	.70	.16	.10	.26	.16	.18	0 86	931	286	310	122	64	75	1377	.065	.14
20												956	284	311	166	10	75	1385	[illegible]	.15
21												930	282	313	124	94	[illegible]	[illegible]	[illegible]	.17
22												8.65	2.79	[illegible]	41	80	75	565	.027	[illegible]
23				08	.05				02	.01	003	952	273	315	25	77	55	452	.021	[illegible]
24		.02	.05	.10	.18		00	.01	.02	04	007	912	278	317	74	77	91	[illegible]	.052	[illegible]
25												927	277	317	120	74	96	1370	.064	.25
26	1.80	1.21	1.30	.90	1.40	25	.19	.37	.17	35	1 35	938	317	374	150	74	130	324 [illegible]	.152	[illegible]
27												946	362	3.56	158	[illegible]	83	324 [illegible]	.152	[illegible]
28												9.15	294	299	98	10	[illegible]	1176	.055	[illegible]
29																				
30																				
31																				
TOTAL	6.12	4.54 (505)	550	455	456	86	.71	1.43	.87	1.13	5 00	—	—	—	2,369	4002	399.8	[illegible]	[illegible]	4.15

★ [illegible]

DATE [illegible] MONTH [illegible] YEAR	RAINFALL MEASURED RAINFALL GAGE 1 P (INCHES)	2 A	3 C	4 O	5 R	WEIGHTED RAINFALL GAGE 1 14% (INCHES)	2 16%	3 26%	4 19%	5 25%	TOTAL WEIGHTED RAINFALL (INCHES)	STAGE MAIN CANAL (FT. M.S.L.)	NORTH RELIEF CANAL	SOUTH RELIEF CANAL	DISCHARGE MAIN CANAL (SEC. FT.)	NORTH RELIEF CANAL	SOUTH RELIEF CANAL	TOTAL DISCHARGE (SEC. FT.)	TOTAL DISCHARGE (Qx.00047) (IN. OVER DISTRICT)	PAN EVAP. (INCHES)
1		.20	.10	.20	29		.03	03	.04	.07	0 17	926	292	294	116	79	76	[illegible]	[illegible]	[illegible]
2		.11	.10	.10	.10		02	03	.02	02	0 09	929	280	296	120	31	10	1341	.065	.28
3												919	2.79	2.95	103	34	91	[illegible]	.057	.14
4												905	280	295	83	74	85	1009	.047	.18
5			.07		.10			.02		.02	0 04	900	278	296	76	[illegible]	[illegible]	[illegible]	[illegible]	.18
6		.08					.01				0 01	899	2.78	[illegible]	74	[illegible]	[illegible]	[illegible]	.043	.17
7		.07	.05	.10	.20		.01	.01	.02	.05	0 09	899	277	295	74	[illegible]	91	915	.043	.21
8												906	275	297	[illegible]	[illegible]	80	1006	[illegible]	.18
9	.95	.47	.50	.45	.56	.13	.08	13	.09	.12	0 55	905	273	300	[illegible]	74	91	995	.047	23
10												906	279	302	[illegible]	14	96	1036	[illegible]	.21
11												928	277	361	117	[illegible]	95	1349	.063	.12
12		T										916	275	302	95	64	[illegible]	[illegible]	[illegible]	.19
13												901	273	303	77			941	[illegible]	.17
14	.08	T				.01					0 01	876	272	303	46	77	[illegible]	622	.027	13
15												873	271	304	43	77	[illegible]	592	[illegible]	.19
16												891	269	[illegible]	64	75	[illegible]	795	[illegible]	.17
17												[illegible]	267	366	76	67	[illegible]	912	.043	.19
18												[illegible]	[illegible]	307	76	64	[illegible]	909	.043	21
19		T										889	269	308	60	61	[illegible]	752	.035	25
20		.03					00					[illegible]	263	309	28	58	91	427	[illegible]	21
21												834	262	[illegible]	[illegible]	58	[illegible]	230	.011	23
22												835	2.62	307	19	58	[illegible]	237	.011	22
23												[illegible]	264	309	20	[illegible]	[illegible]	[illegible]	[illegible]	22
24												[illegible]	265	309	36	70	[illegible]	699	.033	[illegible]
25												911	263	310	[illegible]	64	[illegible]	1039	[illegible]	[illegible]
26												877	263	3.11	[illegible]	67	[illegible]	[illegible]	[illegible]	[illegible]
27		T										857	2.63	312	26	[illegible]	[illegible]	[illegible]	[illegible]	.15
28		.24					.04				0.04	875	264	312	[illegible]	74	[illegible]	[illegible]	[illegible]	23
29	.05	[illegible]	.08	.10	.45	.01	.04	.02	02	.11	0.20	[illegible]	[illegible]	313	[illegible]	61	[illegible]	[illegible]	[illegible]	22
30	.20	1.12	.85	1.05	.20	.03	.19	.22	.20	.15	0 79	[illegible]	261	326	121	67	15	142.7	[illegible]	.24
31												[illegible]	269	3.25	206	73	13	[illegible]	[illegible]	[illegible]
TOTAL	[illegible]	265 (1.98)	1.75	200	224	.18	.42	.46	.39	.54	1 99	—	—	—	2,276 1	235.5	271 0	2,782 6	[illegible]	[illegible]

U.S.D.A - AGRICULTURAL RESEARCH SERVICE - FORT LAUDERDALE, FLORIDA

COOPERATING WITH

CENTRAL AND SOUTHERN FLORIDA FLOOD CONTROL DISTRICT &
UNIVERSITY OF FLORIDA, AGRICULTURAL EXPERIMENT STATION

U.S.D.A., A.R.S., APRIL 1961
REVISED JAN. 1964

MONTHLY HYDROLOGIC DATA INDIAN RIVER FARMS DRAINAGE DISTRICT

FLORIDA WATERSHED W—I *NOTE: Runoff data provisional only.

DATE JUNE MONTH 1963 YEAR	RAINFALL MEASURED RAINFALL GAGE 1 P (INCHES)	2 A	3 C	4 O	5 R	WEIGHTED RAINFALL GAGE 1 14% (INCHES)	2 16%	3 26%	4 19%	5 25%	TOTAL WEIGHTED RAINFALL (INCHES)	STAGE MAIN CANAL (FT. M. S. L.)	NORTH RELIEF CANAL	SOUTH RELIEF CANAL	DISCHARGE MAIN CANAL (SEC. FT.)	NORTH RELIEF CANAL	SOUTH RELIEF CANAL	TOTAL DISCHARGE (SEC. FT.)	TOTAL DISCHARGE (Qx.00047) (IN. OVER DISTRICT)	PAN EVAP. (INCHES)
1	.15	.28	.10		.05	.02	.04	.03		.01	0 10	9 09	2.74	2 83	90	5 1	4 7	99 8	.017	.39
2												9 06	2.71	2 92	85	4 3	5 7	95 0	[illegible]	22
3			.15		2 21			.04		.55	0 59	8 86	2.72	2 92	[illegible]	4 5	5 7	69 2	.033	33
4				.10					02		0 02	8 78	2 74	4 46	50	5 1	65	120.1	.056	.32
5	.50	.84	.20	.90	1 20	07	.13	.05	.17	.30	0 72	9 13	3 75	4 69	102	127	81	312 0	.147	24
6												8 96	3 90	4 87	78	134	56	268.0	.126	.04
7												8 69	2.77	3 05	40	5 8	11	56.8	.027	.36
8	.35			.35		.05			07		0 12	8.70	2 75	3 46	41	5 1	16	67.1	.029	30
9	.50		.60			07		.16			0 23	8 83	2 72	3.47	56	4 3	16	76 2	.036	.20
10		.07					.01				0.01	8 76	2.71	3 48	77	4 0	16	99 0	.047	.17
11		.11	.45				.07	.12			0 14	8 59	2.70	3 46	30	3.7	16	49 7	.023	28
12												8 67	2 69	3 36	38	3 2	14	55 2	.026	36
13	.25	31		.10	.50	.04	.05		.02	.12	0 23	8 81	2.71	3 63	52	3 7	22	77.7	.037	.28
14	.25	.54	1 30	.85	.30	.04	.09	.34	.16	.08	0 71	9 06	2.75	3.45	84	4 8	18	106 8	.050	.26
15	.30	30			1 00	.04	.05			25	0 39	9 01	2 81	3 44	77	6 7	16	99 7	047	36
16		16	.15	.45			.03	.04	.09		0 16	9 04	2.81	3 72	81	6 7	23	107 7	051	41
17		.03					.00				0 00	9 05	2 85	3 28	93	80	14	105.0	.049	32
18												8 95	2.82	3 34	67	6 7	14	89 7	.042	20
19					.25					06	0 06	8 62	2.78	3 17	35	54	12	52 4	025	.19
20												8 26	2.76	2 69	61	48	64	17 3	.008	27
21			.25	.20				.06	.04		0.10	8 43	2.75	2 69	20	4 5	6 4	30 9	015	.26
22												8 64	2.75	2 71	37	4 5	6 6	48 1	.023	21
23			20	.10	.30			.05	02	.08	0 15	8 76	2 76	2 73	43	4 5	6 5	54 6	.026	.17
24		.06		.10	10		.01		02	02	0 05	8 88	2.75	3 00	64	4 5	10	78 5	.037	26
25	.30	T	.50	.85	.55	.04		.13	.16	.14	0 47	8 72	2 75	3 19	44	4 5	24	72 5	.034	29
26	1 50	.98	.75	35	.35	21	01	20	07	.09	0 58	8 91	2 85	3.96	67	7 7	26	100.7	.047	.05
27	.65	.92	1.00	.60	.45	.09	07	26	.11	.11	0 64	9 77	3 99	4 26	236	177	38	451	.212	16
28	.95	1.56	.15	.35	.30	.13	25	04	.07	.08	0 57	9 28	4 32	3 88	132	204	29	365	.167	.27
29	.05	.57				.01	.09				0.10	9 16	3.17	3 67	107	47	19	172	080	.27
30												8 68	3 06	3.67	45	35	17	102	.048	.19
31																				
TOTAL	5 75	5 33	5 80	5 30	7 56	.81	.85	1.52	1 02	1 87	6 09	—	—	—	2,033 1	845.4	609 3	3 437.[illegible]	1.642	759

DATE JULY MONTH 1963 YEAR	RAINFALL MEASURED RAINFALL GAGE 1 P (INCHES)	2 A	3 C	4 O	5 R	WEIGHTED RAINFALL GAGE 1 14% (INCHES)	2 16%	3 26%	4 19%	5 25%	TOTAL WEIGHTED RAINFALL (INCHES)	STAGE MAIN CANAL (FT. M. S. L.)	NORTH RELIEF CANAL	SOUTH RELIEF CANAL	DISCHARGE MAIN CANAL (SEC. FT.)	NORTH RELIEF CANAL	SOUTH RELIEF CANAL	TOTAL DISCHARGE (SEC. FT.)	TOTAL DISCHARGE (Qx.00047) (IN. OVER DISTRICT)	PAN EVAP. (INCHES)
1												8 90	2 93	3 22	65	26	13	104 0	.049	.24
2												8 80	2.91	2 76	53	25	7.1	85.1	[illegible]	[illegible]
3			.50	.10				.13	02		0.15	8 59	2 92	2 78	31	26	7 3	64 3	.030	.33
4			1.00	.15	.70			.26	03	.18	0 47	8 28	2 92	2 80	6 6	26	7 5	40 1	[illegible]	.18
5					.20					.05	0 05	9 07	2 90	3 59	103	24	30	157.0	.074	32
6												8 72	2 85	3 75	54	22	26	102 0	[illegible]	.29
7												8 40	2 91	3 47	16	19	18	53 0	.025	28
8												8 65	2 81	2 81	36	19	7 6	62 6	.029	26
9		.27					.04				0 04	8 65	2 80	2 74	36	18	6 9	60 9	.029	25
10												8 73	2 78	2 75	33	17	7 0	[illegible]	.032	.21
11	.90	2 32	1 30	3 60		.13	.37	34	.57		1 41	9 44	2 76	3 37	146	31	39	255 5	.120	.22
12	.05	.02				.01	.00				0 01	9 27	3 83	3 15	146	100	35	281 0	.132	.26
13												9 11	3 75	2.73	92	92	6 3	190.8	.090	30
14	30	.22		1 20		.04	.04		23		0 31	8 92	3 70	2 72	65	[illegible]	6 7	[illegible] 7	.075	20
15												8 95	3 69	2 72	69	57	6 7	162 7	.076	.09
16		.62					.10				0.10	9 11	3 67	2 73	91	85	6 8	122 3	.056	30
17												8.54	3 61	2 75	65	90	7 0	155 0	[illegible]	[illegible]
18												8 95	3 59	3 02	57	79	10	145 0	.068	30
19		.08			.70		.01			.18	0 19	8 64	3 35	3 34	36	[illegible]	15	109 0	.051	25
20	.10	.62	.65	1 35	83	.01	.10	.17	26	.21	0 75	8 46	2 70	2 76	22	12	7.1	41 1	.019	26
21												9 14	2 70	2 75	96	12	7 3	115 3	.054	[illegible]
22	86	.51	.90	.50		.12	.08	.23	.15		0.58	9 08	2.90	2.88	87	25	9 5	123 3	.058	30
23												9 33	3 36	3 89	127	62	24	213 0	.100	.31
24		.05					.01				0 01	9 24	2 75	3 41	101	16	16	141 0	.066	27
25												8 94	2 71	2 94	67	13	7 7	87 7	.041	.12
26			.10					03			0 03	8 84	2 68	2 35	54	11	[illegible]	73 0	.034	.27
27				.10					.02		0 02	8 88	2 66	2 97	54	10	9 2	72 2	.034	.27
28												8 77	2 66	[illegible]	46	10	9 5	[illegible]	.030	.32
29		.35	.05	.65			.06	.01	.12		0.17	8 70	2 66	3 04	35	9 5	11	55 5	.026	33
30												8 56	2 62	3 60	26	10	19	55 0	.026	.26
31				.45					.09		0 09	8 59	2 62	3.14	26	10	12	48 0	.023	24
TOTAL	2 23	5 06	4 50	7 80	2 43	.31	.81	1.17	1 49	.62	4 40	—	—	—	2,007.6	1,129.8	399 5	3,531.9	1.659	792

(4 40

PART II

Monthly Hydrologic Data

Upper Taylor Creek (W-2)

Upper Taylor Creek (W-3)

10/1/62 - 9/30/63

U.S.D.A. - AGRICULTURAL RESEARCH SERVICE - FORT LAUDERDALE, FLORIDA

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UNIVERSITY OF FLORIDA, AGRICULTURAL EXPERIMENT STATION

MONTHLY HYDROLOGIC DATA UPPER TAYLOR CREEK WATERSHED
FLORIDA WATERSHED W—2 & 3

DATE OCT MONTH 1962 YEAR	RAINFALL: MEASURED RAINFALL, GAGE, SUB AREA 1 W	2 B	3 R	4 J	5 D	6 M	7 O	WEIGHTED RAINFALL, GAGE, SUB AREA 1 9% 43%	2 13% 57%	3 10%	4 15%	5 12%	6 18%	7 25%	TOTAL WEIGHTED RAINFALL SUB AREA	TOTAL WEIGHTED RAINFALL ENTIRE AREA	STAGE: UPPER STATION	LOWER STATION	DISCHARGE: SUB AREA	TOTAL AREA	SUB AREA	TOTAL AREA	PAN EVAP.
	(INCHES)							(INCHES)							(INCHES)	(INCHES)	(FT. M.S.L.)		(SEC. FT.)		(IN. OVER AREA)		(INCHES)
1	.25		1.25		1.25	.10		.02	.14	.12		.15	.02		0.71	0.31	3.76	7.02	7.6	130	.019	.049	.07
2								.01	.01								3.73	6.98	7.0	116	.017	.043	.16
3	.15	2.05	1.33	.30	.35	.45	.40	.40	.01	.13	.04	.08	.08	.09	0.66	0.53	4.19	6.96	36	125	.086	.047	.16
4				.05				.01			.01					0.01	4.80	7.01	67	150	.139	.036	.16
5								.01									4.02	7.06	20	170	.048	.059	.21
6								.01									3.83	7.09	12	150	.028	.056	.18
7																	3.79	7.07	8.8	125	.020	.047	.20
8																	3.68	7.09	5.3	100	.013	.038	.17
9	.05														0.02	0.00	3.60	7.01	4.0	85	.010	.032	.16
10																	3.57	6.88	3.4	70	.008	.026	.18
11																	3.53	6.83	2.8	54	.007	.020	.17
12																	3.49	6.85	2.4	45	.005	.018	.16
13																	3.46	6.87	2.0	35	.005	.013	.16
14				.03							.00					0.00	3.44	6.79	1.8	27	.004	.010	.15
15						.09						.01				0.01	3.41	6.76	1.6	22	.004	.008	.16
16																	3.38	6.66	1.4	18	.003	.007	.19
17	.12	.10	.17	.15	.10	.20	.30	.11	.60	.02	.02	.01	.04	.07	0.11	0.18	3.36	6.66	1.2	15	.003	.006	.16
18								.06	.06								3.35	6.71	1.2	13	.003	.006	.15
19								.07	.06								3.35	6.76	1.2	11	.003	.004	.15
20								.05									3.32	6.72	1.0	10	.002	.004	.18
21								.03									3.28	6.81	.7	9.0	.002	.003	.17
22	.08	.10	.08	.10	.05	.15	.15	.06		.01	.02	.01	.03	.03	0.07	0.12	3.25	6.92	.6	8.0	.001	.003	.12
23																	3.25	6.64	.6	7.2	.001	.003	.07
24																	3.25	6.57	.6	6.6	.001	.003	.16
25																	3.22	6.54	.5	6.2	.001	.002	.16
26																	3.19	6.48	.4	5.9	.001	.002	.16
27																	3.09	6.45	.3	5.6	.001	.002	.16
28																	2.89	6.53	.1	5.4		.002	.13
29																	2.08	6.53		5.3		.002	.15
30																	2.18	6.65		5.3		.002	.16
31	.15		.05		.05	.05	.05			.01		.01	.01	.01	0.06	0.05	2.44	6.77	.1	5.3		.002	.10
TOTAL	.60	1.25	2.88	.63	1.90	.98	1.90	.06	.16	.29	.09	.22	.19	.20	1.05	1.21	—	—	191.1	1538.8	.455	.577	4.88

(1.32) 1.33 .72

DATE NOV MONTH 1962 YEAR	RAINFALL: MEASURED RAINFALL, GAGE, SUB AREA 1 W	2 B	3 R	4 J	5 D	6 M	7 O	WEIGHTED RAINFALL, GAGE, SUB AREA 1 9% 43%	2 13% 57%	3 10%	4 15%	5 12%	6 18%	7 25%	TOTAL WEIGHTED RAINFALL SUB AREA	TOTAL WEIGHTED RAINFALL ENTIRE AREA	STAGE: UPPER STATION	LOWER STATION	DISCHARGE: SUB AREA	TOTAL AREA	SUB AREA	TOTAL AREA	PAN EVAP.
	(INCHES)							(INCHES)							(INCHES)	(INCHES)	(FT. M.S.L.)		(SEC. FT.)		(IN. OVER AREA)		(INCHES)
1								.01	.01								2.64	6.53	.1	5.3		.002	.11
2							.05	.10	.13					.01		0.01	2.75	6.62	.1	5.3		.002	.12
3								.11	.25								2.87	6.69	.1	5.2		.002	.03
4	.05	.05						.03	.01						0.05	0.02	2.95	6.64	.1	5.2		.003	.12
5									.03								3.00	6.63	.1	5.2		.004	.12
6																	3.03	6.47	.1	5.2		.002	.11
7																	3.03	6.58	.1	5.2		.002	.10
8	1.10	1.00	1.85	1.35	.65	.70	.85			.18	.20	.08	.13	.20	1.04	1.02	3.06	6.61	.2	5.2	.001	.002	.10
9	1.20	1.90	.20	.80	1.35	1.45	1.05			.02	.12	.16	.26	.24	1.60	1.16	3.72	6.82	9.9	21	.024	.008	.11
10																	3.80	6.71	11	27	.026	.010	.10
11																	3.66	6.66	5.6	28	.013	.012	.18
12		.05													0.08	0.01	3.60	6.72	4.0	27	.010	.010	.14
13																	3.54	6.55	3.0	26	.007	.015	.11
14																	3.51	6.34	2.4	25	.006	.009	.10
15																	3.47	6.56	2.0	21	.005	.008	.12
16																	3.45	6.68	1.8	18	.004	.007	.10
17								.37	.03								3.43	6.72	1.7	16	.004	.006	.10
18								.47	.57								3.40	6.73	1.4	16	.003	.005	.11
19								.52	1.08								3.39	6.67	1.3	17	.003	.004	.11
20								.19	.03								3.37	6.71	1.2	11	.003	.004	.07
21			.03			.10			.19	.00			.02			0.02	3.56	6.81	1.1	9.6	.003	.004	.10
22	.30	.25		.05							.01				0.27	0.07	3.40	6.67	1.4	8.5	.003	.003	.12
23																	3.41	6.42	1.4	7.5	.003	.003	.23
24																	3.40	6.60	1.4	7.0	.003	.003	.11
25																	3.37	6.62	1.2	6.5	.003	.002	.07
26																	3.34	6.16	.9	6.0	.002	.002	.08
27																	3.30	6.28	.8	5.6	.002	.002	.16
28																	3.30	6.37	.7	5.4	.002	.002	.11
29																	3.29	6.52	.7	5.1	.002	.002	.04
30																	3.27	6.60	.6	5.0	.002	.002	.16
31																							
TOTAL	2.65	2.25	2.08	2.20	2.00	2.25	1.95	.25	.43	.20	.33	.24	.41	.45	2.99	2.31	—	—	56.4	358.9	.134	.133	3.37

(2.34) (1.14 1.85)

U. S. D. A. - AGRICULTURAL RESEARCH SERVICE - FORT LAUDERDALE, FLORIDA

COOPERATING WITH

CENTRAL AND SOUTHERN FLORIDA FLOOD CONTROL DISTRICT &
UNIVERSITY OF FLORIDA, AGRICULTURAL EXPERIMENT STATION

MONTHLY HYDROLOGIC DATA UPPER TAYLOR CREEK WATERSHED
FLORIDA WATERSHED W—2 & 3

DATE	RAINFALL																STAGE		DISCHARGE				PAN EVAP.
FEB MONTH 1963 YEAR	MEASURED RAINFALL GAGE							WEIGHTED RAINFALL GAGE							TOTAL WEIGHTED RAINFALL SUB AREA	TOTAL WEIGHTED RAINFALL ENTIRE AREA	UPPER STATION	LOWER STATION	SUB AREA	TOTAL AREA	SUB AREA G X .00238	TOTAL AREA G X .000376	
	SUB AREA 1 W	SUB AREA 2 B	3 R	4 J	5 D	6 M	7 O	SUB AREA 1 9% 43%	SUB AREA 2 13% 57%	3 10%	4 15%	5 12%	6 18%	7 23%									
	(INCHES)									(INCHES)					(INCHES)	(INCHES)	(FT.	M.S.L.)	(SEC.	FT.)	(IN. OVER	AREA)	(INCHES)
1								.01	.03								3.13	6.14	.3	4.7	.001	.002	.12
2								.00	.12								3.12	6.15	.2	4.6	.000	.002	.13
3			.08				.35	.09	.06	.01				.08		0.09	3.11	6.21	.2	4.5	.000	.002	.13
4	.15	.25	.15	.21	.30	.33	.45	.05	.01	.02	.03	.04	.06	.10	0.20	0.29	3.11	6.00	.2	4.8	.000	.002	.07
5	.65							.06	.08						0.02	0.00	3.13	6.12	.3	7.0	.001	.003	.13
6								.01	.00								3.15	6.17	.3	9.0	.001	.003	.13
7								.15	.23								3.15	6.16	.3	9.8	.001	.004	.07
8																	3.14	6.18	.3	9.4	.001	.004	.21
9																	3.12	6.01	.2	9.0	.000	.003	.20
10																	3.10	6.05	.2	8.5	.000	.003	.14
11				.10							.02					0.02	3.09	6.23	.2	8.0	.000	.003	.10
12	.95	.90	.68	.60	.60	.50	.65			.07	.09	.07	.09	.15	0.92	0.68	3.14	6.25	.3	8.0	.001	.003	.13
13																	3.26	5.96	.7	8.5	.002	.003	.17
14																	3.29	6.10	.8	9.5	.002	.004	.15
15								⧓	⧓								3.27	6.01	.7	9.9	.002	.004	.09
16	.55	.50	.48	.45	.45	.55	.50	.06	.14	.05	.07	.05	.10	.12	0.33	0.50	3.24	6.01	.6	11	.001	.004	.14
17								.02	.51								3.32	5.94	1.1	12	.003	.004	.03
18		.10	.03					.41	.29	.00					0.06	0.01	3.39	6.06	1.4	14	.003	.005	.11
19	.65	.65	1.10	1.10	.85	.80	.70	.24	.06	.11	.16	.10	.14	.16	0.65	0.81	3.42	6.34	1.7	16	.004	.006	.10
20								.28	.37								3.54	6.18	3.0	22	.007	.008	.13
21								.04	.02								3.47	6.21	2.1	25	.005	.007	.15
22								.73	1.00								3.43	5.99	1.8	26	.004	.010	.12
23																	3.41	5.99	1.6	26	.004	.010	.17
24	.10	.03	.10	.35						.01	.05				0.06	0.07	3.46	6.34	1.5	25	.004	.009	.06
25																	3.40	6.09	1.5	25	.004	.009	.16
26	1.70	1.70	1.62	1.45	1.90	1.65	1.90			.16	.22	.23	.30	.44	1.73	1.73	3.57	6.30	5.4	70	.013	.026	.15
27																	3.94	6.16	16	180	.038	.067	.13
28																	3.76	6.32	9.3	200	.022	.075	.13
29																							
30																							
31																							
TOTAL	4.15	4.18	4.24	4.26	4.10	3.83	4.55	.37	.53	.43	.64	.47	.69	1.05	4.17	4.20	—	—	52.2	767.2	.127	.295	352
			(4.19)					11.78	12.39														

U.S.D.A., A.R.S., JULY 1955

DATE	RAINFALL															WHS	STAGE		DISCHARGE				PAN EVAP.
MAR MONTH 1963 YEAR	MEASURED RAINFALL GAGE							WEIGHTED RAINFALL GAGE							TOTAL WEIGHTED RAINFALL SUB AREA	TOTAL WEIGHTED RAINFALL ENTIRE AREA	UPPER STATION	LOWER STATION	SUB AREA	TOTAL AREA	SUB AREA G X .00238	TOTAL AREA G X .000376	
	SUB AREA 1	SUB AREA 2	3	4	5	6	7	SUB AREA 1 9% 43%	SUB AREA 2 13% 57%	3 10%	4 15%	5 12%	6 18%	7 23%									
	(INCHES)									(INCHES)					(INCHES)	(INCHES)	(FT.	M.S.L.)	(SEC.	FT.)	(IN. OVER	AREA)	(INCHES)
1	.15	.15	.25	.15				.01	.02	.02	.02				0.15	0.07	3.70	6.50	7.0	130	.017	.049	.12
2		.05	.03	.05	.20	.20	.30	.00	.01	.00	.01	.02	.04	.07	0.03	0.15	3.67	6.36	5.9	50	.014	.019	.13
3								.02	.00								3.65	6.38	5.3	37	.013	.014	.13
4								.00	.04								3.61	6.44	4.2	31	.010	.012	.16
5								.01	.03								3.58	6.53	3.6	28	.009	.011	.05
6								.00	.01								3.54	6.56	3.0	25	.007	.009	.15
7	.05	.05	.11	.10	.10	.12	.25	.01	.02	.01	.01	.01	.02	.06	0.05	0.11	3.50	6.29	2.4	22	.006	.008	.20
8								.04	.00								3.47	6.15	2.1	20	.005	.008	.12
9	.27	.30	.18	.20	.05	.25	.25		.05	.02	.03	.01	.04	.06	0.29	0.22	3.45	6.42	1.9	18	.004	.007	.19
10																	3.47	6.36	2.1	16	.005	.006	.15
11																	3.49	6.51	2.3	15	.005	.006	.11
12	.05	.20	.05		.05					.01		.01			0.13	0.05	3.46	6.51	2.0	14	.005	.005	.20
13																	3.44	6.45	1.8	12	.004	.004	.22
14		.10													0.06	0.01	3.43	6.45	1.8	11	.004	.004	.20
15																	3.40	6.31	1.5	9.8	.004	.004	.22
16	.05	.15	.08	.10	.08	.10		⧓	⧓	.01	.02	.01	.02		0.11	0.09	3.38	6.48	1.4	8.5	.003	.003	.16
17								.06	.09								3.35	6.45	1.2	7.5	.003	.003	.22
18								.02	.03								3.34	6.34	1.1	6.8	.003	.003	.24
19								.12	.03								3.29	6.41	.8	6.0	.002	.002	.21
20								.02	.17								3.24	6.36	.6	5.4	.001	.002	.24
21								.02	.11								3.19	5.90	.4	4.8	.001	.002	.29
22								.04	.06								3.14	5.79	.3	4.7	.001	.002	.30
23								.20	.09								3.10	5.99	.2	4.0	.001	.002	.18
24									.03								3.08	6.06	.2	3.8	.001	.002	.18
25							.35		.21					.08		0.08	3.06	6.10	.2	3.7	.001	.001	.18
26																	3.05	6.19	.2	3.6		.001	.17
27	.10	.05		.05			.12				.01			.03	0.07	0.05	3.04	6.13	.2	3.6		.001	.20
28						.15	.10						.03	.02		0.05	3.02	6.07	.1	3.6		.001	.23
29																	3.00	5.84	.1	4.0		.001	.20
30	.46	.37	.15	.15	.10	.10	.30			.01	.02	.01	.02	.07	0.41	0.22	3.00	5.65	.1	4.1		.001	.23
31																	3.04	5.63	.2	3.8		.001	.15
TOTAL	1.13	1.42	0.85	0.80	0.58	0.92	1.67	.09	.13	.08	.12	.07	.17	.37	1.30	1.10	—	—	54.2	516.7	.129	.194	577
			(1.05)					(.98	.82)														

U.S.D.A., A.R.S., JULY 1955

U. S. D. A. - AGRICULTURAL RESEARCH SERVICE - FORT LAUDERDALE, FLORIDA

COOPERATING WITH

CENTRAL AND SOUTHERN FLORIDA FLOOD CONTROL DISTRICT &
UNIVERSITY OF FLORIDA, AGRICULTURAL EXPERIMENT STATION

MONTHLY HYDROLOGIC DATA UPPER TAYLOR CREEK WATERSHED
FLORIDA WATERSHED W—2 & 3

DATE: JUNE MONTH, 1963 YEAR

DATE	RAINFALL: MEASURED RAINFALL, GAGE (INCHES): Sub area 1 W	2 B	3 R	4 J	5 D	6 M	7 O	WEIGHTED RAINFALL, GAGE (INCHES): Sub area 1 9% 43%	2 13% 57%	3 10%	4 15%	5 12%	6 18%	7 23%	TOTAL WEIGHTED RAINFALL SUB AREA (INCHES)	TOTAL WEIGHTED RAINFALL ENTIRE AREA (INCHES)	STAGE: UPPER STATION (FT. M.S.L.)	LOWER STATION	DISCHARGE: SUB AREA (SEC. FT.)	TOTAL AREA	SUB AREA (IN. OVER AREA)	TOTAL AREA	PAN EVAP (INCHES)
1				.07				.02	.13		.01					0.01	3.34	4.67	1.0	3.4	.002	.001	.22
2								.04	.12								3.29	4.89	.7	3.4	.002	.001	.21
3	.30	1.00	.41	.33		.70		.03	.11	.09	.05		.13		0.66	0.37	3.23	4.92	.6	3.4	.001	.001	.22
4	.50	.95	1.50	1.00	2.03	.95	.15	.03	.06	.15	.15	.25	.17	.03	0.76	0.97	3.65	4.95	2.5	5.0	.006	.002	.15
5	.30	.85	.75	1.90	.85			.09	.05	.08	.28	.10			0.61	0.60	3.71	4.96	6.3	7.5	.015	.003	.22
6								.09	.05								3.74	5.00	7.4	12	.018	.004	.22
7								.09	.04								3.58	5.05	3.1	18	.007	.007	.21
8				.78		.35	.30	.00	.02		.12		.06	.07		0.25	3.48	5.08	1.8	18	.004	.007	.23
9								.01	.05								3.43	5.09	1.4	16	.003	.006	.12
10					.33	.15	.20	.01	.11			.09	.07	.05		0.12	3.39	5.19	1.2	15	.003	.006	.23
11	.32	.50	.28			.85	.25	.07	.09	.03			.15	.06	0.92	0.33	3.34	5.17	.8	14	.002	.005	.20
12			.02					.10		.06							3.32	5.16	.7	12	.002	.005	.26
13																	3.34	5.15	.8	11	.002	.005	.27
14			.10		.76		.35			.01		.03		.08		0.12	3.33	5.18	.7	10	.002	.004	.15
15	.42	.35	.80	.30		.90		[redacted]	[redacted]	.08	.09		.16		0.38	0.37	3.27	5.26	.5	10	.001	.004	.21
16	1.05	.35	.98	.35	.30	.16		.09	.57	.09	.05	.04	.03		0.65	0.35	3.34	5.25	1.0	10	.002	.004	.20
17	.40	.30						.22	.14						0.34	0.08	3.52	5.21	2.1	11	.003	.005	.19
18								.13	.98								3.56	5.13	2.3	11	.005	.005	.22
19								.14	.28								3.48	5.15	1.7	12	.004	.005	.26
20								.18	.20								3.40	5.19	1.1	12	.003	.004	.27
21								.44	.20								3.35	5.18	.8	12	.002	.004	.28
22								.17	.17								3.29	5.01	.5	12	.001	.004	.30
23								.02	.10								3.26	4.95	.4	11	.001	.004	.23
24	.05							.09	.24						0.02	0.06	3.19	4.90	.3	11	.001	.004	.32
25	.10	.18	.03	.10	.70		.40	.04	.48	.00	.02	.08		.09	0.14	0.22	3.16	4.91	.2	11	.001	.004	.20
26	.10	.42	.28	.45	.75	.55	.10	.32	.90	.04	.07	.09	.10	.02	0.28	0.37	3.19	5.05	.3	11	.001	.004	.09
27	.73	.85	.83	.50	1.45	.30	.20	.47		.08	.09	.17	.05	.05	0.80	0.61	3.31	5.00	.7	12	.002	.004	.16
28	1.10	.70	1.80	1.30	.90	.05	.05			.10	.20	.05	.01	.01	0.87	0.56	3.60	5.00	3.2	14	.007	.005	.23
29							.30							.07		0.07	3.83	5.01	9.7	17	.023	.006	.22
30					.50	.25						.06	.04			0.18	3.79	4.96	7.8	22	.018	.008	.25
31																							
TOTAL	5.27	5.95	6.88	7.10	7.29	6.21	2.30	.98	.83	.69	1.67	.91	.99	.53	3.93	3.49	—	—	61.4	347.7	.146	.131	6.98

(571) /227 366\

DATE: JULY MONTH, 1963 YEAR

DATE	RAINFALL: MEASURED RAINFALL, GAGE (INCHES): Sub area 1 W	2 B	3 R	4 J	5 D	6 M	7 O	WEIGHTED RAINFALL, GAGE (INCHES): Sub area 1 9% 43%	2 13% 57%	3 10%	4 15%	5 12%	6 18%	7 23%	TOTAL WEIGHTED RAINFALL SUB AREA (INCHES)	TOTAL WEIGHTED RAINFALL ENTIRE AREA (INCHES)	STAGE: UPPER STATION (FT. M.S.L.)	LOWER STATION	DISCHARGE: SUB AREA (SEC. FT.)	TOTAL AREA	SUB AREA (IN. OVER AREA)	TOTAL AREA	PAN EVAP (INCHES)
1								.04	.01								3.70	4.91	4.7	18	.011	.007	.17
2								.00	.11								3.64	4.97	3.4	14	.008	.005	.26
3						.25		.01	.10				.04			0.04	3.58	5.00	2.6	11	.006	.004	.23
4	.40		.08				.15	.01	.20	.01				.03	0.17	0.08	3.54	5.00	2.1	9.5	.005	.004	.20
5								.14	.06								3.51	4.96	1.8	8.5	.004	.004	.11
6								.03	.01								3.47	4.91	1.5	7.8	.004	.003	.22
7	.05			.30				.04	.01		.04				0.02	0.04	3.45	4.87	1.6	7.4	.003	.003	.28
8	.15							.13	.02						0.06	0.07	3.42	4.85	1.2	6.8	.003	.003	.27
9								.00									3.37	4.86	.8	6.6	.002	.002	.30
10	.10	.10		.05	.10			.09			.01	.01			0.10	0.04	3.39	4.86	.6	6.4	.001	.002	.28
11	1.50	.85	.30		.15	.10	.10	.09		.03		.02	.02	.02	1.12	0.34	3.29	4.85	.5	6.2	.001	.002	.12
12	.30			.95		1.00	.30				.14		.18	.12	0.13	0.47	3.23	4.76	.4	6.3	.001	.002	.22
13																	3.24	4.77	.7	6.4	.002	.002	.15
14																	3.39	4.82	1.0	6.6	.002	.002	.16
15					.45	.55						.05	.10			0.15	3.36	4.79	.8	6.8	.002	.003	.23
16	.43	.75	.12	.96	.12	.05	1.92	[redacted]	[redacted]	.01	.05	.01	.01	.36	0.61	0.58	3.29	4.78	.5	7.0	.001	.003	.25
17	1.45	1.55	.28	.68	.65	.20	.30	.17	.06	.01	.10	.08	.04	.07	1.50	0.65	3.39	4.78	1.0	7.4	.002	.003	.10
18		.95			.75	.10		.02	.48			.09	.02		0.26	0.17	3.76	4.70	6.0	8.8	.014	.003	.17
19								.06	.43								3.79	4.70	7.4	11	.018	.004	.16
20		.10						.04	.88						0.06	0.01	3.73	4.71	5.3	12	.013	.004	.28
21								.09	.26								3.67	4.70	3.8	11	.009	.004	.28
22	.05	.10	.05	.22		.05		.13	.06	.01	.03		.01		0.08	0.06	3.62	4.68	3.0	10	.007	.004	.24
23								.18	.06								3.58	4.63	2.4	9.0	.007	.003	.27
24		.15	.10		.20			.42	.09	.01		.07			0.04	0.05	3.55	4.55	2.1	7.8	.005	.003	.09
25	1.05		.08	.12				.07		.01	.02				0.49	0.12	3.50	4.52	1.7	6.9	.005	.003	.30
26								.43									3.46	4.48	1.4	6.0	.003	.002	.24
27								.45									3.44	4.39	1.3	5.2	.003	.002	.31
28	.05		.60	.10						.06	.02				0.45	0.17	3.41	4.41	1.2	4.7	.003	.002	.29
29							.05							.01		0.01	3.39	4.44	1.0	4.7	.002	.002	.17
30						.35	.30						.06	.07		0.13	3.38	4.41	1.8	3.8	.004	.002	.15
31																	3.36	4.40	1.6	3.5	.004	.001	.20
TOTAL	5.48	4.05	1.61	2.78	2.42	2.65	2.96	.58	.32	.17	.41	.28	.48	.68	5.08	3.12	—	—	65.0	246.6	.155	.093	6.78

(328) (276 232)

PART III

Monthly Hydrologic Data

Monreve Ranch (W-4)

10/1/62 - 9/30/63

U.S.D.A - AGRICULTURAL RESEARCH SERVICE - FORT LAUDERDALE, FLORIDA

COOPERATING WITH

CENTRAL AND SOUTHERN FLORIDA FLOOD CONTROL DISTRICT &
UNIVERSITY OF FLORIDA, AGRICULTURAL EXPERIMENT STATION

MONTHLY HYDROLOGIC DATA MONREVE RANCH

FLORIDA WATERSHED W—4

DATE	RAINFALL											STAGE		IRRIGATION		RUNOFF		EVAP.
OCT MONTH 1962 YEAR	MEASURED RAINFALL GAGE 1	2	3	4	5	WEIGHTED RAINFALL GAGE 1 18%	2 17%	3 16%	4 24%	5 25%	TOTAL WEIGHTED RAINFALL	ST. LUCIE CANAL	OUTLET WEIR	CFS X HRS / 24	(.00617)(CFS)	OUTLET WEIR	(.00617)(CFS)	STD. PAN
	(INCHES)					(INCHES)					(INCHES)	(FT. MSL)		(CFS)	(IN./AREA)	(CFS)	(IN/AREA)	(INCHES)
1				.05					.01		0.01	15.13	16.70			19	.117	.07
2												15.17	16.67			17	.105	.15
3												15.19	16.62			14	.086	.11
4												15.16	16.58			12	.074	.09
5												15 25	16.55			10	.062	09
6												15 27	16.52			8.6	.054	09
7												15 24	16 49			7.6	.047	.19
8												15 24	16 47			6.9	.043	.14
9	.03	.05				.01	.01				0 02	15.33	16 44			6.0	.037	.11
10												15.25	16 39			4.6	.028	.17
11												15 24	16 36			3.7	.024	.18
12												15 29	16 29			2.6	.016	.10
13	.05		.25	.10	.10	.01		.04	.02	.02	0.09	15 25	16 28			2.5	.015	.15
14				.10					.02		0 02	15 24	16 21			1.6	.010	.06
15												15 22	16 20			1 5	.009	.07
16					.05					.01	0 01	15.25	16 22			1 7	010	.20
17		.05	.10				.01	.02			0 03	15 90	16 21			1 6	010	.16
18												15 55	16 21			1 6	010	.21
19												15.31	16 19			1 4	009	.08
20												15.15	16 17			1 2	.007	.14
21												15.18	16 15			1 1	.007	.16
22	.05	.10	.10	.10	.05	.01	.02	02	02	.01	0 08	15 25	16 13			1 0	.006	.13
23												15.25	16 13			1 0	.006	.16
24												15.12	16 12			.9	.006	.12
25												15 20	16 10			.8	.005	.14
26												15.13	16 14	12 5	.075	1 2	.007	.12
27												15 10	16.47	5 8	.035	7 7	.048	.17
28												15.15	16 93			5 7	.035	.18
29												14.95	16 28	9 2	.055	2.5	.015	.12
30												15.10	16.25	9 2	.055	2 0	.012	.15
31												15.28	16 16			1 2	.007	.06
TOTAL	0.13	0 20	0 45	0 35	0 20	0 03	0 04	0 08	0 07	0.04	0.26			52.7	.220	150 6	.927	4.07

(0 27)

U.S.D.A. - A.R.S. JULY 1959

DATE	RAINFALL											STAGE		IRRIGATION		RUNOFF		EVAP.
NOV MONTH 1962 YEAR	MEASURED RAINFALL GAGE 1	2	3	4	5	WEIGHTED RAINFALL GAGE 1 18%	2 17%	3 16%	4 24%	5 25%	TOTAL WEIGHTED RAINFALL	ST. LUCIE CANAL	OUTLET WEIR	CFS X HRS / 24	(.00617)(CFS)	OUTLET WEIR	(.00617)(CFS)	STD. PAN
	(INCHES)					(INCHES)					(INCHES)	(FT. MSL)		(CFS)	(IN./AREA)	(CFS)	(IN/AREA)	(INCHES)
1	.20	.20	.15	.20	.20	.04	.03	.02	05	.05	0 19	15 23	16 12			0 9	[illegible]	.11
2												15 03	16 09			.8	.005	.10
3												14 97	16 08			.7	.004	.07
4												15 03	16 07			.7	.004	.12
5												14 98	16 06			6	.004	.07
6												15.12	16 05	7 5	.045	6	.004	.10
7												15 01	16 12	6.7	.040	9	.006	.10
8	.05	.10	.10	.05	.10	.01	02	.02	01	.02	0.08	14.95	16 10			.8	.005	.10
9	.20	.15	.15	.20	.20	04	.03	03	05	05	0 20	15 60	16 12			.9	.006	.11
10												15 35	16 08			7	.004	13
11												15 22	16 07			7	.004	.11
12												15.17	16 07	8 3	.050	7	.004	.12
13												15.16	16 16	9 2	.055	1.2	.007	.15
14												15 05	16 12			.9	.006	.07
15												15 07	16 08			7	.004	.10
16												15 07	16 07			7	.004	.07
17												15 05	16 07			7	.004	.08
18												15 08	16 06			6	.004	[illegible]
19												15 11	16 06			6	.004	.05
20												15 11	16 06			6	.004	.09
21	.35	.15	.20	.15	.20	06	03	.03	.04	05	0 21	15 10	16 07	7.5	.045	7	.004	07
22												15 90	16.30	14 2	.085	2.8	.017	.12
23												15 05	16 17			1 2	.007	.14
24												15.05	16 25			3 3	.020	.10
25												15.05	16 15			1.1	.007	.06
26												15.07	16 10	13 3	.080	8	.005	.05
27												15.25	16 28	20.0	.120	2 5	.015	.12
28												15.04	16 31	6.7	.040	3 0	.018	.10
29												15.12	16 18			1 4	.009	.13
30												15.12	16 16			1.2	.007	.04
31																		
TOTAL	0 80	0 60	0.60	0 60	0.70	.15	.11	.10	.15	.17	0 68			93 4	.560	33.0	.202	2 78

(.67)

U.S.D.A. - A.R.S. JULY 1959

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COOPERATING WITH

CENTRAL AND SOUTHERN FLORIDA FLOOD CONTROL DISTRICT &
UNIVERSITY OF FLORIDA, AGRICULTURAL EXPERIMENT STATION

MONTHLY HYDROLOGIC DATA MONREVE RANCH

FLORIDA WATERSHED W—4

MONTH: FEB YEAR: 1963

DATE	RAINFALL: MEASURED RAINFALL GAGE 1 (INCHES)	2	3	4	5	WEIGHTED RAINFALL GAGE 1 18% (INCHES)	2 17%	3 16%	4 24%	5 25%	TOTAL WEIGHTED RAINFALL (INCHES)	STAGE: ST. LUCIE CANAL (FT. MSL)	OUTLET WEIR (FT. MSL)	IRRIGATION: CFS X HRS / 24 (CFS)	(.00617)(CFS) (IN./AREA)	RUNOFF: OUTLET WEIR (CFS)	(.00617)(CFS) (IN/AREA)	EVAP. STD. PAN (INCHES)
1												14.62	16.14			1.0	.006	.13
2												14.64	16.13			1.0	.006	.10
3		.02		.20	.23		.00		.05	.06	0.11	14.60	16.12			.9	.006	.12
4	.65	.68	.62	.76	.77	.12	.12	.10	.18	.19	0.71	14.46	16.14			1.0	.006	.25
5												15.00	16.13			1.0	.006	.07
6												14.95	16.13			1.0	.006	.05
7												14.80	16.13			1.0	.006	.06
8												14.65	16.12			.9	.006	.17
9												14.50	16.12			.9	.006	.19
10												14.43	16.11			.9	.006	.10
11												14.50	16.10			.8	.005	.04
12	1.05	1.07	1.02	1.03	1.05	.19	.18	.16	.25	.26	1.04	14.92	16.14			1.0	.006	.39
13												14.70	16.13			1.0	.006	.18
14												14.60	16.13			1.0	.006	.13
15												14.62	16.13			1.0	.006	.12
16	0.53	.48	.50	.50	.52	.10	.08	.08	.12	.13	0.51	14.51	16.13			1.0	.006	.12
17												14.64	16.15			1.1	.007	.14
18												14.53	16.15			1.1	.007	.03
19	.32	.28	.40	.30	.38	.06	.05	.06	.07	.10	0.34	14.55	16.16			1.2	.007	.16
20												14.86	16.16			1.2	.007	.15
21												14.69	16.15			1.1	.007	.08
22												14.70	16.15			1.1	.007	.15
23												14.55	16.15			1.1	.007	.17
24				.08					.02		0.02	14.65	16.15			1.1	.007	.07
25												14.51	16.14			1.0	.006	.19
26	1.02	1.00	.95	1.30	1.20	.19	.17	.15	.31	.30	1.11	14.62	16.16			1.2	.007	.10
27												14.85	16.17			1.2	.007	.13
28												14.67	16.17			1.2	.007	.11
29																		
30																		
31																		
TOTAL	3.57	3.53	3.49	4.17	4.15	.65	.60	.55	1.00	1.04	3.84			—	—	29.0	.178	3.70

(3.78)

U.S.D.A., A.R.S. JULY 1959

MONTH: MAR YEAR: 1963

DATE	RAINFALL: MEASURED RAINFALL GAGE 1 (INCHES)	2	3	4	5	WEIGHTED RAINFALL GAGE 1 18% (INCHES)	2 17%	3 16%	4 24%	5 25%	TOTAL WEIGHTED RAINFALL (INCHES)	STAGE: ST. LUCIE CANAL (FT. MSL)	OUTLET WEIR (FT. MSL)	IRRIGATION: CFS X HRS / 24 (CFS)	(.00617)(CFS) (IN./AREA)	RUNOFF: OUTLET WEIR (CFS)	(.00617)(CFS) (IN/AREA)	EVAP. STD. PAN (INCHES)
1	.05	.04	.12	.08	.11	.01	.01	.02	.02	.03	0.09	14.71	16.17			1.2	.007	.13
2			.02					.00				14.71	16.17			1.2	.007	[illegible]
3												14.74	16.16			1.2	.007	[illegible]
4												14.83	16.15			1.1	.007	[illegible]
5												14.85	16.14			1.0	.006	.12
6												15.00	16.14			1.0	.006	.13
7	.05	.10	.10	.15	.10	.01	.02	.02	.04	.02	0.11	14.83	16.19			1.0	.006	.22
8												14.80	16.19			1.0	.006	.22
9	.35	.40	.45	.35	.35	.06	.07	.07	.08	.09	0.37	14.85	16.19			1.0	.006	.19
10												14.89	16.15			1.1	.007	.16
11												14.85	16.19			1.0	.006	.16
12												14.81	16.13			1.0	.006	.10
13												14.88	16.12			.9	.006	.16
14												14.78	16.12			.9	.006	.16
15												14.85	16.12			.9	.006	.12
16												14.78	16.13	14.2	.085	1.0	.006	.11
17												14.68	16.23	9.2	.055	1.8	.011	.17
18												14.76	16.24	14.2	.085	1.9	.012	.22
19												14.75	16.29	20.0	.120	2.6	.016	.12
20												14.88	16.30	20.0	.120	2.8	.017	.13
21												14.67	16.31	20.0	.120	3.0	.019	.27
22												14.60	16.30	20.0	.120	2.8	.017	.21
23												14.65	16.28	20.0	.120	2.5	.015	.19
24												14.56	16.28	20.0	.120	2.5	.015	.14
25	.20	.25	.25	.32	.35	.04	.04	.04	.08	.09	0.29	14.59	16.25	12.5	.075	2.5	.015	.17
26												14.47	16.25			2.0	.012	.12
27												14.58	16.22			1.7	.010	.10
28	.10	.20	.15	.15	.05	.02	.03	.02	.04	.01	0.12	14.44	16.20			1.5	.009	.16
29												[illegible]	16.20			1.5	.009	.22
30												14.75	16.19			1.4	.009	.21
31												14.30	16.17			1.2	.007	.23
TOTAL	.75	.99	1.09	1.05	.96	.14	.17	.17	.26	.24	0.98			170.1	1,020	48.2	.294	5.18

(0.97)

U.S.D.A., A.R.S. JULY 1959

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UNIVERSITY OF FLORIDA, AGRICULTURAL EXPERIMENT STATION

MONTHLY HYDROLOGIC DATA MONREVE RANCH

FLORIDA WATERSHED W—4

DATE	RAINFALL											STAGE		IRRIGATION		RUNOFF		EVAP.
JUNE MONTH 1963 YEAR	MEASURED RAINFALL GAGE 1 (INCHES)	2	3	4	5	WEIGHTED RAINFALL GAGE 1 18% (INCHES)	2 17%	3 16%	4 24%	5 25%	TOTAL WEIGHTED RAINFALL (INCHES)	ST. LUCIE CANAL (FT. MSL)	OUTLET WEIR (FT. MSL)	CFS X HRS / 24 (CFS)	(.00617)(CFS) (IN./AREA)	OUTLET WEIR (CFS)	(.00617)(CFS) (IN/AREA)	STD. PAN (INCHES)
1	.10	.10	.10	.10		.02	.02	.02	.02		0.08	13.95	16.30			28	.017	.28
2	.35				.05	.06				.01	0 07	13 46	16 27			23	.014	.18
3		.25	.75	.10	.10		.04	.12	.07	.02	0 20	13 46	16 26			2.2	.014	.20
4				.75	.90				.18	.10	0 28	13 46	16 25			20	.012	.23
5	.65	.05	.25	.45	1.20	.12	.01	.04	.11	.30	0 58	13.49	16 22			17	.010	.16
6												13.45	16 25			2.0	.012	.21
7												13 52	16 22			17	.010	.15
8												13 48	16 18			14	.009	.15
9	.15	.15		.15		.03	.03		.04		0 10	13 55	16 16			1.2	.007	.12
10												13 40	16 14			1.0	.006	.23
11												13 51	16 10			.8	.005	.20
12												13 42	16 08			.7	.004	.28
13												13.45	16 08			.7	.004	.20
14	.05		.05	.15	.20	.01		.01	.04	.05	0 11	13 50	16 14			.6	.004	.14
15												13 41	16 13	7.5	.045	16	.010	.18
16	.10					.02					0 02	13.50	16 22			17	.010	.20
17	.25	.10	.25			.04	.02	.04			0.10	13 46	16 07			.7	.004	.21
18	.20	.50	.25	.15	.20	.04	.08	.04	.04	.05	0 25	13.50	16 05			.6	.004	.21
19												13.43	16 05	8.3	.050	.6	.004	.20
20												13 30	16 08			.7	.004	.21
21												13.36	16 07			.7	.004	.29
22												13.33	16 04	6 7	.040	.6	.004	.22
23	.10					.02					0 02	13 43	16 26	7.5	.045	2.2	.014	.26
24	.15	.10	.15	.20	.20	.03	.02	.02	.05	.05	0.17	13 23	16 11			.9	.006	.25
25	.81	1 38	1.08	.82	.85	.15	.23	.17	.20	.21	0 96	13.24	16 10			.8	.005	.26
26	.75	.90	.80	.65	.40	.13	.15	.13	.16	.10	0 67	13 18	16 10			.8	.005	.21
27	.05		.10	.15	.15	.01		.02	.04	.04	0.11	13 37	16 10			.8	.005	.16
28	.40	.70	.80	.95	.65	.07	.12	.13	.22	.16	0 70	13 33	16 27			4 7	.029	.16
29												13 33	16 44			6 0	.037	.18
30												13 31	16 30			2 8	.017	.21
31																		
TOTAL	4 11	4.23	4.58 (4.39)	4.62	4.40	.75	.72	.74	1.12	1.09	4 42			30 0	.180	47 3	.290	6.14

U.S.D.A., A.R.S., JULY 1959

DATE	RAINFALL											STAGE		IRRIGATION		RUNOFF		EVAP.
JULY MONTH 1963 YEAR	MEASURED RAINFALL GAGE 1 (INCHES)	2	3	4	5	WEIGHTED RAINFALL GAGE 1 18% (INCHES)	2 17%	3 16%	4 24%	5 25%	TOTAL WEIGHTED RAINFALL (INCHES)	ST. LUCIE CANAL (FT. MSL)	OUTLET WEIR (FT. MSL)	CFS X HRS / 24 (CFS)	(.00617)(CFS) (IN./AREA)	OUTLET WEIR (CFS)	(.00617)(CFS) (IN/AREA)	STD. PAN (INCHES)
1												13 32	16 13			1 0	.006	.23
2												13 36	16 05	11 7	.070	.6	.004	26
3												13.42	16 05	5.8	.035	.6	.004	24
4			.05	.05				.01	.01		0 02	13 35	16 05			.6	.004	16
5												13 33	16 05			.6	.004	22
6	1.71	1.10	1.00	1.10	1.15	.31	.19	.16	.26	.29	1.21	13 37	16 24			1 7	.012	29
7												13.36	16 16			1 2	.007	50
8												13 46	16 17			1 2	.007	22
9												13 37	16 14			1.0	.006	26
10	.25					.04					0 04	13 35	16 03			.5	.003	26
11	.15					.03					0.03	13.16	16 00	6 7	.040	.4	.002	29
12		.10	.05	.15	.40		.02	.01	.04	.10	0 17	13 18	16 22	6.7	.040	2.0	.012	07
13			.10		.05			.02		.01	0 03	13.10	16 10			.8	.005	22
14		.50	.55		.15		.08	.09		.04	0.21	13 16	16 04			.6	.004	25
15												13 19	16 02			.5	.003	34
16		.31	.55	.20			.05	.09	.05		0 19	13 08	16 01			.4	.002	14
17												13 08	16 00	5.8	.035	.4	.002	11
18												13 05	16 12	6 7	.040	1 0	.006	26
19												12.74	16 05			.6	.004	30
20		.10	.10				.02	.02			0 04	12.98	16 02			.5	.003	25
21												13.16	16 00			.4	.002	16
22												13 05	16 00	5.0	.030	.4	.002	15
23												13 17	15 99			.4	.002	30
24												13 03	16 00	14 2	.085	.4	.002	14
25					.10					.02	0 02	12 90	16 06	20 0	.120	.6	.004	25
26			.10	.05	.20			.02	.01	.05	0 08	12 75	16 11	5.8	.035	[illegible]	.006	29
27												12 67	16 06			.6	.004	30
28	.60	.20	.35	.70	.55	.11	.03	.06	.17	.14	0 51	12 82	16 05			.6	.004	17
29	1.42	.61	1.20	.70	.70	.26	.10	.19	.17	.18	0 90	12.75	16 05			.6	.004	11
30												12.78	16 06			.6	.004	03
31	.60	.50	.50			.11	.08	.08			0.27	12 82	16 08			.8	.005	.11
TOTAL	4.73	3.42	4.55 (3.79)	2.45	3.30	.86	.57	.75	.71	.83	3.72			88 4	.530	22 7	.139	6 78

U.S.D.A., A.R.S., JULY 1959

PART IV

Monthly Hydrologic Data

Plantation Field Laboratory

1963

Division 1 - Rainfall, Air Temperature, Wind, Relative Humidity

HYDROLOGIC DATA - PLANTATION FIELD LABORATORY
FORT LAUDERDALE, FLORIDA

DATE JAN.	RAINFALL	AIR TEMP. (°F)			WIND	MEAN WTD. REL.HUM.	REMARKS
(MO.)	(IN.)	MAX.	MIN.	MN	(MI.)	%	
1963 (YR.)							
1		73	41	57	37	80	
2		72	49	60	37	89	
3		72	49	60	23	70	
4		69	41	55	25	74	
5		74	49	62	38	82	
6	0.08	75	52	64	19	82	
7	0.09	75	54	64	69	80	
8	0.16	66	49	58	40	89	
9		64	38	51	38	90	
10		68	43	56	5	75	
11		73	47	60	18	81	
12	0.24	80	62	71	46	94	
13	0.04	82	64	73	15	95	
14	0.15	83	66	74	30	95	
15		80	57	68	15	97	
16	0.28	80	61	70	38	95	
17	0.02	75	62	68	44	97	
18		78	59	68	26	89	
19	T	80	60	70	44	90	
20	T	80	64	72	32	93	
21		84	69	76	82	91	
22	0.19	76	48	62	53	92	
23		73	54	64	53	85	
24		81	64	72	49	93	
25		71	50	60	61	91	
26		75	68	72	86	88	
27		79	60	70	36	—	
28		84	58	71	58	—	
29		73	60	66	106	82	
30	0.03	74	67	70	76	88	
31	0.01	77	57	67	27	93	
TOT.	1.29	2,356	1,722	2,031	1,326		
MN.		76.0	55.5	65.5			

HYDROLOGIC DATA - PLANTATION FIELD LABORATORY
FORT LAUDERDALE, FLORIDA

DATE FEB.	RAINFALL	AIR TEMP. (°F)			WIND	MEAN WTD. REL.HUM.	REMARKS
(MO.)	(IN.)	MAX.	MIN.	MN	(MI.)	%	
1963 (YR.)							
1		81	55	68	13	88	
2		83	64	74	25	88	
3		80	56	68	21	87	
4	0.88	82	61	72	34	88	
5	0.02	68	53	60	20	98	
6		62	51	57	43	98	
7		70	51	60	71	98	
8		76	56	66	46	78	
9	0.13	76	51	64	40	89	
10		75	49	62	26	98	
11		77	57	67	16	—	
12	0.06	81	72	77	103	—	
13	2.97	75	48	61	62	—	
14		65	43	54	35	84	
15		71	47	59	21	83	
16	0.08	68	54	61	29	77	
17	0.62	64	57	60	54	97	
18	0.07	69	58	64	21	98	
19	0.25	76	67	72	94	95	
20	0.04	84	52	68	94	—	
21		69	44	57	37	85	
22		77	56	67	16	73	
23		75	55	65	71	85	
24		72	63	68	80	84	
25		83	58	70	76	—	
26	T	81	61	71	25	93	
27	0.02	84	44	64	124	84	
28		68	49	58	43	74	
29							
30							
31							
TOT.	5.09	2092	1532	1814	1,340		
MN.		74.7	54.7	64.7			

HYDROLOGIC DATA - PLANTATION FIELD LABORATORY
FORT LAUDERDALE, FLORIDA

DATE MAY	RAINFALL	AIR TEMP. (°F)			WIND	MEAN WTD. REL. HUM.	REMARKS
(MO.)	(IN.)	MAX.	MIN.	MN	(MI.)	%	
1963 (YR.)							
1	0.15	82	65	74	38	89	
2	1.40	87	64	76	45	94	
3	2.67	78	68	73	48	98	
4	.01	72	64	68	42	91	
5		80	60	70	33	86	
6		80	53	66	44	—	
7		87	57	72	26	69	
8		88	61	74	65	77	
9		83	57	70	29	81	
10		83	59	71	35	75	
11		87	64	76	33	77	
12		90	62	76	31	78	
13		92	65	78	31	79	
14	0.33	87	72	80	65	85	
15		82	60	71	47	83	
16		87	65	76	25	79	
17		88	64	76	28	80	
18		90	66	78	31	—	
19		90	67	78	25	—	
20		87	75	81	89	—	
21		88	76	82	14	88	
22	0.11	86	69	78	22	94	
23		88	70	79	29	90	
24	0.17	88	69	78	20	93	
25		86	70	78	40	—	
26		87	69	78	24	85	
27		89	70	80	41	86	
28		89	74	82	19	90	
29	0.01	89	74	82	44	84	
30	1.03	89	71	80	33	92	
31	0.63	86	70	78	31	88	
TOT.	6.51	2665	2050	2359	1,128		
MN.		85.9	66.1	76.1			

HYDROLOGIC DATA - PLANTATION FIELD LABORATORY
FORT LAUDERDALE, FLORIDA

DATE JUNE	RAINFALL	AIR TEMP. (°F)			WIND	MEAN WTD. REL. HUM.	REMARKS
(MO.)	(IN.)	MAX.	MIN.	MN	(MI.)	%	
1963 (YR.)							
1		86	69	78	59	83	
2		87	69	78	33	—	
3		88	68	78	36	—	
4	0.32	88	70	79	25	90	
5	0.06	89	70	80	25	90	
6	0.04	92	68	80	23	88	
7	1.00	91	65	78	9	92	
8	0.02	90	60	75	10	89	
9		85	67	76	17	86	
10	0.04	91	70	80	29	—	
11	1.56	89	68	78	7	90	
12	0.05	91	74	82	31	89	
13	1.10	90	75	82	23	91	
14	0.04	88	73	80	69	89	
15		91	73	82	7	83	
16	0.33	91	73	82	4	90	
17	0.52	92	72	82	4	—	
18		90	71	80	22	84	
19		90	73	82	34	85	
20		89	74	82	39	80	
21		89	75	82	28	82	
22		89	72	80	52	80	
23	0.22	91	74	82	31	80	
24		90	72	81	40	—	
25	0.27	90	73	82	25	79	
26	0.93	89	71	80	27	90	
27	0.18	83	71	77	8	89	
28	0.02	88	70	79	14	86	
29	0.45	89	70	80	26	90	
30		89	75	82	16	82	
31							
TOT.	7.15	2675	2125	2399	773		
MN.		89.2	70.8	80.0			

HYDROLOGIC DATA - PLANTATION FIELD LABORATORY
FORT LAUDERDALE, FLORIDA

DATE SEPT. (MO.) 1963 (YR.)	RAINFALL (IN.)	AIR TEMP. (°F) MAX.	MIN.	MN	WIND (MI.)	MEAN WTD. REL. HUM. %	REMARKS
1	0.12	90	76	83	31	89	
2	1.22	88	74	81	16	95	
3		90	74	82	10	90	
4		91	75	83	16	84	
5		92	73	82	23	83	
6	0.11	93	73	83	13	87	
7	1.35	93	73	83	27	86	
8	0.05	92	74	83	4	84	
9		93	72	82	16	87	
10	1.32	93	72	82	18	91	
11		92	72	82	10	83	
12		90	72	81	16	85	
13		96	72	84	14	78	
14		93	74	84	24	81	
15		90	74	82	21	82	
16	0.08	88	73	80	8	86	
17	0.13	91	75	83	22	85	
18	0.11	88	75	82	13	91	
19	0.68	85	72	78	9	92	
20	1.69	82	72	77	14	—	
21	0.92	80	72	76	10	98	
22	0.06	83	72	78	16	96	
23	0.60	90	72	81	10	93	
24	0.26	83	74	78	20	98	
25	1.09	85	72	78	24	96	
26	0.89	84	74	79	36	98	
27		89	72	80	26	92	
28		92	75	84	17	87	
29		90	79	84	56	86	
30		91	72	82	36	84	
31							
TOT.	10.68	2,677	2201	2,437	576		
MN.		89.2	73.4	81.2			

HYDROLOGIC DATA - PLANTATION FIELD LABORATORY
FORT LAUDERDALE, FLORIDA

DATE OCT. (MO.) 1963 (YR.)	RAINFALL (IN.)	AIR TEMP. (°F) MAX.	MIN.	MN	WIND (MI.)	MEAN WTD. REL. HUM. %	REMARKS
1		91	71	81	14	76	
2	0.03	84	71	78	30	85	
3	3.62	87	71	79	17	95	
4	0.29	85	74	80	31	84	
5		85	74	80	20	71	
6		85	72	78	15	74	
7	0.10	84	74	79	35	85	
8	0.04	85	75	80	41	83	
9	0.02	85	69	77	19	85	
10	0.68	85	64	74	23	—	
11	0.40	84	68	76	30	84	
12		78	63	70	19	90	
13		83	65	74	24	79	
14		82	64	73	25	77	
15	2.03	84	65	74	31	79	
16	0.30	82	68	75	22	90	
17	0.11	82	68	75	20	—	
18	0.13	80	66	73	22	—	
19	0.01	82	60	71	17	84	
20		83	63	73	24	84	
21		83	58	70	28	86	
22		85	58	72	22	78	
23		87	66	76	35	—	
24		86	65	76	27	—	
25		84	65	74	32	—	
26		86	68	77	12	—	
27		86	69	78	28	—	
28		88	66	77	6	—	
29		89	66	78	9	77	
30		85	58	72	42	75	
31		79	57	68	24	72	
TOT.	7.76	2,614	2,061	2,338	744		
MN.		84.3	66.5	75.4			

PART IV

Monthly Hydrologic Data

Plantation Field Laboratory

1963

Division 2 - Solar Radiation, Standard Pan Evaporation, Water Temperature

HYDROLOGIC DATA - PLANTATION FIELD LABORATORY
FORT LAUDERDALE, FLORIDA

DATE	SOLAR RADIATION			FREE WATER EVAP. - (CLASS A PAN)							
JAN	DURATION	TOT. INC. LIGHT	TOT. RADIATION	ALUM.	BLACK	WATER TEMP. (°F.)					
(MO.) 1963	(HOURS)		(GUNN-BELLANI) UNITS	(IN.)	(IN.)	ALUM.			BLACK		
(YR.)						MAX.	MIN.	MN	MAX.	MIN.	MN
1	6.9	364	8.4	.24							
2	6.8	362	8.6	.07							
3	5.8	338	8.6	.14							
4	7.4	380	9.7	.16							
5	7.2	376	9.8	.10							
6	2.8	256	6.5	.19							
7	2.6	251	6.5	.09							
8	6.9	374	7.9	.14							
9	4.4	309	4.7	.10							
10	8.2	410	10.2	.11							
11	8.2	411	10.3	.05							
12	6.6	372	9.3	.04							
13	5.0	330	9.3	.12							
14	4.6	320	7.9	.10							
15	1.6	221	5.7	.08							
16	2.0	238	7.5	.08							
17	0.1	162	1.8	.05							
18	8.5	428	9.9	.12							
19	8.1	428	10.4	.13							
20	7.8	416	8.6	.10							
21	8.6	435	12.2	.18							
22	0.8	198	2.0	.12							
23	5.4	356	9.8	.11							
24	6.2	380	9.8	.12							
25	0.3	180	4.9	.14							
26	1.3	220	5.0	.08							
27	1.8	240	5.6	.09							
28	8.4	445	11.4	.19							
29	0.5	190	4.7	.15							
30	2.1	258	7.1	.14							
31	3.2	300	6.0	.09							
TOT.	150.1	9,948	204.7	3.62							
MN.	4.8		6.6	.12							

DATE	SOLAR RADIATION			FREE WATER EVAP. - (CLASS A PAN)							
FEB	DURATION	TOT. INC. LIGHT	TOT. RADIATION	ALUM.	BLACK	WATER TEMP. (°F.)					
(MO.) 1963	(HOURS)		(GUNN-BELLANI) UNITS	(IN.)	(IN.)	ALUM.			BLACK		
(YR.)						MAX.	MIN.	MN	MAX.	MIN.	MN
1	4.8	350	9.3	.11							
2	7.4	428	11.4	.12							
3	6.6	408	10.4	.11							
4	6.1	396	10.4	.19							
5	0	174	1.2	.06							
6	0.2	180	1.9	.05							
7	5.5	380	8.7	.15							
8	8.8	480	13.7	.17							
9	6.2	405	9.9	.12							
10	8.0	460	12.0	.12							
11	3.2	310	9.2	.09							
12	3.2	311	9.1	.14							
13	0.7	210	0.1	.13							
14	8.7	490	12.8	.13							
15	8.7	478	12.1	.11							
16	8.9	501	13.6	.15							
17	0	178	0.6	.02							
18	0	179	1.1	.01							
19	1.7	256	8.5	.08							
20	6.3	476	10.8	.23							
21	10.2	542	13.7	.16							
22	9.4	524	16.4	.17							
23	3.6	337	9.1	.18							
24	0.8	220	4.9	.09							
25	5.7	412	9.6	.18							
26	6.4	440	12.0	.12							
27	8.6	512	13.2	.31							
28	9.2	530	14.7	.16							
29											
30											
31											
TOT.	148.4	10,517	260.4	3.66							
MN.	5.3		9.3	.13							

HYDROLOGIC DATA - PLANTATION FIELD LABORATORY
FORT LAUDERDALE, FLORIDA

DATE	SOLAR RADIATION			FREE WATER EVAP. - (CLASS A PAN)							
MAY	DURATION	TOT. INC. LIGHT	TOT. RADIATION	ALUM.	BLACK	WATER TEMP. (°F.)					
(MO.) 1963	(HOURS)		(GUNN-BELLANI) UNITS	(IN.)	(IN.)	ALUM.			BLACK		
						MAX.	MIN.	MN	MAX.	MIN.	MN
(YR.)											
1	3.7	380	11.6	.21							
2	2.7	339	6.9	.15							
3	0.4	212	3.9	.31							
4	1.2	251	3.2	.24							
5	6.1	489	10.3	.30							
6	10.6	658	15.5	.25							
7	11.2	672	20.2	.28							
8	11.3	676	19.4	.31							
9	12.3	701	19.5	.27							
10	11.4	679	19.9	.29							
11	10.2	648	20.0	.27							
12	10.5	656	19.3	.28							
13	10.9	666	19.2	.27							
14	10.5	656	15.7	.23							
15	12.0	695	16.5	.26							
16	11.1	671	18.7	.26							
17	12.2	701	21.3	.29							
18	11.0	669	20.2	.30							
19	7.0	520	16.1	.24							
20	10.9	666	16.3	.26							
21	4.3	413	13.0	.27							
22	2.8	341	3.7	.08							
23	7.4	531	16.4	.21							
24	2.9	348	7.5	.10							
25	5.3	457	14.3	.18							
26	9.1	599	16.3	.23							
27	8.9	590	18.4	.31							
28	2.8	341	9.7	.16							
29	9.3	609	17.5	.27							
30	4.6	423	12.0	.13							
31	3.6	380	12.0	.34							
TOT.	238.2	16,637	454.5	7.55							
MN.	7.7		14.7	.24							

DATE	SOLAR RADIATION			FREE WATER EVAP. - (CLASS A PAN)							
JUNE	DURATION	TOT. INC. LIGHT	TOT. RADIATION	ALUM.	BLACK	WATER TEMP. (°F.)					
(MO.) 1963	(HOURS)		(GUNN-BELLANI) UNITS	(IN.)	(IN.)	ALUM.			BLACK		
						MAX.	MIN.	MN	MAX.	MIN.	MN
(YR.)											
1	7.3	528	14.7	.26							
2	8.2	557	11.3	.17							
3	3.7	580	17.5	.25							
4	3.6	379	11.0	.22							
5	6.0	483	14.7	.17							
6	8.0	548	15.7	.23							
7	3.5	371	8.2	.21							
8	5.1	348	12.3	.15							
9	2.6	330	9.7	.13							
10	6.9	514	14.7	.20							
11	7.6	535	7.1	.38							
12	9.4	610	15.6	.23							
13	5.1	446	11.1	.20							
14	0.8	230	7.6	.10							
15	7.5	531	15.6	.23							
16	4.2	407	7.5	.15							
17	7.4	528	14.2	.21							
18	12.3	711	18.9	.28							
19	12.3	712	18.8	.28							
20	11.3	680	19.3	.29							
21	12.0	702	20.2	.31							
22	11.9	700	21.8	.30							
23	11.0	670	20.5	.32							
24	9.9	630	17.9	.31							
25	10.6	658	19.3	.32							
26	4.4	415	11.5	.26							
27	0.2	194	2.1	.29							
28	3.9	390	9.1	.12							
29	4.4	415	9.5	.16							
30	10.9	666	19.4	.27							
31											
TOT.	217.0	15,468	416.8	7.00							
MN.	7.2		13.9	.23							

HYDROLOGIC DATA - PLANTATION FIELD LABORATORY
FORT LAUDERDALE, FLORIDA

DATE	SOLAR RADIATION			FREE WATER EVAP. - (CLASS A PAN)							
SEPT.	DURATION	TOT. INC. LIGHT	TOT. RADIATION	ALUM.	BLACK	WATER TEMP. (°F.)					
(MO.) 1963	(HOURS)		(GUNN-BELLANI) UNITS	(IN.)	(IN.)	ALUM.			BLACK		
(YR.)						MAX.	MIN.	MN	MAX.	MIN.	MN
1	9.6	593	15.8	.24							
2	0.3	193	2.8	.28							
3	4.0	380	8.0	.02							
4	9.7	591	17.6	.29							
5	10.3	608	17.4	.21							
6	6.7	478	10.2	.21							
7	7.5	505	14.3	.37							
8	6.3	460	11.5	.21							
9	6.9	481	13.6	.19							
10	6.0	445	11.0	.18							
11	6.7	471	13.8	.19							
12	7.2	488	13.1	.20							
13	8.9	550	16.5	.24							
14	7.6	498	15.2	.20							
15	4.8	397	11.1	.21							
16	3.3	340	7.3	.10							
17	7.5	491	15.6	.24							
18	0.5	200	6.6	.12							
19	0.4	191	4.6	.11							
20	0.0	169	1.3	.18							
21	0.8	214	1.0	.18							
22	2.0	280	3.7	.05							
23	2.7	313	7.3	.12							
24	0.2	176	3.9	.06							
25	1.1	229	5.4	.13							
26	0.7	206	3.6	.18							
27	5.5	409	11.2	.13							
28	6.4	439	15.8	.18							
29	8.1	492	14.0	.20							
30	10.0	556	15.2	.30							
31											
TOT.	151.7	11,843	309.2	5.52							
MN.	5.1		10.3	.18							

DATE	SOLAR RADIATION			FREE WATER EVAP. - (CLASS A PAN)							
OCT.	DURATION	TOT. INC. LIGHT	TOT. RADIATION	ALUM.	BLACK	WATER TEMP. (°F.)					
(MO.) 1963	(HOURS)		(GUNN-BELLANI) UNITS	(IN.)	(IN.)	ALUM.			BLACK		
(YR.)						MAX.	MIN.	MN	MAX.	MIN.	MN
1	7.5	471	16.0	.23							
2	0.3	179	3.0	.09							
3	2.2	281	7.1	.20							
4	5.3	395	10.2	.25							
5	7.7	472	13.3	.30							
6	6.4	429	11.1	.33							
7	2.5	293	7.1	.24							
8	6.5	430	11.0	.25							
9	9.3	514	13.6	.28							
10	5.0	379	8.5	.14							
11	7.9	470	13.3	.21							
12	2.0	262	5.1	.10							
13	9.2	503	13.5	.22							
14	8.4	480	13.3	.25							
15	8.1	470	14.2	.20							
16	5.5	388	9.9	.14							
17	2.7	289	4.4	.31							
18	4.8	363	8.1	.14							
19	7.9	458	11.4	.07							
20	7.1	432	12.4	.29							
21	8.8	480	12.1	.14							
22	9.3	491	14.3	.20							
23	9.1	485	14.0	.18							
24	8.4	464	12.9	.19							
25	8.9	476	13.2	.17							
26	5.2	366	10.4	.02							
27	3.8	317	9.6	.26							
28	5.8	381	12.3	.17							
29	5.3	365	10.2	.15							
30	9.4	481	10.9	.24							
31	8.6	459	11.2	.20							
TOT.	198.9	12,723	337.6	6.16							
MN.	6.4		10.9	.20							

PART IV

Monthly Hydrologic Data

Plantation Field Laboratory

1963

Division 3 - Evapotranspiration of Tifway Bermudagrass at 12-, 18-, 24-, and 36-inch depth - 12/31/62 to 12/31/63

HYDROLOGIC DATA - PLANTATION FIELD LABORATORY
FORT LAUDERDALE FLA.

DATE	EVAPOTRANSPIRATION *															AVG. WATER CONTENT		
MAY	W.T. LEVEL - 12"					W.T. LEVEL - 24"					W.T. LEVEL - 36"					UPPER FT. SOIL **		
(MO)	1	2	3	4	AVG.	1	2	3	4	AVG.	1	2	3	4	AVG.	"W.T.	"W.T.	"W.T.
1963	(IN)					(IN)					(IN)					(IN)	(IN)	(IN)
(YR)	3	4	9	12		1	6	8	11		2	5	7	10				
1	.12	.12	.11	.12	.12	.16	.10	.15	.21	.15	.24	.18	.17	.30	.22			
2	.12	.12	.11	.12	.12	.23	.25	.19	.21	.22	.16	.25	.25	.13	.20			
3	.12	.13	.11	.12	.12	.09	.11	.15	.11	.12	.13	.12	.19	.21	.16			
4	.12	.12	.11	.12	.12	.09	.12	.16	.10	.12	.13	.11	.19	.21	.16			
5	.12	.13	.11	.12	.12	.10	.17	.03	.11	.10	.13	.12	.05	.01	.08			
6	.12	.12	.11	.12	.12	.10	.09	.14	.10	.11	.14	.14	.05	.10	.11			
7	.11	.12	.12	.18	.13	.13	.14	.14	.11	.13	.14	.12	.05	.10	.10			
8	.18	.19	.18	.19	.19	.14	.16	.15	.11	.14	.11	.14	.10	.03	.11			
9	.18	.17	.16	.17	.17	.14	.12	.15	.11	.13	.06	.05	.12	.12	.09			
10	.17	.18	.17	.17	.17	.13	.14	.13	.14	.14	.13	.15	.10	.08	.12			
11	.16	.16	.14	.16	.16	.12	.12	.13	.13	.13	.04	.01	.14	.08	.07			
12	.20	.19	.20	.18	.19	.16	.17	.17	.16	.17	.20	.28	.06	.08	.16			
13	.21	.21	.18	.19	.20	.16	.17	.18	.15	.18	.14	.14	.26	.20	.19			
14	.19	.18	.17	.17	.18	.19	.24	.19	.38	.25	.41	.47	.36	.23	.37			
15	.18	.18	.18	.18	.18	.20	.25	.20	.09	.17	.10	.03	.09	.22	.11			
16	.19	.18	.17	.17	.18	.20	.13	.19	.10	.16	.08	.17	.12	.09	.12			
17	.18	.19	.18	.19	.19	.13	.16	.12	.13	.13	.16	.11	.10	.12	.12			
18	.19	.18	.18	.17	.18	.12	.12	.14	.12	.13	.03	.16	.12	.08	.10			
19	.18	.17	.15	.17	.17	.14	.18	.14	.16	.16	.16	.06	.08	.10	.10			
20	.20	.21	.19	.18	.20	.15	.17	.18	.13	.16	.16	.26	.24	.12	.20			
21	.16	.15	.15	.16	.16	.14	.12	.13	.12	.13	.13	.11	.08	.12	.11			
22	.10	.11	.11	.11	.11	.12	.15	.14	.12	.13	.04	.08	.11	.07	.08			
23	.11	.11	.11	.10	.11	.13	.15	.15	.11	.14	.18	.20	.14	.16	.17			
24	.10	.10	.11	.09	.10	.15	.14	.13	.21	.16	.13	.07	.13	.13	.12			
25	.11	.10	.11	.10	.11	.15	.15	.14	.04	.12	.10	.16	.06	.08	.10			
26	.18	.18	.11	.17	.16	.08	.10	.09	.13	.10	.08	.10	.14	.10	.11			
27	.19	.18	.17	.18	.18	.16	.21	.20	.14	.18	.26	.20	.20	.14	.20			
28	.11	.09	.09	.11	.10	.04	.13	.12	.05	.09	.11	.04	.02	.03	.05			
29	.21	.21	.20	.20	.21	.21	.13	.13	.18	.16	.11	.26	.24	.20	.20			
30	.14	.16	.13	.15	.15	.19	.10	.18	.19	.17	.23	.26	.23	.21	.23			
31	.14	.15	.13	.16	.15	.18	.10	.18	.19	.16	.22	.26	.23	.22	.23			
TOT.	4.79	4.79	4.45	4.72	4.69	4.43	4.59	4.62	4.34	4.50	4.44	4.81	4.42	4.12	4.45			
MEAN	.15	.15	.14	.15	.15	.14	.15	.15	.14	.15	.14	.15	.14	.13	.14			

* - TIFWAY BERMUDAGRASS

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DATE	EVAPOTRANSPIRATION *															AVG. WATER CONTENT		
JUNE	W.T. LEVEL - 12"					W.T. LEVEL - 24"					W.T. LEVEL - 36"					UPPER FT. SOIL **		
(MO)	1	2	3	4	AVG.	1	2	3	4	AVG.	1	2	3	4	AVG.	"W.T.	"W.T.	"W.T.
1963	(IN)					(IN)					(IN)					(IN)	(IN)	(IN)
(YR)	3	4	9	12		1	6	8	11		2	5	7	10				
1	.15	.16	.14	.15	.15	.19	.11	.18	.18	.16	.23	.26	.23	.21	.23			
2	.14	.08	.13	.11	.12	.08	.10	.14	.19	.13	.22	.26	.23	.22	.23			
3	.18	.19	.13	.18	.17	.15	.22	.14	.19	.18	.37	.26	.23	.21	.27			
4	.16	.13	.15	.11	.14	.12	.23	.14	.19	.17	.36	.20	.22	.23	.25			
5	.15	.14	.14	.11	.14	.12	.22	.14	.08	.14	.16	.21	.23	.23	.21			
6	.16	.13	.15	.12	.14	.11	.23	.14	.09	.14	.11	.03	.04	.02	.05			
7	.07	.10	.04	.11	.08	.12	.08	.08	.14	.10	.12	.27	.23	.11	.18			
8	.07	.09	.03	.11	.08	.12	.07	.08	.15	.10	.12	.26	.24	.12	.18			
9	.07	.12	.04	.12	.09	.03	.08	.06	.06	.06	.12	.11	.10	.12	.11			
10	.14	.12	.26	.13	.16	.13	.16	.15	.06	.12	.12	.11	.11	.12	.12			
11	.07	.06	.10	.07	.08	.11	.16	.11	.15	.13	.12	.11	.10	.20	.13			
12	.08	.07	.10	.08	.08	.11	.17	.12	.15	.14	.12	.11	.10	.21	.11			
13	.03	.09	.10	.07	.07	.11	.06	.11	.13	.10	.12	.11	.11	.10	.11			
14	.02	.09	.10	.07	.07	.12	.06	.12	.12	.10	.12	.11	.10	.10	.11			
15	.03	.09	.04	.11	.07	.04	.04	.07	.06	.05	.11	.11	.09	.09	.10			
16	.14	.13	.13	.13	.13	.17	.14	.15	.13	.15	.12	.12	.10	.09	.11			
17	.14	.13	.13	.14	.14	.13	.13	.14	.12	.13	.11	.11	.14	.09	.11			
18	.15	.13	.14	.13	.14	.14	.14	.15	.13	.14	.12	.12	.14	.10	.12			
19	.14	.13	.13	.14	.14	.13	.14	.15	.12	.14	.11	.11	.14	.09	.11			
20	.21	.16	.16	.17	.18	.09	.22	.13	.13	.14	.12	.02	.04	.09	.07			
21	.21	.15	.12	.16	.16	.12	.10	.13	.09	.11	.02	.05	.07	.09	.06			
22	.20	.19	.17	.20	.19	.14	.18	.15	.11	.14	.09	.09	.09	.12	.10			
23	.18	.17	.15	.19	.17	.21	.25	.23	.33	.26	.32	.22	.30	.28	.28			
24	.18	.17	.16	.19	.18	.22	.26	.23	.07	.20	.14	.20	.18	.06	.14			
25	.14	.13	.05	.13	.11	.18	.11	.18	.33	.20	.31	.15	.19	.32	.24			
26	.13	.13	.06	.13	.11	.18	.11	.18	.14	.15	.10	.17	.18	.13	.14			
27	.14	.13	.05	.13	.11	.18	.12	.18	.14	.16	.11	.17	.19	.13	.15			
28	.16	.13	.05	.13	.12	.10	.11	.10	.03	.08	.16	.17	.19	.13	.16			
29	.15	.12	.21	.13	.15	.11	.11	.11	.16	.12	.15	.07	.09	.06	.09			
30	.16	.13	.21	.13	.16	.10	.11	.10	.15	.12	.16	.08	.10	.07	.10			
31																		
TOT.	3.66	3.63	3.17	3.73	3.55	3.61	4.01	3.91	3.37	3.74	4.21	3.59	3.81	3.50	3.78			
MEAN	.12	.12	.11	.12	.12	.12	.13	.13	.11	.12	.14	.12	.13	.12	.13			

* - TIFWAY BERMUDAGRASS

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HYDROLOGIC DATA - PLANTATION FIELD LABORATORY
FORT LAUDERDALE FLA.

DATE	EVAPOTRANSPIRATION *															AVG. WATER CONTENT		
JAN	W.T. LEVEL - 12"					W.T. LEVEL - 24"					W.T. LEVEL - 36"					UPPER FT. SOIL **		
(MO)	1	2	3	4	AVG.	1	2	3	4	AVG.	1	2	3	4	AVG.	"W.T.	"W.T.	W.T.
1963	(IN)					(IN)					(IN)					(IN)	(IN)	(IN)
(YR)	3	4	9	12		1	6	8	11		2	5	7	10				
1	.10	.12	.12	.13	.12	.07	.03	.04	.01	.04	.05	.04	.04	.04	.04			
2	.06	.02	.02	.01	.03	.05	.07	.07	.10	.07	.01	.04	.03	.04	.03			
3	.11	.14	.13	.14	.13	.10	.08	.06	.01	.06	.14	.04	.06	.06	.08			
4	.13	.12	.13	.10	.12	.09	.08	.10	.13	.10	.06	.05	.07	06	.06			
5	.04	.05	.02	.05	.04	.06	.06	.04	.01	.04	.07	.09	.04	.04	.06			
6	.05	.03	.06	.03	.06	.03	.02	.04	.06	.04	.02	.05	.04	.04	.04			
7	.10	.11	.10	.10	.10	.13	.14	.13	.11	.13	.02	.05	.16	.14	.09			
8	.11	.11	.10	.11	.11	.10	.12	.13	.16	.13	.19	.17	.03	.04	.11			
9	.10	.11	.10	.10	.10	.06	.07	.08	.12	.08	.19	.13	.24	.26	.21			
10	.11	.11	.11	.10	.11	.12	.12	.11	.08	.11	.06	.14	.06	.07	.08			
11	.07	.05	.06	.07	.06	.08	.09	.08	.06	.08	.05	.14	.03	.06	.07			
12	.07	.07	.06	.06	.07	.08	.10	.11	.14	.11	.19	.18	.26	.13	.19			
13	.04	.07	.06	.06	.06	.09	.11	.09	.06	.09	.16	.06	.08	.10	.10			
14	.05	.05	.05	.06	.05	.04	0	.04	.07	.04	.05	.07	.13	.21	.12			
15	.05	.05	.06	.06	.06	.01	0	.01	0	.01	.06	.04	.04	.16	.08			
16	.05	.05	.05	.06	.05	.19	.19	.16	.09	.16	.14	.14	.30	.16	.19			
17	.06	.05	.06	.06	.06	.09	.02	.07	.10	.07	.14	.14	.03	.06	.09			
18	.09	.11	.10	.06	.09	.10	.02	.08	.12	.08	.10	.10	.03	.06	.07			
19	.09	.11	.07	.10	.09	.09	.28	.17	.13	.17	.16	.10	.12	.06	.11			
20	.02	.11	.01	.10	.06	.06	.08	.06	.04	.06	.16	.10	.12	.06	.11			
21	.10	.11	.08	.11	.10	.06	.05	.07	.10	.07	.10	.16	.10	.16	.13			
22	.10	.07	.08	.06	.08	.03	.04	.03	.01	.03	.02	.03	.02	.01	.02			
23	.10	.06	.08	.07	.08	.04	.05	.04	.02	.04	.02	.02	.02	.01	.02			
24	.09	.07	.08	.06	.08	.10	.11	.01	.08	.08	.01	.03	.03	.01	.02			
25	04	.10	.15	.06	.09	.07	.06	.08	.06	.07	.02	.02	.02	.02	.02			
26	.05	.05	.05	.03	.05	.04	.06	.06	.05	.05	.08	.06	.02	.01	.04			
27	.10	.06	.05	.06	.07	.07	.07	.05	.02	.05	.08	.02	.02	.01	.03			
28	.10	.16	.15	.16	.14	.13	.14	.10	.11	.12	.06	.05	.12	.01	.06			
29	.10	.04	.02	.03	.05	.04	.04	.03	.02	.03	.05	.04	.03	.10	.06			
30	.04	.04	.03	.04	.04	.04	.08	.04	.04	.05	.04	.05	.05	.11	.06			
31	.04	.05	.03	.04	.04	.04	.02	.05	.04	.04	.07	.05	.05	.07	.06			
TOT.	2.36	2.45	2.27	2.28	2.34	2.30	2.40	2.23	2.15	2.27	2.57	2.40	2.39	2.37	2.43			
MEAN	.08	.08	.07	.07	.08	.07	.08	.07	.07	.07	.08	.08	.08	.08	.08			

* - TIFWAY BERMUDAGRASS
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DATE	EVAPOTRANSPIRATION *															AVG. WATER CONTENT		
FEB.	W.T. LEVEL - 12"					W.T. LEVEL - 24"					W.T. LEVEL - 36"					UPPER FT. SOIL **		
(MO)	1	2	3	4	AVG.	1	2	3	4	AVG.	1	2	3	4	AVG.	"W.T.	"W.T.	W.T.
1963	(IN)					(IN)					(IN)					(IN)	(IN)	(IN)
(YR)	3	4	9	12		1	6	8	11		2	5	7	10				
1	.15	.15	.16	.15	.15	.14	.13	.11	.11	.12	.02	.14	.01	.10	.07			
2	.04	.03	.04	.03	.04	.09	.01	.07	.07	.06	.03	.02	.08	.08	.05			
3	.12	.13	.08	.13	.12	06	.11	.07	.05	.07	.06	.02	.02	.04	.04			
4	.11	.04	.14	.07	.09	.10	.03	.09	.11	.08	.11	.21	.14	.13	.15			
5	.11	.04	.14	.07	.09	.10	.03	.10	.11	.09	.12	.20	.14	.13	.15			
6	.05	.05	.02	.07	.05	.10	.03	.03	.06	.06	.12	.20	.14	.13	.15			
7	.06	.04	.04	.07	.05	.04	.11	.03	.07	.06	.12	.20	.14	.13	.15			
8	.13	.24	.14	.11	.16	.11	.13	.08	.06	.10	.12	.20	.14	.13	.15			
9	.12	.13	.10	.11	.12	.11	.27	.10	.18	.17	.25	.11	.27	.26	.22			
10	.12	.13	.11	.11	.12	.11	.12	.11	.05	.10	.12	.12	.14	.13	.13			
11	.08	.01	.02	.08	.05	.05	.04	.04	.07	.04	.11	.09	.09	.13	.11			
12	.09	.10	.10	.07	.09	.18	.20	.14	.18	.18	.11	.09	.09	.07	.09			
13	.09	.10	.11	.08	.10	.17	.21	.14	.18	.18	.11	.08	.09	.07	.09			
14	.09	.10	.10	.08	.09	.18	.21	.14	.18	.18	.11	.08	.09	.07	.09			
15	.05	.09	.06	.07	.07	.04	.05	.04	.05	.05	.11	.08	.05	.07	.09			
16	.08	.07	.11	.06	.08	.16	.15	.14	.11	.14	.11	.08	.08	.06	.08			
17	.06	06	.05	.07	.06	.04	.01	.01	.05	.03	.11	.08	.08	.06	.08			
18	.06	.06	.04	.06	.06	.04	.01	.01	.05	.03	.11	.08	.08	.06	.08			
19	.07	.06	.05	.07	.06	.04	.01	.01	.05	.03	.11	.08	.08	.06	.08			
20	.06	.06	.05	.06	.06	.04	.01	.01	.05	.03	.02	.08	.08	.06	.06			
21	.10	.08	.15	.09	.11	.06	.06	.06	.06	.06	.01	.00	.08	.06	.06			
22	.13	.15	.08	.13	.12	.12	.11	.11	.07	.10	.01	.01	.04	.04	.03			
23	.10	.08	.12	.07	.09	.07	.07	.04	.06	.06	.01	.01	.02	.05	.02			
24	.08	.08	.07	.08	.08	.04	.06	.04	.02	.04	.01	.01	.01	.04	.02			
25	.09	.09	.08	.07	.08	.10	.06	.10	.08	.09	.02	.01	.01	.05	.02			
26	.11	.12	.12	.12	.12	.03	.09	.01	.04	.04	.08	.06	.02	.06	.06			
27	.12	.12	.12	.13	.12	.18	.09	.19	.13	.15	.08	.14	.10	.09	.10			
28	.11	.10	.09	.09	.10	.07	.05	.07	.10	.07	.06	.04	.05	.03	.05			
29																		
30																		
31																		
TOT.	2.58	2.51	2.49	2.40	2.50	2.57	2.46	2.09	2.35	2.37	2.36	2.60	2.39	2.39	2.44			
MEAN	.09	.09	.09	.09	.09	.09	.09	.07	.08	.08	.08	.09	.09	.09	.09			

* - TIFWAY BERMUDAGRASS
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HYDROLOGIC DATA - PLANTATION FIELD LABORATORY
FORT LAUDERDALE FLA.

DATE	EVAPOTRANSPIRATION *															AVG. WATER CONTENT		
SEPT.	W.T. LEVEL - 12"					W.T. LEVEL - 24"					W.T. LEVEL - 36"					UPPER FT. SOIL **		
(MO)	1	2	3	4	AVG.	1	2	3	4	AVG.	1	2	3	4	AVG.	"W.T.	"W.T.	"W.T.
1963	(IN)					(IN)					(IN)					(IN)	(IN)	(IN)
(YR)	3	4	9	12		1	6	8	11		2	5	7	10				
1	.11	.11	.12	.10	.11	.13	.13	.12	.13	.13	.12	.16	.17	.14	.15			
2	.11	.11	.11	.11	.11	.13	.12	.11	.14	.12	.13	.17	.16	.15	.15			
3	.12	.11	.11	.10	.11	.13	.12	.12	.13	.12	.12	.17	.17	.15	.15			
4	.11	.11	.11	.10	.11	.13	.12	.11	.13	.12	.12	.17	.16	.15	.15			
5	.11	.11	.11	.13	.12	.10	.07	.11	.13	.10	.12	.17	.17	.15	.15			
6	.12	.14	.11	.15	.13	.10	.08	.12	.13	.11	.13	.11	.12	.10	.12			
7	.13	.15	.11	.16	.14	.13	.08	.14	.13	.12	.12	.12	.11	.11	.12			
8	.12	.14	.11	.15	.13	.14	.08	.15	.14	.13	.13	.11	.12	.10	.12			
9	.13	.12	.11	.12	.12	.13	.09	.14	.14	.12	.12	.12	.11	.11	.12			
10	.12	.13	.14	.12	.13	.14	.09	.13	.13	.12	.12	.11	.12	.11	.12			
11	.13	.12	.15	.12	.13	.14	.08	.14	.12	.12	.12	.12	.11	.11	.12			
12	.13	.11	.12	.13	.12	.14	.09	.13	.13	.12	.12	.11	.12	.11	.12			
13	.13	.12	.14	.15	.14	.10	.04	.11	.09	.08	.12	.12	.11	.11	.12			
14	.17	.14	.15	.15	.15	.11	.23	.12	.08	.14	.12	.11	.12	.11	.12			
15	.10	.12	.13	.13	.12	.10	.23	.12	.09	.14	.12	.12	.11	.11	.12			
16	.06	.06	.06	.05	.06	.06	.23	.16	.09	.14	.12	.11	.11	.07	.10			
17	.06	.06	.05	.06	.06	.07	.07	.07	.06	.07	.12	.13	.06	.07	.10			
18	.06	.06	.06	.05	.06	.07	.08	.06	.05	.06	.12	.14	.06	.07	.10			
19	.06	.06	.05	.06	.06	.07	.07	.06	.06	.06	.10	.13	.06	.07	.09			
20	.06	.06	.06	.05	.06	.07	.08	.06	.05	.06	.10	.14	.06	.07	.09			
21	.06	.06	.05	.06	.06	.07	.07	.06	.06	.06	.10	.13	.06	.07	.09			
22	.06	.06	.06	.05	.06	.07	.08	.06	.06	.07	.10	.14	.06	.07	.09			
23	.06	.06	.05	.06	.06	.07	.07	.06	.06	.06	.09	.13	.06	.07	.09			
24	.05	.06	.06	.05	.06	.07	.07	.06	.06	.06	.09	.14	.06	.07	.09			
25	.06	.06	.05	.06	.06	.07	.07	.06	.06	.06	.09	.13	.06	.07	.09			
26	.06	.06	.06	.05	.06	.07	.07	.06	.06	.06	.09	.14	.06	.07	.09			
27	.06	.06	.05	.05	.06	.07	.07	.06	.06	.06	.09	.13	.06	.07	.09			
28	.08	.08	.10	.11	.12	.09	.04	.06	.06	.06	.09	.14	.06	.07	.09			
29	.08	.09	.12	.11	.10	.06	.04	.10	.04	.06	.09	.13	.06	.07	.09			
30	.08	.09	.13	.11	.10	.07	.04	.10	.04	.06	.09	.14	.05	.07	.09			
31																		
TOT.	2.79	2.82	2.84	2.90	2.84	2.90	2.80	2.86	2.71	2.87	3.31	3.99	2.92	2.87	3.27			
MEAN	.09	.09	.09	.10	.09	.10	.09	.10	.09	.09	.11	.13	.10	.10	.11			

* - TIFWAY BERMUDAGRASS

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DATE	EVAPOTRANSPIRATION *															AVG. WATER CONTENT		
OCT.	W.T. LEVEL - 12"					W.T. LEVEL - 24"					W.T. LEVEL - 36"					UPPER FT. SOIL **		
(MO)	1	2	3	4	AVG.	1	2	3	4	AVG.	1	2	3	4	AVG.	"W.T.	"W.T.	"W.T.
1963	(IN)					(IN)					(IN)					(IN)	(IN)	(IN)
(YR)	3	4	9	12		1	6	8	11		2	5	7	10				
1	.12	.11	.11	.13	.12	.05	.07	.10	.05	.07	.09	.11	.11	.03	.08			
2	.12	.12	.14	.12	.12	.06	.05	.12	.05	.07	.14	.12	.10	.04	.10			
3	.13	.13	.15	.13	.14	.13	.13	.11	.14	.13	.19	.11	.11	.12	.13			
4	.13	.12	.14	.12	.13	.12	.14	.12	.13	.13	.19	.12	.10	.13	.14			
5	.13	.13	.15	.13	.14	.13	.13	.11	.14	.13	.19	.11	.10	.13	.13			
6	.10	.11	.10	.12	.11	.13	.13	.12	.14	.13	.19	.11	.10	.13	.13			
7	.10	.11	.12	.13	.12	.10	.14	.11	.13	.12	.19	.11	.11	.13	.14			
8	.11	.10	.12	.13	.12	.09	.07	.11	.09	.09	.19	.09	.10	.13	.13			
9	.14	.12	.12	.13	.13	.10	.08	.10	.08	.09	.19	.08	.10	.13	.12			
10	.10	.11	.11	.11	.11	.09	.09	.09	.09	.09	.19	.09	.10	.11	.12			
11	.10	.12	.11	.11	.11	.09	.10	.09	.08	.09	.19	.08	.10	.10	.12			
12	.09	.12	.11	.11	.11	.09	.09	.09	.08	.09	.19	.09	.10	.11	.12			
13	.13	.12	.12	.13	.12	.10	.09	.07	.08	.08	.19	.09	.10	.10	.12			
14	.12	.11	.13	.13	.12	.10	.08	.08	.08	.08	.19	.09	.10	.11	.12			
15	.09	.09	.09	.09	.09	.09	.10	.12	.07	.10	.10	.09	.11	.06	.09			
16	.10	.08	.08	.08	.08	.10	.10	.13	.06	.10	.09	.09	.11	.07	.09			
17	.09	.09	.09	.09	.09	.09	.10	.12	.07	.10	.09	.09	.11	.06	.09			
18	.10	.09	.08	.09	.09	.10	.10	.13	.06	.10	.09	.09	.10	.07	.09			
19	.09	.09	.09	.09	.09	.09	.10	.12	.07	.10	.09	.09	.10	.07	.09			
20	.10	.09	.08	.09	.09	.09	.10	.11	.06	.09	.09	.09	.10	.07	.09			
21	.13	.14	.14	.12	.13	.09	.10	.12	.07	.10	.09	.09	.10	.07	.09			
22	.12	.12	.11	.12	.12	.08	.09	.11	.07	.09	.09	.09	.06	.07	.08			
23	.11	.09	.10	.10	.10	.07	.08	.08	.03	.06	.04	.09	.06	.07	.06			
24	.11	.10	.11	.11	.11	.08	.08	.09	.03	.07	.04	.07	.06	.07	.06			
25	.13	.11	.11	.08	.11	.10	.08	.11	.05	.08	.04	.07	.06	.07	.06			
26	.08	.08	.08	.08	.08	.05	.03	.07	.04	.05	.04	.06	.06	.06	.06			
27	.08	.08	.08	.10	.08	.06	.04	.07	.03	.05	.04	.06	.05	.06	.05			
28	.11	.10	.11	.11	.11	.09	.06	.10	.05	.08	.07	.06	.06	.06	.06			
29	.08	.12	.12	.13	.11	.06	.07	.08	.04	.06	.07	.06	.05	.06	.06			
30	.15	.13	.13	.13	.14	.11	.11	.11	.06	.10	.07	.06	.05	.06	.06			
31	.16	.12	.12	.13	.13	.10	.11	.10	.07	.10	.07	.06	.05	.06	.06			
TOT.	3.45	3.35	3.45	3.47	3.43	2.83	2.84	3.19	2.29	2.79	3.36	2.71	2.72	2.61	2.85			
MEAN	.11	.11	.11	.11	.11	.09	.09	.10	.07	.09	.11	.09	.09	.08	.09			

* - TIFWAY BERMUDAGRASS

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PART V

Monthly Hydrologic Data

Everglades Experiment Station

1963

Division 1 - Rainfall, Air Temperature, Wind

HYDROLOGIC DATA - EVERGLADES EXPERIMENT STATION
BELLE GLADE, FLORIDA

DATE JAN	RAINFALL	AIR TEMP. (°F)			WIND	MAX. - MIN. REL. HUM.	REMARKS
MO.	(IN.)	MAX.	MIN.	MN	(MI.)	(%)	
1963 (YR.)							
1		70	41	55.5	51	100 49	
2		68	45	56.5	47	100 42	
3		67	46	56.5	51	99 38	
4		65	42	53.5	85	100 46	
5		73	48	60.5	56	100 57	
6		74	52	63.0	30	100 57	
7	0.11	76	52	64.0	191	100 56	
8	.04	63	46	54.5	45	100 70	
9	.02	61	35	48.0	84	100 63	
10		64	38	51.0	28	100 44	
11		74	41	57.5	23	100 48	
12		81	60	70.5	39	100 58	
13		86	60	73.0	60	100 54	
14		85	60	72.5	64	100 59	
15		77	58	67.5	60	100 78	
16		70	57	63.5	79	100 81	
17		72	56	64.0	51	100 82	
18		82	52	67.0	53	100 56	
19		84	56	70.0	38	100 57	
20		83	57	70.0	57	100 60	
21	.17	86	61	73.5	148	100 55	
22	.29	69	44	56.5	98	100 64	
23		73	54	63.5	56	100 54	
24		82	63	72.5	90	100 64	
25		68	47	57.5	104	100 70	
26		71	61	66.0	49	100 70	
27	.35	77	57	67.0	47	100 80	
28		82	53	67.5	111	100 60	
29		72	56	64.0	61	100 65	
30		75	56	65.5	77	100 56	
31		76	57	66.5	31	100 70	
TOT.	0.98	2,306	1,611	—	2,064	—	
MN.		74.4	52.0	63.2		—	

HYDROLOGIC DATA - EVERGLADES EXPERIMENT STATION
BELLE GLADE, FLORIDA

DATE FEB	RAINFALL	AIR TEMP. (°F)			WIND	MAX. - MIN. REL. HUM.	REMARKS
MO.	(IN.)	MAX.	MIN.	MN	(MI.)	(%)	
1963 (YR.)							
1		81	52	66.5	29	100 50	
2		78	53	65.5	25	100 62	
3		82	52	67.0	53	100 56	
4	0.76	83	59	71.0	85	100 51	
5		72	49	60.5	101	100 70	
6		58	49	53.5	126	100 89	
7		65	46	55.5	133	100 62	
8		75	51	63.0	107	100 40	
9		75	45	60.0	93	100 53	
10		70	43	56.5	46	100 60	
11		74	57	65.5	21	100 56	
12	0.28	83	66	74.5	146	100 53	
13	0.79	75	49	62.0	171	100 83	
14		59	39	49.0	75	100 60	
15		68	41	54.5	36	100 60	
16	0.02	65	49	57.0	38	98 30	
17	0.60	61	52	56.5	62	100 83	
18		66	53	59.5	76	100 78	
19	0.02	75	60	67.5	102	100 71	
20	0.38	83	52	67.5	155	100 64	
21		64	40	72.0	50	100 57	
22		75	40	57.5	37	100 42	
23		71	50	60.0	102	99 55	
24		79	52	65.5	107	100 64	
25	0.07	83	56	69.5	91	100 64	
26		79	58	68.5	60	100 64	
27	0.57	82	43	62.5	229	100 64	
28		60	41	50.0	63	99 54	
29							
30							
31							
TOT.	3.49	2,041	1,397	—	2,419	—	
MN.		72.9	49.9	61.4		—	

HYDROLOGIC DATA - EVERGLADES EXPERIMENT STATION
BELLE GLADE, FLORIDA

DATE MAY	RAINFALL	AIR TEMP. (°F)			WIND	MAX. - MIN. REL. HUM.	REMARKS
MO.	(IN.)	MAX.	MIN.	MN	(MI.)	(%)	
1963 (YR.)							
1		80	65	72 5	76	97 - 56	
2	0.17	80	60	70.0	84	100 - 76	
3	0.15	78	64	71.6	94	100 - 70	
4	3.66	71	63	67.6	115	100 - 98	
5	0.01	79	61	70 0	88	100 - 60	
6	0.02	79	50	64 5	66	100 - 54	
7		85	60	72.0	74	100 - 44	
8		87	59	73 0	38	100 - 94	
9		85	57	71.0	39	100 - 53	
10		86	61	73.5	28	100 - 51	
11		87	64	75.5	69	100 - 52	
12		90	62	76 0	45	100 - 40	
13		90	67	78 5	48	100 - 46	
14	0.11	87	64	75.5	83	100 - 80	
15		80	59	69.5	41	100 - 60	
16		89	65	77.6	24	100 - 56	
17		90	63	76 5	40	100 - 54	
18		92	64	78 0	50	100 - 46	
19		90	64	77 6	37	100 - 52	
20		88	65	76 5	38	100 - 54	
21		88	66	77 0	29	100 - 60	
22	0.89	83	68	75.5	28	100 - 83	
23	0 02	87	67	77 0	32	100 - 68	
24	0 05	89	66	77.5	19	100 - 60	
25	0 04	87	67	77 0	44	100 - 70	
26		89	69	79 0	14	100 - 57	
27	1.14	90	68	79 0	33	100 - 56	
28	0 03	83	70	76.5	11	100 - 66	
29	0.05	83	66	74 5	24	100 - 84	
30	0 20	87	69	78 0	30	100 - 68	
31	0 52	86	65	75.5	19	100 - 64	
TOT.	7.06	2,645	1,778	—	1,460		
MN.		85.3	63 8	74.5			

HYDROLOGIC DATA - EVERGLADES EXPERIMENT STATION
BELLE GLADE, FLORIDA

DATE JUNE	RAINFALL	AIR TEMP. (°F)			WIND	MAX. - MIN. REL. HUM.	REMARKS
MO.	(IN.)	MAX.	MIN.	MN	(MI.)	(%)	
1963 (YR.)							
1	0.07	85	68	76.0	76	100 70	
2	0.05	81	69	75.0	44	100 71	
3	1.40	88	69	78 5	48	100 65	
4	0.07	86	67	76.5	11	100 70	
5	0.44	88	69	78 5	23	100 64	
6	0.43	90	67	78 5	65	100 63	
7		85	66	75.5	4	100 60	
8		86	68	77.0	15	100 64	
9	0.16	85	67	76.0	14	100 60	
10		89	69	79.0	83	100 56	
11	0.02	90	69	79.5	46	100 60	
12		90	71	80.5	46	100 60	
13	0 84	91	74	82.5	50	100 64	
14		87	72	79.5	11	100 74	
15		90	71	80.5	66	100 63	
16	0.91	90	71	80.5	8	100 68	
17	0.26	87	72	79.5	98	100 78	
18	0.73	92	69	80.5	0	100 60	
19	0 95	91	70	81.0	7	100 66	
20		91	68	79.5	93	100 66	
21		90	71	80.5	49	100 60	
22		90	69	79.5	49	100 58	
23		91	69	80.0	20	100 58	
24	0.09	89	71	80.0	22	100 64	
25		90	69	79.5	38	100 56	
26	0 01	84	70	77.0	20	100 74	
27	1.15	86	69	77.5	41	100 74	
28	1.20	88	68	78 0	21	100 72	
29	2 60	88	67	77 5	23	100 70	
30	0 21	90	71	80.5	23	100 62	
31							
TOT.	11.59	2,648	2,[illegible]		1,114	———	
MN.		85.3	69.3	78.8		———	

HYDROLOGIC DATA - EVERGLADES EXPERIMENT STATION
BELLE GLADE, FLORIDA

DATE SEPT	RAINFALL	AIR TEMP. (°F)			WIND	MAX. - MIN. REL. HUM.		REMARKS
MO. 1963 (YR.)	(IN.)	MAX.	MIN.	MN	(MI.)	(%)		
1	|	92	72	82.0	48	100	51	
2	0.40	90	71	80.5	14	100	70	
3	0.62	88	71	79.5	21	100	72	
4		92	71	81.5	44	100	73	
5	1.19	91	70	80.5	19	100	73	
6		93	74	83.5	12	100	78	
7		92	71	81.5	35	100	57	
8		92	71	81.5	27	100	65	
9	1.04	90	72	81.0	21	—	—	
10		89	68	78.5	38	100	51	
11		89	69	79.0	50	100	50	
12		90	68	79.0	34	100	47	
13	0.57	92	70	81.0	25	100	46	
14		91	71	81.0	23	100	54	
15		89	71	80.0	38	100	58	
16	0.02	90	71	80.5	38	100	60	
17	0.02	90	72	81.0	45	100	57	
18	0.06	88	71	79.5	33	100	63	
19	0.01	87	72	79.5	28	100	69	
20	0.23	82	71	76.5	26	100	78	
21	0.17	81	71	76.0	40	100	83	
22	0.05	86	74	80.0	60	100	75	
23	2.04	89	70	79.5	5	100	65	
24	0.02	83	72	77.5	23	100	79	
25	1.34	82	72	77.0	28	100	80	
26	0.25	81	73	77.0	51	100	82	
27	1.24	88	71	79.5	29	100	72	
28		92	75	83.5	28	100	68	
29		90	76	83.0	79	100	60	
30		90	67	78.5	118	100	57	
31								
TOT.	9.27	2,659	2,138	—	1,080	—		
MN.		88.6	71.2	79.9		—		

HYDROLOGIC DATA - EVERGLADES EXPERIMENT STATION
BELLE GLADE, FLORIDA

DATE OCT	RAINFALL	AIR TEMP. (°F)			WIND	MAX. - MIN. REL. HUM.		REMARKS
MO. 1963 (YR.)	(IN.)	MAX.	MIN.	MN	(MI.)	(%)		
1	|	86	64	75.0	28	100	47	
2	0.06	87	68	77.5	46	100	52	
3	0.58	85	70	77.5	64	100	68	
4	0.01	87	68	77.5	64	100	63	
5		87	63	75.0	100	98	44	
6		81	71	76.0	152	95	52	
7		86	67	76.5	175	95	64	
8	0.01	87	68	77.5	114	100	52	
9		87	68	77.5	84	100	51	
10	0.37	84	60	72.0	58	100	64	
11	0.19	82	67	74.5	54	100	66	
12	0.04	81	62	71.5	28	100	62	
13		83	59	71.6	104	100	68	
14		85	60	72.5	9	100	50	
15		85	74	79.5	67	100	61	
16	0.13	84	64	74.0	93	100	54	
17	0.18	82	64	73.0	67	100	64	
18	0.02	83	63	73.0	90	100	63	
19		83	63	73.0	82	100	67	
20	0.01	83	63	73.0	102	100	47	
21		83	54	68.5	9	100	50	
22		84	56	70.0	36	100	36	
23		85	65	75.0	99	100	50	
24		84	64	74.0	122	100	63	
25		84	63	73.5	59	100	58	
26		85	66	75.5	17	100	55	
27		85	63	74.0	32	99	50	
28		85	60	72.5	25	100	42	
29		85	65	75.0	23	100	46	
30		81	50	65.5	99	89	50	
31		78	51	64.5	57	94	46	
TOT.	1.60	2,607	1,963	—	2,159	—		
MN.		84.1	63.3	73.7		—		

PART V

Monthly Hydrologic Data

Everglades Experiment Station

1963

Division 2 - Standard Pan and Land Tank Evaporation

HYDROLOGIC DATA - EVERGLADES EXPERIMENT STATION
BELLE GLADE, FLORIDA

DATE	SOLAR RADIATION		FREE WATER EVAPORATION				EVAPOTRANSPIRATION	
JAN	NET R.	TOTAL R.	STD. CLASS A		LAND TANKS		EVAPOTRANSPIROMETERS	
(MO.)	LANGLEY'S	GUNN-BELLANI UNITE	P2	P3	T7 (ALUM.)	T8 (BLACK)	T1	T2
1963 (YR.)			(IN.)	(IN.)	(IN.)	(IN.)	(IN.)	(IN.)
1			0.12	.13	.19	.18		
2			.11	.11	.12	.13		
3			.11	13	.16	15		
4			06	.14	.15	.17		
5			10	.11	.12	.11		
6			.17	.09	.06	.06		
7			.13	.13	.11	.12		
8			.12	.10	.12	11		
9			.07	.09	.12	14		
10			.11	.10	.12	.13		
11			.09	.10	.10	.09		
12			.08	.08	.05	.04		
13			11	.11	.05	.05		
14			.12	12	.05	.04		
15			.10	.11	.08	.08		
16			.07	.08	.06	.07		
17			06	.03	.05	.06		
18			.10	.13	.09	.09		
19			.13	.14	.09	.08		
20			12	.14	.08	.07		
21			.15	.16	.08	.08		
22			.13	.13	.16	.19		
23			.11	10	.12	.11		
24			11	11	.06	.06		
25			.11	.14	.19	.19		
26			.06	.05	.04	.06		
27			.02	.04	.01	.08		
28			.16	.16	.13	.13		
29			.10	.09	.09	.09		
30			14	.15	.11	.12		
31			.09	.07	.05	.06		
TOT.			3.26	3.37	3.01	3.06		
MN.								

DATE	SOLAR RADIATION		FREE WATER EVAPORATION				EVAPOTRANSPIRATION	
FEB	NET R.	TOTAL R.	STD. CLASS A		LAND TANKS		EVAPOTRANSPIROMETERS	
(MO.)	LANGLEY'S	GUNN-BELLANI UNITE	P2	P3	T7 (ALUM.)	T8 (BLACK)	T1	T2
1963 (YR.)			(IN.)	(IN.)	(IN.)	(IN.)	(IN.)	(IN.)
1			.11	.14	.11	.10		
2			.08	.08	.06	.07		
3			14	.14	10	.11		
4			.15	.16	14	14		
5			.10	.08	12	.10		
6			.03	.05	.16	.16		
7			.08	.09	14	14		
8			17	.09	16	.15		
9			.12	.22	10	.10		
10			.13	.12	13	.13		
11			.04	.06	.03	.03		
12			.17	.17	.09	.06		
13			.10	.10	.13	.17		
14			.15	.15	.16	.16		
15			.08	.09	.13	.13		
16			.04	.04	.10	.11		
17			.09	.10	.02	.03		
18			.10	.07	08	.07		
19			.05	.07	.12	.05		
20			.11	.11	.12	.11		
21			.12	.14	.15	.14		
22			.14	.13	.10	.10		
23			.19	.20	.19	.19		
24			.11	.10	.06	.08		
25			.14	.16	.13	.11		
26			.14	.14	.07	.08		
27			.24	.22	.33	.30		
28			.14	.15	.18	.14		
29								
30								
31								
TOT.			3.26	3.37	3.41	3.27		
MN.								

HYDROLOGIC DATA - EVERGLADES EXPERIMENT STATION
BELLE GLADE, FLORIDA

DATE	SOLAR RADIATION		FREE WATER EVAPORATION				EVAPOTRANSPIRATION	
MAY	NET R.	TOTAL R.	STD. CLASS A		LAND TANKS		EVAPOTRANSPIROMETERS	
(MO.)	LANGLEY'S	GUNN-BELLANI UNITS	P2	P3	T7 (ALUM.)	T8 (BLACK)	T1	T2
1963 (YR.)			(IN.)	(IN.)	(IN.)	(IN.)	(IN.)	(IN.)
1			.16	.18	.16	.15		
2			.10	.13	.15	.14		
3			.15	.13	.14	.15		
4			.21	.20	.17	.18		
5			.22	.23	.11	.16		
6			.18	.19	.19	.16		
7			.24	.24	.18	.16		
8			.21	.23	.16	.15		
9			.25	.25	.19	.19		
10			.25	.25	.17	.17		
11			.29	.26	.23	.24		
12			27	.31	22	18		
13			.24	.24	.18	.16		
14			.26	.24	.21	21		
15			.20	.20	.21	.20		
16			.29	.23	.19	.21		
17			.25	.28	.24	20		
18			.21	.27	.25	.23		
19			.35	.04	.13	.45		
20			.26	.26	.22	.20		
21			.22	.22	.18	.19		
22			.15	.15	.14	.14		
23			.16	.16	.12	.11		
24			.19	.18	.16	.16		
25			.25	.22	.17	.17		
26			.19	.24	.17	.16		
27			.37	.32	.24	.27		
28			.11	.15	.14	.14		
29			.06	.07	.12	.12		
30			.21	.13	.13	.15		
31			.04	.11	.13	.18		
TOT.			6.49	6.31	5.42	5.68		
MN.								

DATE	SOLAR RADIATION		FREE WATER EVAPORATION				EVAPOTRANSPIRATION	
JUNE	NET R.	TOTAL R.	STD. CLASS A		LAND TANKS		EVAPOTRANSPIROMETERS	
(MO.)	LANGLEY'S	GUNN-BELLANI UNITS	P2	P3	T7 (ALUM.)	T8 (BLACK)	T1	T2
1963 (YR.)			(IN.)	(IN.)	(IN.)	(IN.)	(IN.)	(IN.)
1			.24	.27	.23	.19		
2			.18	.20	.13	.13		
3			.21	.23	.20	.19		
4			.13	.13	.14	.13		
5			.26	.26	.20	.19		
6			.26	.26	.23	.24		
7			.15	.17	.14	.12		
8			.23	.21	.15	.15		
9			.17	.17	.18	.18		
10			.25	.23	.13	.19		
11			.24	.28	.29	.21		
12			.26	.26	.23	.22		
13			.31	.28	.26	.25		
14			.11	.11	.11	.11		
15			.26	.20	.24	.24		
16			.23	.21	.22	.21		
17			.15	.14	.14	.19		
18			.29	.30	.23	.18		
19			.32	.23	.20	.26		
20			.25	.28	.38	.18		
21			.33	.32	.25	.25		
22			.28	.24	.23	.22		
23			.23	.23	.19	.19		
24			.15	.15	.13	.13		
25			.25	.27	.21	.23		
26			.04	.04	.08	.06		
27			.22	.27	.20	.22		
28			.20	.23	.18	.20		
29			.21	.23	.20	.19		
30			.18	.31	.19	.17		
31								
TOT.			6.58	6.83	5.87	5.62		
MN.								

HYDROLOGIC DATA - EVERGLADES EXPERIMENT STATION
BELLE GLADE, FLORIDA

DATE	SOLAR RADIATION		FREE WATER EVAPORATION				EVAPOTRANSPIRATION	
SEPT	NET R.	TOTAL R.	STD. CLASS A		LAND TANKS		EVAPOTRANSPIROMETERS	
(MO.)	LANGLEY'S	GUNN-BELLANI UNITS	P2 (IN.)	P3 (IN.)	T7 (ALUM.) (IN.)	T8 (BLACK) (IN.)	T1 (IN.)	T2 (IN.)
1963 (YR.)								
1			.22		.20	.20		
2			.08		.10	.11		
3			.16		.14	14		
4			.21		.17	.16		
5			.18		.12	.15		
6			.24		.20	.17		
7			.18		.15	.16		
8			.19		.17	.18		
9			.21		.17	.19		
10			.23		.21	.20		
11			.27		.23	.22		
12			.22		21	.21		
13			.27		.20	.21		
14			.22		.17	.19		
15			.15		.16	.10		
16			.18		.19	.22		
17			.19		.15	.21		
18			.11		.12	.13		
19			.09		.10	.11		
20			.02		.09	.08		
21			.04		.07	.08		
22			.13		.09	.07		
23			.19		.16	.11		
24			.05		.09	.07		
25			.13		.16	.16		
26			.05		.39	.07		
27			.23		.14	.15		
28			.20		.13	.12		
29			.18		.15	.17		
30			.27		.27	.22		
31								
TOT.			5.09		4.90	4.60		
MN.								

DATE	SOLAR RADIATION		FREE WATER EVAPORATION				EVAPOTRANSPIRATION	
OCT	NET R.	TOTAL R.	STD. CLASS A		LAND TANKS		EVAPOTRANSPIROMETERS	
(MO.)	LANGLEY'S	GUNN-BELLANI UNITS	P2 (IN.)	P3 (IN.)	T7 (ALUM.) (IN.)	T8 (BLACK) (IN.)	T1 (IN.)	T2 (IN.)
1963 (YR.)								
1			.21		.20	.21		
2			.12		.16	.15		
3			.14		.14	.15		
4			.19		.26	.17		
5			.23		.16	.27		
6			.25		.25	.24		
7			.22		.22	.23		
8			.20		.18	.19		
9			.22		.22	.22		
10			.13		.12	.12		
11			.07		.10	.11		
12			.14		.13	.13		
13			.16		.17	.18		
14			.20		.18	.15		
15			.13		.16	.16		
16			.18		.16	.16		
17			.12		.11	.12		
18			.15		.15	.13		
19			.18		.17	.20		
20			.16		.15	.15		
21			.19		.18	.15		
22			.19		.18	.19		
23			.18		.17	.17		
24			.23		.16	.16		
25			.13		.12	.12		
26			.12		.09	.10		
27			.18		.11	.12		
28			.16		.15	.11		
29			.14		.13	.13		
30			.25		.28	.25		
31			.18		.20	.20		
TOT.			5.35		5.16	5.26		
MN.								

PART VI

Daily Mean Ground Water Stage

Upper Taylor Creek Watershed

(W-2), (W-3)

MEAN DAILY GROUND-WATER STAGE (WATERSHED AREAS)
(FEET BELOW GRD. SURF.)

DATE	UPPER TAYLOR CREEK							INDIAN RIVER FARMS					MONREVE RANCH				
OCT	1	2	3	4	5	6	7	1	2	3	4	5	1	2	3	4	5
(MO) 1962 (YR)									⑦ AVG W-2		② AVG W-3		Line A		Line B		
1	1.15	086	229	2.29	163	204	093		1.60		100		1.89		0.31		
2	0.76	0.96	1.06	224	0.02	200	101		1.15		0.86		1.96		0.25		
3	096	092	1.00	229	0.02	1.94	101		1.16		0.94		1.33		0.35		
4	084	043	074	218	0.01	1.43	086		093		064		0.19		0.45		
5	1.19	044	087	236	005	172	093		108		082		0.72		0.64		
6	1.49	049	1.18	249	0.32	204	103		1.29		099		1.29		0.82		
7	1.66	059	159	257	109	2.25	1.13		155		112		1.62		0.96		
8	1.70	074	1.93	263	1.72	235	122		176		122		1.79		1.05		
9	167	0.91	2.16	267	204	242	130		188		129		1.89		1.18		
10	172	1.08	234	2.73	225	246	136		199		140		1.99		1.42		
11	187	125	252	279	242	2.55	142		212		156		2.11		1.72		
12	190	1.40	264	284	2.51	2.61	149		220		1.65		2.19		1.94		
13	191	154	2.72	2.89	257	2.66	154		226		172		2.24		2.18		
14	196	165	279	2.93	2.63	271	158		232		180		2.29		2.42		
15	196	177	287	300	2.67	2.77	164		238		186		2.41		2.40		
16	202	187	2.94	305	2.73	2.84	169		245		195		2.41		2.51		
17	177	1.94	2.91	309	2.69	2.84	1.65		242		186		2.34		2.32		
18	162	199	275	314	2.63	2.74	1.49		2.34		180		2.37		2.17		
19	195	205	293	318	279	2.88	157		248		2.06		2.48		2.42		
20	209	212	307	322	287	297	168		2.57		2.10		2.55		2.62		
21	211	2.18	314	325	292	302	177		263		2.15		2.58		2.71		
22	201	2.24	318	326	293	305	1.83		264		2.12		2.60		2.58		
23	188	227	312	329	283	2.97	175		2.59		208		2.56		2.26		
24	215	233	321	3.34	297	305	1.86		270		224		2.64		2.48		
25	225	237	328	336	304	313	197		2.78		232		2.71		2.69		
26	229	246	334	342	311	319	204		283		238		2.73		2.81		
27	232	252	340	347	317	324	213		2.89		242		2.76		2.88		
28	233	257	345	351	322	328	220		294		245		2.81		2.92		
29	235	262	350	355	323	333	225		297		248		2.86		2.97		
30	233	266	352	357	327	336	228		3.00		250		2.87		2.99		
31	221	271	3.53	359	328	339	229		300		246		2.88		2.95		
MEAN	182	1.68	258	297	225	269	158		2.22		1.75						

DATE	UPPER TAYLOR CREEK							INDIAN RIVER FARMS					MONREVE RANCH				
NOV	1	2	3	4	5	6	7	1	2	3	4	5	1	2	3	4	5
(MO) 1962 (YR)									⑦ AVG W-2		② AVG W-3		Line A		Line B		
1	209	2.74	3.55	3.63	3.29	342	2.29		3.00		242		2.89		2.95		
2	230	2.78	359	366	339	345	2.31		3.06		2.54		2.91		2.96		
3	233	281	361	368	3.35	3.46	232		3.08		2.56		2.92		2.94		
4	226	2.84	365	371	339	349	235		3.10		255		2.95		3.01		
5	243	287	370	376	344	354	2.41		3.16		265		3.00		3.07		
6	250	289	3.73	3.80	348	358	2.44		326		270		3.02		3.12		
7	250	292	3.77	3.82	351	361	2.49		323		271		3.04		3.15		
8	212	292	375	383	350	361	2.40		316		252		2.90		2.92		
9	0.41	131	255	313	2.12	253	1.05		1.87		0.56		1.22		0.57		
10	0.57	078	218	287	195	2.15	0.94		163		0.38		1.10		0.51		
11	106	082	236	2.90	2.16	2.27	1.12		181		094		1.44		0.77		
12	131	0.89	247	2.92	226	238	1.20		192		110		1.68		0.78		
13	133	0.94	252	2.97	232	2.44	123		196		114		1.79		1.11		
14	154	103	266	304	242	2.53	129		207		128		1.91		1.40		
15	1.64	1.15	2.77	309	251	2.62	135		216		140		2.02		1.65		
16	166	127	284	315	259	2.70	134		223		1.46		2.08		1.80		
17	172	137	291	3.20	266	276	142		229		154		2.15		1.94		
18	176	146	298	325	274	284	1.45		2.35		1.61		2.21		2.04		
19	177	1.58	305	330	282	2.90	1.50		2.42		168		2.25		2.10		
20	176	1.65	3.08	333	2.90	2.94	1.52		245		1.70		2.27		2.17		
21	177	172	311	337	295	2.97	153		2.49		1.77		2.29		2.14		
22	111	158	314	341	301	2.90	153		239		1.34		1.65		2.09		
23	150	159	323	347	3.09	305	1.65		251		1.54		1.31		2.35		
24	169	168	328	351	315	311	167		257		168		2.09		2.40		
25	170	176	330	354	319	314	171		262		173		2.20		2.42		
26	177	184	333	358	318	317	1.73		266		1.80		2.28		2.49		
27	195	1.91	3.53	360	321	3.22	1.80		274		1.93		2.37		2.53		
28	191	198	358	363	324	325	183		277		194		2.41		2.59		
29	186	204	359	365	327	327	183		279		195		2.42		2.57		
30	182	2.10	3.61	368	327	327	184		280		1.96		2.42		2.54		
31																	
MEAN	174	184	318	342	274	302	172		2.55		1.79						

MEAN DAILY GROUND-WATER STAGE (WATERSHED AREAS)
(FEET BELOW GRD. SURF.)

DATE	UPPER TAYLOR CREEK							~~INDIAN RIVER FARMS~~					~~MONREVE RANCH~~				
Feb	1	2	3	4	5	6	7	1	2	3	4	5	1	2	3	4	5
(MO) 1963 (YR)									⑦ Avg. W-2		② Avg. W-3		Line A		Line B		
1	2.65	3.01	4.27	4.28	4.02	3.85	3.00		3.58		2.83		2.92		2.22		
2	2.68	3.02	4.29	4.30	4.04	3.90	3.03		3.61		2.85		2.93		2.33		
3	2.72	3.03	4.29	4.31	4.07	3.94	2.77		3.62		2.87		2.95		2.39		
4	2.50	3.06	4.24	4.32	4.04	3.94	2.46		3.51		2.78		2.85		1.61		
5	2.32	3.06	4.19	4.32	3.88	3.85	2.18		3.40		2.67		2.78		1.46		
6	2.40	3.07	4.19	4.33	3.84	3.78	2.23		3.41		2.73		2.82		1.60		
7	2.55	3.07	4.20	4.34	3.84	3.77	2.30		3.44		2.81		2.86		1.83		
8	2.72	3.08	4.26	4.34	3.89	3.78	2.41		3.50		2.90		2.93		2.11		
9	2.79	3.09	4.36	4.35	3.97	3.84	2.53		3.56		2.94		2.98		2.29		
10	2.81	3.10	4.37	4.36	4.03	3.87	2.63		3.60		2.95		3.03		2.34		
11	2.82	3.12	4.37	4.36	4.07	3.91	2.70		3.62		2.97		3.04		2.39		
12	1.87	2.96	4.23	4.36	3.99	3.88	2.42		3.37		2.41		2.60		1.28		
13	1.52	2.76	3.99	4.35	3.72	3.69	2.16		3.17		2.14		2.36		1.10		
14	2.06	2.75	3.99	4.34	3.71	3.64	2.29		3.25		2.40		2.50		1.41		
15	2.22	2.75	4.04	4.33	3.73	3.63	2.39		3.30		2.48		2.60		1.67		
16	1.82	2.75	4.05	4.32	3.78	3.65	2.37		3.25		2.28		2.51		1.20		
17	.17	2.54	3.83	4.31	3.55	3.49	1.87		2.94		1.75		2.01		0.45		
18	1.60	2.50	3.76	4.22	3.45	3.35	1.96		2.98		2.05		2.16		0.80		
19	1.07	2.27	3.47	4.06	3.35	3.25	1.82		2.75		1.67		1.84		0.46		
20	.94	1.95	3.02	3.59	3.02	2.88	1.52		2.42		1.44		1.65		0.29		
21	1.50	1.96	3.03	3.41	3.04	2.86	1.64		2.49		1.73		1.93		0.52		
22	1.76	1.78	3.10	3.39	3.11	2.92	1.74		2.57		1.87		2.12		0.80		
23	1.77	2.01	3.17	3.38	3.18	2.99	1.84		2.65		1.99		2.29		1.04		
24	1.88	2.05	3.17	3.38	3.24	3.04	1.87		2.66		1.96		2.37		1.15		
25	1.83	2.08	3.15	3.34	3.26	3.09	1.94		2.67		1.95		2.40		1.40		
26	1.33	1.67	—	3.17	2.86	2.80	1.59		*2.24		1.50		1.78		0.85		
27	.48	.85	—	2.66	2.00	1.85	.90		*1.46		0.66		0.96		0.21		
28	.88	.86	—	2.63	2.12	1.98	1.05		*1.59		0.87		1.29		0.39		
29																	
30																	
31																	
MEAN	1.95	2.51	*3.88	3.96	3.53	3.41	2.14		*3.02		2.23		2.41		1.34		

DATE	UPPER TAYLOR CREEK							INDIAN RIVER FARMS					MONREVE RANCH				
Mar.	1	2	3	4	5	6	7	1	2	3	4	5	1	2	3	4	5
(MO) 1963 (YR)									⑦ Avg. W-2		② Avg. W-3		Line A		Line B		
1	1.16	.90	—	2.66	2.20	2.09	1.16		*1.67		1.03		1.47		0.56		
2	.83	.91	—	2.60	2.10	1.99	.97		*1.57		0.87		1.24		0.39		
3	1.25	.91	—	2.61	2.19	2.06	1.07		*1.68		1.08		1.53		0.61		
4	1.39	.96	—	2.67	2.30	2.17	1.19		*1.75		1.17		1.69		0.75		
5	1.46	.99	2.27	2.71	2.38	2.25	1.24		1.96		1.22		1.78		0.87		
6	1.64	1.06	2.39	2.77	2.48	2.34	1.32		2.00		1.35		1.95		1.02		
7	1.60	1.16	2.36	2.81	2.43	2.29	1.18		1.97		1.38		2.05		1.12		
8	1.93	1.27	2.52	2.85	2.52	2.37	1.27		2.10		1.60		2.18		1.21		
9	1.75	1.42	2.58	2.90	2.63	2.48	1.35		2.16		1.58		2.15		1.31		
10	0.99	1.46	2.38	2.90	2.67	2.37	1.12		1.98		1.22		1.92		1.44		
11	1.53	1.51	2.55	2.87	2.76	2.96	1.27		2.13		1.52		2.08		1.50		
12	1.82	1.59	2.75	2.94	2.87	2.57	1.40		2.28		1.70		2.23		1.66		
13	1.73	1.64	2.80	2.99	2.96	2.68	1.49		2.33		1.68		2.31		1.90		
14	2.06	1.69	2.90	3.04	3.06	2.76	1.57		2.44		1.88		2.40		2.07		
15	2.17	1.74	2.99	3.10	3.11	2.85	1.65		2.51		1.96		2.97		2.16		
16	2.15	1.80	3.07	3.16	3.16	2.93	1.73		2.57		1.99		2.52		2.25		
17	2.04	1.85	3.11	3.20	3.22	2.99	1.81		2.60		1.94		2.47		2.33		
18	2.32	1.90	3.17	3.28	3.28	3.05	1.88		2.70		2.11		2.57		2.42		
19	2.44	1.95	3.25	3.33	3.35	3.13	1.96		2.77		2.20		2.66		2.51		
20	2.50	2.02	3.32	3.37	3.40	3.17	2.04		2.83		2.26		2.74		2.65		
21	2.61	2.09	3.43	3.93	3.47	3.27	2.16		2.92		2.35		2.83		2.80		
22	2.67	2.19	3.55	3.48	3.53	3.34	2.29		3.01		2.44		2.70		2.91		
23	2.75	2.25	3.60	3.53	3.58	3.41	2.37		3.07		2.50		2.76		2.78		
24	2.80	2.32	3.65	3.58	3.62	3.46	2.44		3.12		2.56		3.01		3.04		
25	2.80	2.40	3.70	3.63	3.67	3.50	2.35		3.15		2.60		3.04		3.10		
26	2.83	2.46	3.76	3.65	3.73	3.55	2.14		3.16		2.64		3.06		3.14		
27	2.85	[illegible]	3.86	3.66	3.76	3.60	2.31		3.22		2.68		3.07		3.20		
28	2.76	2.57	3.97	3.72	3.81	3.65	2.30		3.26		2.68		3.11		3.23		
29	2.88	2.63	4.04	3.75	3.86	3.69	2.26		3.30		2.76		3.15		3.21		
30	2.76	2.67	4.09	3.78	3.90	3.72	2.37		3.33		2.75		3.13		3.27		
31	2.28	2.72	4.10	3.80	3.93	3.74	2.20		3.25		2.50		2.95		3.22		
MEAN	1.99	1.79	3.19	3.19	3.10	2.90	1.74		2.54		1.99		2.44		2.09		

MEAN DAILY GROUND-WATER STAGE (WATERSHED AREAS)
(FEET BELOW GRD. SURF.)

DATE	UPPER TAYLOR CREEK							INDIAN RIVER FARMS					MONREVE RANCH				
JUNE	1	2	3	4	5	6	7	1	2	3	4	5	1	2	3	4	5
(MO) 1963 (YR)									AVG ⑦ W-2		AVG ② W-3		LINE "A"		LINE "B"		
1	250	291	5.16	326	3.81	5.19	350		3.76		270		272		319		
2	262	2.92	5.08	328	3.84	5.21	359		3.79		2.77		2.84		3.23		
3	272	295	5.04	334	392	5.21	369		384		2.84		2.80		323		
4	257	265	495	313	3.81	5.18	374		3.72		2.61		1.93		322		
5	212	200	435	254	297	485	3.77		323		206		0.97		312		
6	201	1.54	3.82	2.12	2.56	453	383		2.91		1.78		1.08		312		
7	231	157	3.75	225	269	493	3.90		2.98		1.94		1.53		3.17		
8	2.98	163	3.77	219	286	490	393		3.04		206		1.84		327		
9	251	1.72	3.78	202	290	438	3.88		3.02		2.12		1.64		3.33		
10	265	1.80	3.68	213	271	438	395		304		222		1.68		337		
11	278	1.92	376	229	295	439	396		315		235		1.96		345		
12	260	198	389	2.94	311	435	399		319		229		1.79		325		
13	280	2.03	397	251	324	426	400		326		2.42		2.09		324		
14	290	211	408	253	333	421	4.03		3.31		250		2.32		3.32		
15	286	219	419	265	392	421	407		337		2.52		2.12		3.32		
16	225	2.22	421	274	395	416	400		329		2.23		1.30		2.96		
17	133	208	376	258	344	407	402		304		170		1.30		295		
18	172	193	334	256	335	402	408		300		1.82		1.74		307		
19	204	196	3.39	271	346	402	414		310		200		203		323		
20	237	203	352	285	357	407	420		323		220		2.27		338		
21	253	210	3.65	296	367	404	425		331		232		2.46		353		
22	265	220	377	306	376	423	424		341		2.42		260		363		
23	2.74	228	387	312	383	431	433		350		251		2.71		370		
24	283	2.37	388	317	390	490	435		356		2.60		2.77		3.77		
25	288	296	398	319	388	455	437		3.62		2.67		278		365		
26	285	2.51	404	317	357	459	433		358		268		2.69		328		
27	296	2.93	376	294	2.93	461	434		335		2.45		2.20		291		
28	1.59	190	321	234	218	4.64	434		2.88		1.75		1.55		241		
29	1.10	152	272	197	207	466	434		262		131		1.53		247		
30	1.56	1.55	281	214	216	468	433		2.75		1.56		191		231		
31																	
MEAN	238	212	391	2.67	334	447	405		326		225		2.04		320		

DATE	UPPER TAYLOR CREEK							INDIAN RIVER FARMS					MONREVE RANCH				
JULY	1	2	3	4	5	6	7	1	2	3	4	5	1	2	3	4	5
(MO) 1963 (YR)									AVG ⑦ W-2		AVG ② W-3		LINE "A"		LINE "B"		
1	200	160	295	233	196	4.70	434		284		180		2.21		199		
2	227	167	311	241	229	472	443		298		197		2.33		235		
3	251	176	324	260	296	473	447		311		214		2.48		242		
4	253	187	346	273	260	476	445		320		2.20		2.62		261		
5	214	197	3.42	256	277	479	452		3.21		2.06		2.75		267		
6	245	208	3.54	296	296	484	455		334		226		2.90		277		
7	265	218	369	304	317	488	458		345		241		298		297		
8	272	227	375	303	323	492	461		350		250		303		312		
9	276	2.37	385	315	333	496	464		355		256		3.07		307		
10	284	252	3.93	321	391	5.00	466		365		268		312		331		
11	225	260	402	310	393	503	469		359		242		298		325		
12	110	262	403	268	395	506	4.70		338		186		267		324		
13	144	263	407	276	348	508	464		344		204		276		322		
14	1.85	264	410	291	353	511	465		354		225		287		295		
15	218	267	415	305	357	514	468		363		2.42		300		317		
16	150	270	427	306	3.91	5.16	463		353		2.10		300		315		
17	100	226	430	278	325	5.12	435		327		1.63		234		275		
18	080	190	423	253	2.68	495	402		294		110		160		227		
19	158	131	428	269	230	488	400		300		145		1.79		224		
20	200	133	435	285	251	483	402		312		1.66		2.07		256		
21	221	139	441	301	272	483	408		323		180		2.22		275		
22	2.23	148	444	312	292	487	416		332		186		2.36		295		
23	218	157	450	316	310	492	423		338		1.88		2.37		300		
24	235	164	455	323	319	495	430		346		2.00		248		323		
25	233	1.66	462	332	317	5.05	439		350		200		2.59		321		
26	120	175	468	336	330	515	446		341		1.48		270		330		
27	191	185	474	341	339	5.19	455		358		186		280		343		
28	159	195	478	345	397	522	462		3.57		1.75		288		345		
29	075	205	467	345	353	524	4.67		348		1.90		293		350		
30	154	215	465	352	360	526	472		353		1.84		298		354		
31	202	225	476	356	366	527	476		375		2.14		306		351		
MEAN	1,96	201	4.11	301	309	479	446		337		1.98		264		294		

PART I

Monthly Hydrologic Data

Indian River Farms Drainage District (W-1)

10/1/62 - 9/30/63

U.S.D.A - AGRICULTURAL RESEARCH SERVICE - FORT LAUDERDALE, FLORIDA

COOPERATING WITH

CENTRAL AND SOUTHERN FLORIDA FLOOD CONTROL DISTRICT &
UNIVERSITY OF FLORIDA, AGRICULTURAL EXPERIMENT STATION

U.S.D.A., A.R.S., APRIL 1961
REVISED JAN. 1956

MONTHLY HYDROLOGIC DATA INDIAN RIVER FARMS DRAINAGE DISTRICT
FLORIDA WATERSHED W— I

*NOTE: Runoff data provisional only.

DATE	RAINFALL											STAGE			DISCHARGE					
DEC MONTH 1962 YEAR	MEASURED RAINFALL GAGE 1 P (INCHES)	2 A	3 C	4 O	5 R	WEIGHTED RAINFALL GAGE 1 14% (INCHES)	2 16%	3 26%	4 19%	5 25%	TOTAL WEIGHTED RAINFALL (INCHES)	MAIN CANAL (FT. M. S. L.)	NORTH RELIEF CANAL	SOUTH RELIEF CANAL	MAIN CANAL (SEC. FT.)	NORTH RELIEF CANAL	SOUTH RELIEF CANAL	TOTAL DISCHARGE (SEC. FT.)	TOTAL DISCHARGE (Q x .00047) (IN. OVER DISTRICT)	PAN EVAP. (INCHES)
1		.02					.00				0.00	8.93	2.66	2.82	68	8.9	8.0	89.9	.096	.08
2		T										8.94	2.65	2.82	69	8.4	8.0	85.4	.040	.08
3												8.94	2.65	2.82	69	8.0	7.5	84.5	.040	.15
4												8.98	2.65	3.83	74	8.0	8.0	90.0	.042	.12
5		.04			.10		.01			.02	0.03	9.03	2.65	2.83	81	9.0	7.5	96.5	.045	.13
6												8.98	2.64	2.83	74	7.4	7.5	88.9	.042	.10
7												8.74	2.66	2.82	48	8.0	6.4	62.4	.029	.22
8												8.90	2.67	2.83	14	8.0	6.9	28.9	.014	.03
9	.12	.08	.05	.05		.02	.01	.01	.01		0.05	8.47	2.67	2.81	20	8.0	5.8	33.8	.016	.08
10												8.69	2.68	2.80	40	8.4	4.8	53.2	.025	.25
11												9.05	2.69	2.80	84	8.4	4.8	97.2	.046	.16
12												8.97	2.68	2.81	84	8.0	4.8	96.8	.045	[illegible]
13												8.28	2.68	2.81	6.1	8.0	4.8	18.9	.009	.13
14												8.30	2.70	2.81	7.7	8.4	4.8	20.9	.010	.10
15												9.47	2.91	2.90	176	20	9.1	205.1	.096	.09
16												9.25	2.72	2.80	134	9.4	3.9	147.3	.069	.07
17												9.27	2.71	2.80	130	8.4	3.5	141.9	.067	.07
18												9.32	2.72	2.80	125	8.9	3.5	137.4	.065	.10
19												9.30	2.73	2.82	122	8.9	4.3	135.2	.064	.11
20												8.78	2.74	2.81	55	9.4	3.5	67.9	.032	.11
21												8.48	2.77	2.81	22	11	3.5	36.5	.017	.07
22												9.22	2.78	2.83	114	11	3.9	128.9	.061	.10
23												8.71	2.73	2.83	52	8.8	3.5	64.3	.030	.14
24	.10	.10	.05	.40	.30	.01	.02	.01	.08	.08	0.26	9.03	2.73	2.83	[illegible]	6.4	3.9	100.3	.047	.12
25	.55	.44	.20			.08	.07	.05			0.20	9.04	2.73	2.85	83	8.0	4.3	95.3	.045	.13
26												8.73	2.73	2.85	56	8.0	4.3	68.3	.032	.09
27												8.70	2.72	2.88	41	7.4	5.3	53.7	.025	.11
28												8.76	2.70	2.89	48	6.7	5.8	60.5	.028	.11
29												9.65	2.69	2.88	84	6.4	4.8	95.2	.045	.14
30												9.17	2.68	2.89	102	5.8	5.3	113.1	.053	.13
31												9.01	2.67	2.90	73	6.1	5.3	84.9	.042	.15
TOTAL	.77	.68	.30	.45	.40	.11	.11	.07	.09	.10	0.48	—	—	—	2,248.8	266.1	168.2	2,683.1	[illegible]	3.58

(.52)

DATE	RAINFALL											STAGE			DISCHARGE					
JAN MONTH 1963 YEAR	MEASURED RAINFALL GAGE 1 P (INCHES)	2 A	3 C	4 O	5 R	WEIGHTED RAINFALL GAGE 1 14% (INCHES)	2 16%	3 26%	4 19%	5 25%	TOTAL WEIGHTED RAINFALL (INCHES)	MAIN CANAL (FT. M. S. L.)	NORTH RELIEF CANAL	SOUTH RELIEF CANAL	MAIN CANAL (SEC. FT.)	NORTH RELIEF CANAL	SOUTH RELIEF CANAL	TOTAL DISCHARGE (SEC. FT.)	TOTAL DISCHARGE (Q x .00047) (IN. OVER DISTRICT)	PAN EVAP. (INCHES)
1	—	—	—	—							—	2.89	2.70	8.78	43	64	50	61.2	.029	.23
2												2.90	2.71	8.70	53	64	41	52.7	.025	.11
3												2.89	2.73	8.70	93	70	41	52.3	.024	.15
4												2.90	2.74	8.75	93	74	46	55.2	.027	.17
5												2.91	2.73	8.76	53	67	45	60.0	.028	.15
6												2.93	2.74	8.71	58	76	52	63.8	.031	.10
7	.10	.16	.15	.05	.10	.01	.03	.04	.01	.02	0.11	2.94	2.76	9.11	64	74	92	105.9	.050	.23
8	.15			.10		.02			.02		0.04	2.94	2.76	8.95	58	74	55	71.2	.033	.06
9												2.94	2.76	8.79	53	74	51	64.2	.030	.18
10												2.92	2.75	[illegible]	43	67	70	81.0	.039	.07
11												2.93	2.72	8.93	43	58	51	69.6	.033	.10
12												2.94	2.69	8.29	43	43	66	16.2	.008	.06
13												2.94	2.70	8.75	43	51	57	66.9	.031	.08
14	.12	.09	.16	.20	.20	.02	.01	.04	.04	.05	0.16	2.96	2.70	9.24	55	51	112	122.9	.058	.12
15												2.97	2.71	8.87	52	54	60	71.2	.033	.12
16												2.97	2.73	8.83	[illegible]	61	56	67.9	.032	.03
17		.22	.10	.20	.35		.04	.03	.04	.09	0.20	2.97	2.74	8.84	64	64	57	67.8	.033	.10
18		.03					.00				0.00	2.97	2.73	8.90	6–	61	64	76.5	.036	.13
19												2.99	2.72	8.87	58	50	63	79.6	.035	.15
20												2.98	2.74	8.81	53	64	59	67.7	.030	.12
21		.24					.04				0.04	3.00	2.75	9.05	6–	67	70	103.1	.048	.25
22												3.01	2.74	8.87	[illegible]	64	61	81.6	.038	.30
23												3.00	2.74	8.47	53	64	22	34.2	.016	.16
24												3.01	2.75	8.52	[illegible]	67	24	36.5	.017	.13
25												3.02	2.74	8.30	64	64	7.1	19.9	.009	.11
26	.38	.30	.20	.28	.20	.05	.05	.05	.05	.05	0.25	3.04	2.87	9.09	67	12	114	132.9	.062	.02
27		.02	.06				.00	.02			0.02	3.04	2.78	9.50	61	77	157	170.6	.080	.13
28												3.03	2.74	9.31	63	64	62	79.2	[illegible]	[illegible]
29												3.07	2.74	8.60	[illegible]	64	34	49.2	.023	.17
30												2.97	2.72	8.87	64	58	60	72.2	.034	.17
31												2.99	2.72	8.73	56	55	50	61.6	.029	[illegible]
TOTAL	.75	1.06	.67	.83	.85	.10	.17	.18	.16	.21	0.82	—	—	—	179.7	2[illegible]3.5	1,826.7	2,209.9	1.035	4.10

(0.83)

U.S.D.A - AGRICULTURAL RESEARCH SERVICE - FORT LAUDERDALE, FLORIDA

COOPERATING WITH

CENTRAL AND SOUTHERN FLORIDA FLOOD CONTROL DISTRICT &
UNIVERSITY OF FLORIDA, AGRICULTURAL EXPERIMENT STATION

U.S.D.A., A.R.S., APRIL 1961
REVISED JAN. 1956

MONTHLY HYDROLOGIC DATA INDIAN RIVER FARMS DRAINAGE DISTRICT
FLORIDA WATERSHED W—1

*NOTE: Runoff data provisional only.

DATE APRIL MONTH 1963 YEAR	MEASURED RAINFALL GAGE 1 P (INCHES)	2 A	3 C	4 O	5 R	WEIGHTED RAINFALL GAGE 1 14% (INCHES)	2 16%	3 26%	4 19%	5 25%	TOTAL WEIGHTED RAINFALL (INCHES)	STAGE MAIN CANAL (FT. M.S.L.)	NORTH RELIEF CANAL	SOUTH RELIEF CANAL	DISCHARGE MAIN CANAL (SEC. FT.)	NORTH RELIEF CANAL	SOUTH RELIEF CANAL	TOTAL DISCHARGE (SEC. FT.)	TOTAL DISCHARGE (Q x .00047) (IN. OVER DISTRICT)	PAN EVAP. (INCHES)
1												9.11	2.58	3.13	90	6.1	5.8	101.9	.049	.33
2												9.12	2.57	3.14	93	5.8	6.4	105.2	.049	.29
3												8.80	2.54	3.14	52	4.8	5.8	62.6	.029	37
4												8.57	2.55	3.14	30	5.1	5.8	40.9	.019	.27
5												8.64	2.55	3.15	35	5.1	6.4	46.5	.022	.19
6												8.66	2.54	3.15	37	4.8	5.9	47.6	.022	.21
7		.14	.10	.05	.10		02	.03	.01	.02	0.08	8.71	2.54	3.18	42	4.8	7.5	59.3	.026	.22
8												8.72	2.53	3.18	43	4.5	7.5	55.0	.026	.33
9												8.75	2.54	3.19	46	4.8	7.5	58.3	.027	.18
10												8.81	2.55	3.18	53	6.1	6.7	65.8	.031	.19
11												8.75	2.56	3.19	46	5.4	7.5	58.9	.028	.37
12												8.61	2.57	3.19	32	5.8	7.5	45.3	.021	.27
13	.10					.01					0.01	8.59	2.59	3.19	30	6.4	6.7	43.3	.020	.32
14												8.84	2.59	3.19	57	6.4	6.7	70.3	.033	.26
15												8.60	2.57	3.19	35	5.8	6.9	47.7	.022	27
16												8.29	2.52	3.18	6.6	4.3	5.8	16.7	.008	.29
17												8.49	2.51	3.19	23	4.0	6.4	33.4	.016	.27
18												8.90	2.56	3.19	64	5.1	6.4	75.5	.035	.22
19												8.82	2.53	3.19	54	4.3	5.8	64.1	.030	21
20												8.70	2.53	3.17	40	4.0	5.8	49.8	.023	.21
21												8.65	2.55	3.19	37	4.3	5.8	47.1	.022	.20
22												9.01	2.56	3.19	77	4.5	5.3	86.8	.041	.24
23												8.80	2.56	3.17	51	4.3	5.3	60.6	.028	27
24												8.65	2.55	3.19	35	3.7	5.3	44.0	.021	.15
25												8.82	2.57	3.19	53	4.3	4.8	62.1	.029	.35
26		.10		.13	.20		.02		.02	.05	0.09	8.86	2.59	3.21	58	4.5	5.8	68.3	.032	.22
27												8.88	2.59	3.23	60	4.3	6.9	71.2	.033	[illegible]
28												8.85	2.57	3.20	62	3.7	5.3	71.0	.033	[illegible]
29												9.26	2.58	3.19	84	3.7	4.3	92.0	.043	.36
30	.55	.48	.60	.55	.10	.05	.08	.16	.10	.02	0.44	8.60	2.55	3.20	35	3.7	4.8	43.5	.020	[illegible]
31																				
TOTAL	.65	.72	.70	.73	.40	.09	.12	.19	.13	.09	0.62	—	—	—	1,460.6	143.4	184.9	1,788.9	[illegible]	7.73

(0.64)

DATE MAY MONTH 1963 YEAR	MEASURED RAINFALL GAGE 1 P (INCHES)	2 A	3 C	4 O	5 R	WEIGHTED RAINFALL GAGE 1 14% (INCHES)	2 16%	3 26%	4 19%	5 25%	TOTAL WEIGHTED RAINFALL (INCHES)	STAGE MAIN CANAL (FT. M.S.L.)	NORTH RELIEF CANAL	SOUTH RELIEF CANAL	DISCHARGE MAIN CANAL (SEC. FT.)	NORTH RELIEF CANAL	SOUTH RELIEF CANAL	TOTAL DISCHARGE (SEC. FT.)	TOTAL DISCHARGE (Q x .00047) (IN. OVER DISTRICT)	PAN EVAP. (INCHES)
1	.25	.35	.25	.25	.10	.04	.06	.06	.05	.02	0.23	9.87	2.62	3.24	73	4.3	6.9	84.2	.040	.25
2												9.35	2.63	3.26	129	4.5	7.5	141.0	.066	.32
3	.30	.45	.50	.50	.70	.04	.07	.13	.10	.18	0.52	9.38	2.62	3.30	134	4.0	9.6	147.6	.069	.31
4		.02			.25		.00			.06	0.06	9.31	2.60	3.29	122	3.2	9.1	134.3	.063	.07
5		.02					.00					9.15	2.60	3.32	97	3.2	16	116.2	.055	.35
6												8.82	2.63	3.22	56	3.7	4.3	64.0	.030	.27
7												8.56	2.65	3.20	26	4.0	3.7	33.7	.016	.28
8												8.54	2.64	3.21	25	3.7	3.9	32.6	.015	.28
9												8.52	2.66	3.22	24	4.0	4.3	32.3	.015	.26
10												8.51	2.68	3.22	25	4.5	4.2	33.7	.016	.24
11												8.52	2.67	3.22	26	4.3	4.2	34.5	.016	.29
12												8.66	2.67	3.23	39	4.3	4.3	47.6	.022	.31
13		.01					00					8.64	2.66	3.23	37	3.7	4.3	45.0	.021	.22
14												8.54	2.67	3.23	27	4.0	4.3	35.3	.017	.35
15												8.34	2.67	3.23	12	4.0	4.3	20.3	.010	.27
16												8.24	2.67	3.23	4.6	4.0	4.3	12.9	.006	.20
17												8.24	2.67	3.22	4.6	4.0	4.2	12.8	.006	.31
18												8.36	2.66	3.18	13	3.7	3.8	20.5	.010	.28
19												8.64	2.67	3.18	41	3.7	3.8	48.5	.023	.25
20												8.70	2.70	3.18	42	4.5	3.8	50.3	.024	.21
21		.10	.30				.02	.08			0.10	8.74	2.71	3.18	46	4.8	3.8	54.6	.026	.21
22												8.45	2.73	3.19	21	5.4	3.7	30.1	.014	.17
23	.25	.24	.50	.45	.40	.04	.04	.13	.09	.10	0.40	8.29	2.73	3.21	7.1	5.4	4.1	16.6	.008	.22
24	.15			.10	.10	.02			.02	.02	0.06	9.28	2.94	3.42	139	14	25	178.0	.084	.27
25	.05	.20	.10			.01	.03	.03			0.07	9.07	2.78	3.64	[illegible]	6.7	22	122.7	.058	.20
26	.10	.06		.05		.01	.01		.01		0.03	9.01	2.72	2.77	80	4.8	4.1	88.9	.042	.20
27		.12					.02				0.02	8.70	2.79	2.86	47	5.4	5.1	57.5	.027	[illegible]
28	1.02	.77	.10		.30	.14	.12	.03		.08	0.37	8.90	2.73	3.27	65	5.1	12	82.1	.039	.22
29	.50	.61	.15	.60	.50	.07	.10	.04	.11	.12	0.44	9.56	3.13	2.94	95	36	6.1	137.1	.064	.25
30	.30	1.56	.75	1.90	.35	.04	.25	.20	.36	.09	0.94	9.14	2.80	3.23	97	7.0	11	115.0	.054	.16
31		.28		.20	.10		.04		.04	.02	0.10	9.48	3.03	3.72	153	26	18	197.0	.093	.24
TOTAL	2.92	4.79	2.65	4.05	2.80	.41	.76	.70	.78	.69	3.34	—	—	—	1,801.3	199.9	226.6	2,227.8	1.047	7.58

(3.44)

U.S.D.A - AGRICULTURAL RESEARCH SERVICE - FORT LAUDERDALE, FLORIDA

COOPERATING WITH

CENTRAL AND SOUTHERN FLORIDA FLOOD CONTROL DISTRICT &
UNIVERSITY OF FLORIDA, AGRICULTURAL EXPERIMENT STATION

U.S.D.A., A.R.S., APRIL 1961
REVISED JAN. 1966

MONTHLY HYDROLOGIC DATA INDIAN RIVER FARMS DRAINAGE DISTRICT

FLORIDA WATERSHED W—I

*NOTE: Runoff data provisional only.

DATE	RAINFALL											STAGE			DISCHARGE					
AUG MONTH 1963 YEAR	MEASURED RAINFALL					WEIGHTED RAINFALL					TOTAL WEIGHTED RAINFALL	MAIN CANAL	NORTH RELIEF CANAL	SOUTH RELIEF CANAL	MAIN CANAL	NORTH RELIEF CANAL	SOUTH RELIEF CANAL	TOTAL DISCHARGE	TOTAL DISCHARGE (Q x.00047)	PAN EVAP.
	GAGE 1 P	2 A	3 C	4 O	5 R	GAGE 1 14%	2 16%	3 26%	4 19%	5 25%										
	(INCHES)					(INCHES)					(INCHES)	(FT. M. S. L.)			(SEC. FT.)			(SEC. FT.)	(IN. OVER DISTRICT)	(INCHES)
1												9.00	2.70	3.93	74	11	27	112.0	.053	.24
2		.02	.30				.00	.08			0.08	8.73	2.68	2.96	41	10	9.1	60.1	.028	.28
3												8.89	2.68	2.96	63	10	9.1	82.1	.039	.27
4		.05	.35	.10	.75		.01	.09	.02	.19	0.31	9.01	2.67	3.04	74	5.4	9.9	93.3	.044	.28
5												9.08	2.66	3.13	84	8.9	11	103.7	.049	.29
6												8.98	2.65	3.98	70	8.0	18	96.0	.045	.37
7												8.54	2.61	4.05	29	6.7	31	66.7	.031	.38
8												8.23	2.54	3.06	3.5	4.5	10	18.0	.008	.36
9	.80	1.20	.70	.25	.80	.11	.19	.18	.05	.20	0.73	8.34	2.52	3.08	12	4.0	10	26.0	.012	.25
10		.04	.10	.05	.80		.01	.03	.01	.20	0.25	8.91	2.66	3.15	71	8.4	11	90.4	.042	.41
11	.60	.33	.05	.15	.40	.08	.05	.01	.03	.10	0.27	8.99	2.50	3.41	76	3.4	15	94.4	.044	.30
12												9.08	2.61	4.29	88	6.7	57	151.7	.071	.19
13	.60	.04				.08	.01				0.09	8.64	2.51	3.25	39	3.7	13	55.7	.026	.27
14	.25				.50	.04				.12	0.16	8.81	2.52	4.06	57	4.0	29	90.0	.042	.33
15		.02	.10				.00	.03			0.03	8.84	2.50	4.11	57	3.4	31	91.4	.043	.30
16												8.75	2.50	4.14	46	3.4	32	81.4	.038	.23
17	.20					.03					0.03	8.70	2.47	3.74	41	2.6	23	66.6	.031	.26
18	.80	1.02	.75	2.25		.11	.16	.20	.43		0.90	9.67	2.50	3.14	96	3.4	11	110.4	.052	.28
19	.55	.48	.10	.35	.22	.08	.08	.03	.07	.06	0.32	8.81	2.50	3.14	53	3.4	11	67.4	.032	.14
20		.11	.45	.25	.12		.02	.12	.05	.03	0.22	9.04	2.52	3.63	83	4.0	21	108.0	.051	.30
21	.10	.15	1.35	.10	.18	.01	.02	.35	.02	.04	0.44	9.43	2.86	4.16	144	21	33	198.0	.093	.12
22	.35	.83	1.10	.65	.35	.05	.13	.29	.12	.09	0.68	9.75	3.61	4.49	213	75	58	346.0	.163	.17
23												10.03	3.49	5.25	271	65	115	451.0	.212	.24
24												9.50	2.60	3.25	157	6.4	13	176.4	.083	.17
25												9.07	2.55	3.16	87	4.8	11	102.8	.048	.30
26		.30					.05				0.05	8.42	2.56	3.16	67	5.1	11	83.1	.039	.29
27												8.99	2.56	3.16	76	5.1	11	92.1	.043	.25
28												8.74	2.57	3.16	69	5.4	10	84.4	.040	.29
29												8.77	2.57	3.18	51	5.4	10	66.4	.031	.32
30												8.43	2.61	3.19	16	6.7	10	32.7	.015	.36
31												8.84	2.65	3.22	61	8.0	11	80.0	.038	.33
TOTAL	4.25	4.59 (4.49)	5.35	4.15	4.12	.59	.73	1.41	.80	1.03	4.56	—	—	—	2,364.5	326.8	682.1	3,378.4	1.586	8.58

DATE	RAINFALL											STAGE			DISCHARGE					
SEPT MONTH 1963 YEAR	MEASURED RAINFALL					WEIGHTED RAINFALL					TOTAL WEIGHTED RAINFALL	MAIN CANAL	NORTH RELIEF CANAL	SOUTH RELIEF CANAL	MAIN CANAL	NORTH RELIEF CANAL	SOUTH RELIEF CANAL	TOTAL DISCHARGE	TOTAL DISCHARGE (Q x.00047)	PAN EVAP.
	GAGE 1 P	2 A	3 C	4 O	5 R	GAGE 1 14%	2 16%	3 26%	4 19%	5 25%										
	(INCHES)					(INCHES)					(INCHES)	(FT. M. S. L.)			(SEC. FT.)			(SEC. FT.)	(IN. OVER DISTRICT)	(INCHES)
1												8.59	2.57	3.23	30	5.4	11	46.4	.022	.36
2												8.70	2.57	3.24	45	5.4	10	60.4	.028	.28
3			.33					.09			0.09	8.94	2.57	3.25	69	5.4	10	84.4	.040	.21
4												8.83	2.56	3.27	56	5.1	10	71.1	.033	.24
5		.60	.22	.55	.15		.10	.06	.10	.04	0.36	8.81	2.55	3.28	53	4.8	10	67.8	.032	.31
6	2.20	.84	1.20	1.25	2.40	.31	.13	.31	.24	.60	1.59	9.12	2.68	4.01	111	11	68	190.0	.089	.32
7		.04	.08	.25	1.05		.01	.02	.05	.26	0.34	10.08	3.99	6.38	284	127	258	669.0	.314	.38
8		.47	2.20	.75	.20		.08	.57	.14	.05	0.84	9.82	4.81	5.79	221	244	182	647.0	.304	.24
9												9.54	3.42	5.75	190	78	184	452.0	.212	.29
10												9.05	2.61	3.51	95	8.4	20	123.4	.058	.27
11					.25					.06	0.06	9.24	2.60	4.50	112	8.0	47	167.0	.078	.31
12	2.05	.97				.29	.16				0.45	8.94	2.68	4.54	69	12	49	130.0	.061	.22
13												9.09	2.81	4.57	90	19	50	159.0	.075	.30
14					.85					.21	0.21	8.92	2.66	4.57	67	11	50	128.0	.060	.20
15	.45		.45		.05	.06		.12		.01	0.19	8.90	2.63	4.63	64	9.4	54	127.4	.060	.20
16			.35		.25			.09		.06	0.15	8.90	2.62	4.66	64	8.9	55	127.9	.060	.32
17	.20	.32	.35	1.06	.22	.03	.05	.09	.20	.06	0.43	9.01	2.64	4.78	78	9.8	62	149.8	.070	.26
18				.35					.07		0.07	9.10	2.61	4.79	91	8.4	62	161.4	.076	.10
19	1.15	1.60	1.30	2.75	2.80	.16	.25	.34	.52	.70	1.97	9.13	2.62	4.85	96	8.9	66	170.9	.080	.08
20	.60			.36	.10	.08			.06	.02	0.16	10.87	4.61	7.55	524	178	424	1126	.529	.17
21	.05	.02				.01	.00				0.01	10.01	2.92	5.59	266	36	143	445	.209	.10
22	.25	1.27	1.70	1.50	1.85	.04	.20	.44	.28	.46	1.42	9.72	2.36	5.22	210	10	114	334	.157	.19
23	.25	1.61	.70	.75	.95	.03	.26	.18	.14	.24	0.85	10.72	3.15	7.13	475	52	358	885	.416	.23
24	7.23	7.19	4.93	8.00	5.81	1.01	1.15	1.28	1.52	1.45	6.41	12.76	7.14	9.34	1,246	690	1010	2940	1.382	.23
25	.35	.52	.30	.45	.85	.05	.08	.08	.09	.21	0.51	14.22	9.99	10.05	1,830	1290	1660	4,780	2.247	.23
26	.15		.20		.40	.02		.05		.10	0.17	13.45	8.95	8.35	1,520	876	1190	3,586	1.662	.14
27												11.80	6.08	6.04	860	312	522	1,694	.796	.24
28												10.55	4.28	4.55	422	126	244	792	.372	.15
29		.03					.00				0.00	10.04	3.67	3.92	273	83	151	507	.238	.17
30												9.72	3.20	3.62	200	50	111	361	.170	.23
31																				
TOTAL	14.90	15.49 (16.17)	14.31	17.98	18.18	2.09	2.47	3.72	3.41	4.53	16.22	—	—	—	9,705	4,292.9	7,135	21,132.9	9.930	6.57

PART II

Monthly Hydrologic Data

Upper Taylor Creek (W-2)

Upper Taylor Creek (W-3)

10/1/62 - 9/30/63

U. S. D. A. - AGRICULTURAL RESEARCH SERVICE - FORT LAUDERDALE, FLORIDA

COOPERATING WITH

CENTRAL AND SOUTHERN FLORIDA FLOOD CONTROL DISTRICT &
UNIVERSITY OF FLORIDA, AGRICULTURAL EXPERIMENT STATION

MONTHLY HYDROLOGIC DATA UPPER TAYLOR CREEK WATERSHED
FLORIDA WATERSHED W-2 & 3

DATE	RAINFALL																STAGE		DISCHARGE				
DEC MONTH 1962 YEAR	MEASURED RAINFALL GAGE SUB AREA 1 W	2 B	3 R	4 J	5 D	6 M	7 O (INCHES)	WEIGHTED RAINFALL GAGE SUB AREA 1 9% 43%	2 13% 57%	3 10%	4 15%	5 12%	6 18%	7 23% (INCHES)	TOTAL WEIGHTED RAINFALL SUB AREA (INCHES)	TOTAL WEIGHTED RAINFALL ENTIRE AREA (INCHES)	UPPER STATION (FT.	LOWER STATION M.S.L.)	SUB AREA (SEC.	TOTAL AREA FT.)	SUB AREA (IN. OVER	TOTAL AREA AREA)	PAN EVAP. (INCHE
1								.00	.01								3.28	6.54	.6	4.8	.001	.002	.04
2								.01	.01								3.28	6.51	.6	4.8	.001	.002	.00
3								.02	.02								3.27	6.57	.6	4.8	.001	.002	.07
4								.01	.01								3.25	6.56	.5	4.7	.001	.002	.17
5	.05	.05	.03	.05	.05	.05	.10	.		.01	.01	.01	.01	.02	0.05	0.07	3.24	6.64	.5	6.0	.001	.002	.13
6					.05	.05	.05					.01	.01	.01		0.03	3.24	6.39	.5	6.9	.001	.003	.15
7																	3.22	6.40	.4	7.2	.001	.003	.11
8																	3.21	6.54	.4	7.6	.001	.003	.05
9	.05	.05	.12	.10	.10	.15	.15			.01	.01	.01	.03	.03	0.05	0.11	3.23	6.38	.4	7.9	.001	.003	.02
10																	3.22	6.29	.4	8.1	.001	.003	.17
11																	3.20	6.40	.4	8.4	.001	.003	.12
12																	3.19	6.27	.4	8.6	.001	.004	.08
13																	3.19	5.97	.4	8.8	.001	.003	.08
14																	3.18	6.18	.3	8.9	.001	.003	.06
15																	3.18	6.32	.3	9.0	.001	.004	.07
16																	3.18	6.37	.3	9.1	.001	.003	.07
17								.02	.03								3.19	6.34	.4	9.2	.001	.003	.06
18								.02	.03								3.19	6.33	.4	9.2	.001	.003	.07
19								.09	.09								3.20	6.34	.4	9.3	.001	.003	.07
20								.04	.03								3.20	6.34	.4	9.3	.001	.004	.10
21																	3.19	6.35	.4	9.2	.001	.003	.07
22																	3.18	6.35	.3	9.1	.001	.003	.09
23																	3.17	6.33	.3	9.0	.001	.003	.10
24	.20	.15	.08	.20	.03	.10	.10			.01	.03	.00	.02	.02	0.18	0.12	3.17	6.33	.3	9.0	.001	.003	.10
25			.02							.00						0.00	3.18	6.41	.3	8.8	.001	.003	.00
26																	3.19	6.36	.4	8.6	.001	.003	.12
27																	3.19	6.32	.4	8.4	.001	.004	.14
28																	3.18	6.27	.3	8.2	.001	.003	.08
29																	3.18	6.33	.3	8.0	.001	.003	.09
30	.10	.05	.02	.02		.05					.00		.01		0.07	0.03	3.17	5.95	.3	7.8		.003	.07
31																	3.16	5.99	.3	7.6		.003	.24
TOTAL	.40	.30	27	.37	.23	.40	.40	.04	.05	.03	.05	.03	.08	.08	0.35	0.36	—	—	12.2	246.3	.029	.092	2.75
			(.34)					/.17	.18\														

U.S.D.A., A.R.S., JULY 1958

DATE	RAINFALL																STAGE		DISCHARGE				
JAN MONTH 1963 YEAR	MEASURED RAINFALL GAGE SUB AREA 1 W	2 B	3 R	4 J	5 D	6 M	7 O (INCHES)	WEIGHTED RAINFALL GAGE SUB AREA 1 9% 43%	2 13% 57%	3 10%	4 15%	5 12%	6 18%	7 23% (INCHES)	TOTAL WEIGHTED RAINFALL SUB AREA (INCHES)	TOTAL WEIGHTED RAINFALL ENTIRE AREA (INCHES)	UPPER STATION (FT.	LOWER STATION M.S.L.)	SUB AREA (SEC.	TOTAL AREA FT.)	SUB AREA (IN. OVER	TOTAL AREA AREA)	PAN EVAP. (INCHE
1								.02	.03								3.15	6.08	.3	7.4	.001	.003	.00
2								.02	.02								3.14	6.13	.2	7.1		.003	.11
3								.01	.01								3.12	6.07	.2	6.8		.003	.11
4								.02	.03								3.11	5.99	.2	6.5		.002	.14
5								.01	.01								3.11	6.15	.2	6.3		.002	.07
6																	3.11	6.32	.2	6.1		.002	.09
7	.20	.25	.20	.22	.20	.18	.20			.02	.03	.02	.03	.05	0.23	0.20	3.14	6.12	.2	5.9		.002	.11
8																	3.16	6.12	.3	5.8	.001	.002	.08
9																	3.16	6.13	.3	5.7	.001	.002	.14
10																	3.16	6.20	.3	5.6	.001	.002	.09
11																	3.15	6.19	.3	5.5	.001	.002	.10
12																	3.14	6.21	.2	5.4	.000	.002	.06
13																	3.14	6.23	.2	5.4	.000	.002	.07
14	.20	.15	.12	.20	.23	.15	.35			.01	.03	.03	.03	.08	0.18	0.22	3.15	6.06	.3	5.4	.001	.002	.09
15	.05	.10	.03							.00					0.08	0.02	3.19	6.00	.4	5.4	.001	.002	.00
16								.04	.14								3.21	5.91	.4	7.0	.001	.003	.03
17								.09	.09								3.22	6.16	.4	8.0	.001	.003	.03
18								.02	.06								3.21	6.19	.4	8.8	.001	.003	.08
19								.11	.11								3.20	6.24	.4	9.3	.001	.003	.13
20								.04	.06								3.18	6.28	.3	9.8	.001	.004	.14
21	.25	.20	.28	.20	.36	.43	.31			.03	.03	.04	.08	.07	0.22	0.30	3.19	6.00	.4	10	.001	.004	.12
22																	3.19	5.92	.4	10	.001	.004	.17
23																	3.20	6.18	.4	10	.001	.004	.10
24																	3.19	5.85	.4	8.8	.001	.004	.07
25																	3.17	5.94	.3	7.6	.001	.003	.11
26	.10	.10	.10	.10	.15	.12	.05			.01	.02	.02	.02	.02	0.10	0.11	3.17	6.20	.3	6.6	.001	.002	.03
27																	3.18	6.17	.4	6.0	.001	.002	.05
28																	3.19	5.80	.4	5.6	.001	.002	.13
29																	3.16	6.07	.3	5.2	.001	.002	.13
30																	3.16	6.13	.3	5.0	.001	.002	.10
31																	3.14	6.15	.3	4.9	.001	.002	.13
TOTAL	.80	.80	.73	.72	.94	.88	.94	.08	.10	.07	.11	.11	.16	.22	0.81	0.85	—	—	9.6	212.4	.023	.080	2.80
			(0.83)					(.35	.46)														

U.S.D.A., A.R.S., JULY 1958

U. S. D. A. - AGRICULTURAL RESEARCH SERVICE - FORT LAUDERDALE, FLORIDA

COOPERATING WITH

CENTRAL AND SOUTHERN FLORIDA FLOOD CONTROL DISTRICT &
UNIVERSITY OF FLORIDA, AGRICULTURAL EXPERIMENT STATION

MONTHLY HYDROLOGIC DATA UPPER TAYLOR CREEK WATERSHED
FLORIDA WATERSHED W—2 & 3

DATE APR MONTH 1963 YEAR	RAINFALL: MEASURED RAINFALL GAGE SUB AREA 1	2	3	4	5	6	7	WEIGHTED RAINFALL GAGE SUB AREA 1 9% 43%	2 13% 67%	3 10%	4 15%	5 12%	6 18%	7 23%	TOTAL WEIGHTED RAINFALL SUB AREA	TOTAL WEIGHTED RAINFALL ENTIRE AREA	STAGE UPPER STATION	STAGE LOWER STATION	DISCHARGE SUB AREA	DISCHARGE TOTAL AREA	DISCHARGE SUB AREA Q X .00238	DISCHARGE TOTAL AREA Q X .000376	PAN EVAP.
	(INCHES)							(INCHES)							(INCHES)	(INCHES)	(FT.	M.S.L.)	(SEC.	FT.)	(IN. OVER	AREA)	(INCHES)
1								.04	.06								3.07	5.77	.2	3.4	.001	.001	.16
2								.02	.05								3.08	5.85	.2	3.0	.001	.001	.16
3																	3.06	5.90	.2	2.7	.001	.001	.22
4																	3.02	5.91	.1	2.6	.001	.001	22
5																	2.97	5.92	.1	2.5		.001	24
6																	2.94	6.00	.1	2.4		.001	.19
7																	2.90	6.04	.1	2.5		.001	.21
8																	2.86	5.80	.1	2.7		.001	.27
9																	2.82	5.90	.1	2.9		.001	.17
10																	2.79	5.89	.1	3.0		.001	26
11																	2.74	5.83	.1	3.0		.001	27
12																	2.68	5.77	.1	3.0		.001	27
13																	2.62	5.65	.1	2.9		.001	29
14																	2.56	5.43	.1	2.9		.001	29
15																	2.50	5.56	.1	2.8		.001	29
16								.18	.28								2.44	5.55		2.7		.001	29
17								.11	23								2.38	5.64		2.6		.001	23
18																	2.32	5.62		2.5		.001	.27
19																	2.28	5.61		2.5		.001	23
20																	2.24	5.58		2.4		.001	25
21																	2.17	5.56		2.3		.001	28
22																	2.13	5.57		2.3		.001	26
23																	2.08	5.45		2.2		.001	29
24																	2.05	5.30		2.2		.001	.32
25	.42	.50	.50	80	85	35	30			.05	.12	.10	06	07	0.46	0.50	2.00	5.35		2.4		.001	19
26																	2.00	5.30		2.7		.001	17
27																	1.97	5.25		2.8		.001	23
28																	1.92	5.27		2.9		.001	.24
29																	1.86	5.31		2.9		.001	29
30	25	.40	38	45			.30			.04	.07			07	0 34	0 25	1.83	5.35		2.9		.001	23
31																							
TOTAL	67	.90	88	1.25	85	35	.60	.06	11	.09	.19	.10	06	14	0.80	0 75	—	—	1.8	80.6	.004	.030	723
			(.78)					/.29/	.51\														

U.S.D.A., A.R.S., JULY 1966

DATE MAY MONTH 1963 YEAR	RAINFALL: MEASURED RAINFALL GAGE SUB AREA 1 W	2 B	3 R	4 J	5 D	6 M	7 O	WEIGHTED RAINFALL GAGE SUB AREA 1 9% 43%	2 13% 57%	3 10%	4 15%	5 12%	6 18%	7 23%	TOTAL WEIGHTED RAINFALL SUB AREA	TOTAL WEIGHTED RAINFALL ENTIRE AREA	STAGE UPPER STATION	STAGE LOWER STATION	DISCHARGE SUB AREA	DISCHARGE TOTAL AREA	DISCHARGE SUB AREA Q X .00238	DISCHARGE TOTAL AREA Q X .000376	PAN EVAP.
	(INCHES)							(INCHES)							(INCHES)	(INCHES)	(FT.	M.S.L.)	(SEC.	FT.)	(IN. OVER	AREA)	(INCHES)
1	.40	.35	.40	.35	.35	.30	.35	.04	.05	.04	.05	.04	.05	.08	0.37	0.35	1.86	5.20		3.2		.001	24
2								.10	.16								1.40	4.96		3.7		.001	.10
3	1.10	1.25	1.32	1.15	1.70	1.25	1.53	.01	.11	.13	.17	.20	.22	.36	1.18	1.34	2.04	4.89		3.7		.001	23
4								.03	.05								2.46	5.01	.1	3.0		.001	23
5								.02	.05								2.60	5.10	.1	2.5		.001	20
6								.01	.31								2.64	5.30	.1	2.2		.001	.22
7								.01	.03								2.65	5.30	.1	2.0		.001	28
8								.10	.01								2.64	5.34	.1	1.9		.001	.27
9								.05	.02								2.64	5.37	.1	1.9		.001	.25
10								.10									2.55	5.28	.1	1.8		.001	.30
11																	2.50	5.15	.1	1.8		.000	27
12	.15	.85	.25		.12		T			.02		.01			0.54	0.15	2.44	5.24		1.8		.000	.35
13																	2.41	5.10		1.8		.000	.19
14																	2.37	5.12		1.9		.001	.27
15																	2.31	5.20		1.9		.001	.26
16																	2.24	5.30		1.9		.001	.25
17								.17	.20								2.18	5.34		1.9		.001	.29
18								.47	.71								2.11	5.20		1.9		.001	.27
19								.06	.48								2.04	5.18		1.9		.001	.38
20							.10	.13	.23					.02		0.02	1.96	5.14		1.9		.001	.27
21		.40						.11	.21						0.23	0.05	1.91	5.10		1.9		.001	.22
22								.04	.137								1.86	5.11		1.9		.001	.15
23	.30	.37	.30	80	1.15	50	2.25	.04	.11	.03	.12	.14	.09	.52	0.34	0.98	1.82	5.10		1.9		.001	.24
24								.47	.03								1.85	4.94		2.0		.001	.25
25	.25	2.40	.90	2.32	1.20	.60	.16	.24	.09	.09	.35	.14	.11	.04	1.48	1.06	1.90	4.96		2.2		.001	.16
26	.10							.49							0.04	0.01	3.24	5.00	1.2	2.4	.003	.001	.19
27	.10	.20	.18	.10	.10	.15				.02	.07	.01	.03		0.15	0.12	3.39	4.97	1.3	2.8	.004	.001	.21
28	1.10			.10			.20				.01			.05	0.47	0.16	3.32	5.00	.8	3.2	.002	.001	.26
29		.65	.03							.01					0.03	0.02	3.29	4.98	.7	3.3	.002	.001	10
30	.55	.15	.12	.30	.25					.01	.04	.03			0.33	0.15	3.26	5.00	.6	3.3	.002	.001	.20
31	1.15		.92	.35	.10	.50				.09	.05	.01	.09		0.49	0.34	3.31	4.94	.8	3.3	.002	.001	.13
TOTAL	5.20	6.02	4.92	5.47	4.97	3.30	4.61	.47	.79	.44	.81	.58	.59	1.07	5.66	4.75	—	—	6.2	72.8	.015	.027	723
			/4.86\					/2.22	3.43\														

U.S.D.A., A.R.S., JULY 1966

U. S. D. A. - AGRICULTURAL RESEARCH SERVICE - FORT LAUDERDALE, FLORIDA

COOPERATING WITH

CENTRAL AND SOUTHERN FLORIDA FLOOD CONTROL DISTRICT &
UNIVERSITY OF FLORIDA, AGRICULTURAL EXPERIMENT STATION

MONTHLY HYDROLOGIC DATA UPPER TAYLOR CREEK WATERSHED
FLORIDA WATERSHED W—2 & 3

DATE	RAINFALL: MEASURED RAINFALL GAGE 1 SUB AREA 1	2 SUB AREA 2	3	4	5	6	7	WEIGHTED RAINFALL GAGE 1 SUB AREA 1	2 SUB AREA 2	3	4	5	6	7	TOTAL WEIGHTED RAINFALL SUB AREA	TOTAL WEIGHTED RAINFALL ENTIRE AREA	STAGE UPPER STATION	STAGE LOWER STATION	DISCHARGE SUB AREA	DISCHARGE TOTAL AREA	DISCHARGE SUB AREA Q X .00236	DISCHARGE TOTAL AREA Q X .000376	PAN EVAP.
AUG MONTH 1963 YEAR	W	B	R	J	D	M	G	9 % 43%	13 % 57%	10 %	15 %	12 %	18 %	23 %									
	(INCHES)							(INCHES)							(INCHES)	(INCHES)	(FT.	M.S.L.)	(SEC.	FT.)	(IN. OVER	AREA)	(INCHES
1								.00	.03								3.40	4.40	1.2	3.2	.003	.001	.27
2				.10	.10	.45		.00	.02		.07	.01	.08			0.11	3.35	4.40	.9	3.0	.002	.001	.28
3								.01	.02								3.29	4.39	.7	2.7	.002	.001	.15
4								.01	.01								3.25	4.31	.5	2.5	.001	.001	.24
5		.20	.03				.10	.01	.02	.06				.02	0.11	0.05	3.21	4.34	.4	2.4	.001	.001	.27
6								.04	.05								3.18	4.28	.4	2.3	.001	.001	.21
7								.01	.09								3.12	4.27	.2	2.2	.001	.001	.28
8	.05	.15			.50		.15	.04	.01			.06		.03	0.11	0.11	3.07	4.27	.2	2.2	.001	.001	.26
9		.15					.25	.01	.03					.06	0.09	0.08	3.01	4.27	.1	2.2	.001	.001	.30
10		.05	.18							.02					0.02	0.03	2.96	4.28	.1	2.2	.001	.001	.29
11																	2.92	4.26	.1	2.1	.001	.001	.27
12	.05		.82		1.25					.08		.15			0.02	0.23	2.88	4.25	.	2.1	.001	.001	.20
13				.30							.09					0.04	2.90	4.27	.	2.1		.001	.29
14	.10	.15		.10			1.05				.01			.24	0.13	0.28	2.86	4.28	.1	2.1		.001	.21
15						.35	.35						.06	.08		0.14	2.82	4.26	.1	2.1		.001	.20
16																	2.76	4.27	.1	2.1		.001	.22
17								.02	.11								2.71	4.26	.1	2.1		.001	.24
18	.05		.35		.85			.02	.09	.04		.10			0.02	0.15	2.65	4.25	.1	2.1		.001	.27
19	.10	.40			.15		.60	.04	.09			.02		.14	0.27	0.22	2.61	4.24	.1	2.5		.001	.17
20	.50	.72	.10	1.85	.05	1.05	1.50	.02	.02	.01	.28	.01	.19	.34	0.62	0.96	2.61	4.25	.1	5.4		.001	.14
21	.15	.10		.10	.10	.05		.04	.09		.02	.01	.01		0.12	0.06	2.69	4.26	.1	5.8		.001	.09
22	.40	.20	.95	.50		.65	.30	.21	.23	.04	.08		.12	.07	0.28	0.38	2.76	4.27	.1	5.7		.002	.14
23	.10		.13	.05	1.00	1.30	1.15	.06	.41	.01	.01	.12	.23	.26	0.05	0.64	2.85	4.28	.1	4.6		.002	.17
24								.17	.06								2.89	4.27	.1	4.0		.002	.18
25								.05	.11								2.91	4.26	.1	3.5		.001	.20
26																	2.89	4.25	.1	3.2		.001	.23
27																	2.83	4.24	.1	3.0		.001	.21
28																	2.75	4.15	.1	2.8		.001	.26
29																	2.66	4.08	.1	2.6		.001	.26
30																	2.59	4.04	.1	2.5		.001	.23
31																	2.52	4.05		2.4		.001	.25
TOTAL	1.50	2.12	2.06	3.00	4.00	3.85	5.45	.13	.28	.20	.46	.48	.69	1.24	1.84	3.98	—	—	6.8	89.7	.016	.034	6.99
			(3.14)					1.63	1.21														

U.S.D.A., A.R.S., JULY 1966

DATE	RAINFALL: MEASURED RAINFALL GAGE 1 SUB AREA 1	2 SUB AREA 2	3	4	5	6	7	WEIGHTED RAINFALL GAGE 1 SUB AREA 1	2 SUB AREA 2	3	4	5	6	7	TOTAL WEIGHTED RAINFALL SUB AREA	TOTAL WEIGHTED RAINFALL ENTIRE AREA	STAGE UPPER STATION	STAGE LOWER STATION	DISCHARGE SUB AREA	DISCHARGE TOTAL AREA	DISCHARGE SUB AREA Q X .00236	DISCHARGE TOTAL AREA Q X .000376	PAN EVAP.
SEPT MONTH 1963 YEAR	W	B	R	J	D	M	O	9 % 43%	13 % 57%	10 %	15 %	12 %	18 %	23 %									
	(INCHES)							(INCHES)							(INCHES)	(INCHES)	(FT.	M.S.L.)	(SEC.	FT.)	(IN. OVER	AREA)	(INCHES
1						.20	.20	.03	.05				.04	.05		0.09	2.45	4.05	0	2.3		.001	.26
2								.04	.10								2.40	4.06	0	2.3		.001	.15
3		.38	.57	.10		1.16	.10	.04	.08	.06	.02		.21	.02	0.22	0.36	2.41	4.05	0	2.3		.001	.10
4			.42		.06	.10		.07	.01	.04		.01	.02			0.07	2.50	4.07	.1	2.3		.001	.20
5	.35		.13	1.00		.40	1.15	.01	.32	.01	.15		.07	.26	0.15	0.52	2.55	4.11	.1	2.3		.001	.19
6	.45	.75	.80	.65	.30	.15		.01	.06	.08	.10	.04	.03		0.62	0.39	2.59	4.15	.1	2.4		.001	.26
7		.60		.15		.15		.02	.03		.02		.03		0.34	0.13	2.78	4.12	.1	2.8		.001	.17
8			.05			.15	.75	.06	.08	.01			.03	.17		0.21	2.80	4.07	.1	3.5		.001	.20
9								.02	.01								2.83	3.99	.1	5.0		.002	.16
10								.01	.05								2.88	3.92	.1	6.5		.002	.24
11							.35	.09	.21					.08		0.08	2.86	3.89	.1	8.0	.001	.003	.20
12					.55			.11	.10			.07				0.07	2.78	3.96	.	9.0	.001	.003	.22
13	.50	.05		.20			.35	.26	.02		.03			.08	0.25	0.16	2.68	4.00	.	10	.001	.004	.18
14	.75	2.50	1.20	1.10		.05	.40			.12	.16		.01	.09	1.74	0.77	2.67	3.98	.1	11	.001	.004	.20
15	.10		.18			.21				.02			.04		0.04	0.07	3.10	3.95	.4	13	.001	.005	.15
16	.10			.15	.10						.02	.01			0.04	0.04	3.42	3.86	1.8	14	.004	.005	.17 *
17								.15	.22								3.37	3.83	1.4	15	.003	.006	.19
18	.27	.50	.27	.45	.10	.15	.65	.19	.43	.03	.07	.01	.03	.15	0.40	0.37	3.32	3.85	1.0	16	.002	.006	.17
19	.65	.25	.86	.50	.45	.20	.50	.22	.34	.09	.08	.05	.09	.12	0.42	0.47	3.35	3.85	1.2	17	.003	.006	.11
20	.25	.60	.19	.30	.10	1.55	1.15	.32	.03	.02	.04	.01	.28	.26	0.45	0.71	3.43	4.16	1.8	18	.004	.007	.17 *
21	.15	.10	.18	.30	.55	.05	.10	.04	1.92	.02	.04	.07	.01	.02	0.12	0.18	3.51	4.12	2.7	20	.006	.008	.07
22	1.05	.35	.10	.10	.10	.50	.25	.04	.28	.01	.02	.01	.09	.06	0.65	0.33	3.53	3.97	3.0	22	.007	.008	.12
23	1.20	1.60	.91	.85	1.80	1.05	.95	.12	.14	.09	.13	.22	.19	.22	1.43	1.17	3.65	3.93	6.5	26	.015	.010	.08
24	2.90	.75	1.02	2.55	.50	.90	.90	.28	.34	.10	.38	.06	.16	.09	1.67	1.15	4.25	4.10	31	35	.074	.013	.17 *
25		.15						.11	.06						0.08	0.02	5.28	4.44	105	45	.256	.017	.17 *
26								.06	.20								5.27	4.20	105	70	.250	.026	.13
27								.45	.91								4.69	4.25	59	126	.140	.047	.16
28								.52	.43								4.30	4.57	34	140	.081	.053	.17
29			.04					.24	.08	.00						0.00	4.06	5.01	21	150	.050	.056	.17
30																	3.93	4.29	16	150	.038	.056	.24
31																							
TOTAL	8.72	8.58	6.92	8.40	9.61	6.47	7.30	.77	1.12	.70	1.26	.56	1.28	1.67	8.62	7.36	—	—	391.9	946.7	.932	.355	5.17
			(7.36)					3.74	4.88														

U.S.D.A., A.R.S., JULY 1966

PART III

Monthly Hydrologic Data

Monreve Ranch (W-4)

10/1/62 - 9/30/63

U.S.D.A - AGRICULTURAL RESEARCH SERVICE - FORT LAUDERDALE, FLORIDA

COOPERATING WITH

CENTRAL AND SOUTHERN FLORIDA FLOOD CONTROL DISTRICT &
UNIVERSITY OF FLORIDA, AGRICULTURAL EXPERIMENT STATION

MONTHLY HYDROLOGIC DATA MONREVE RANCH

FLORIDA WATERSHED W—4

DATE	RAINFALL											STAGE		IRRIGATION		RUNOFF		EVAP.
DEC MONTH 1962 YEAR	MEASURED RAINFALL					WEIGHTED RAINFALL					TOTAL WEIGHTED RAINFALL	ST. LUCIE CANAL	OUTLET WEIR	CFS X HRS / 24	(.00617)(CFS)	OUTLET WEIR	(.00617)(CFS)	STD. PAN
	GAGE 1	2	3	4	5	GAGE 1 18%	2 17%	3 16%	4 24%	5 25%								
	(INCHES)					(INCHES)					(INCHES)	(FT.	MSL)	(CFS)	(IN./AREA)	(CFS)	(IN/AREA)	(INCHES)
1												15.07	16.17	12.5	.075	1.2	.007	.06
2												15.00	16.35	10.0	.050	3.7	.023	.07
3												15.00	16.30			2.8	.017	.03
4												15.02	16.18			1.4	.009	.10
5												15.00	16.20	7.5	.045	1.5	.009	.05
6	.05	.05	.05	.05	.05	.01	.01	.01	.01	.01	0.05	14.98	16.28	9.2	.055	2.5	.015	.07
7												14.84	16.32	15.0	.090	3.1	.019	.09
8												14.95	16.30			2.8	.017	.07
9												15.05	16.30	5.6	.035	2.8	.017	.09
10												15.00	16.37	8.3	.050	4.2	.026	.14
11												14.88	16.38	7.5	.045	4.4	.027	.07
12												14.92	16.38	20.0	.120	4.4	.027	.07
13												14.95	16.35	20.0	.120	4.4	.027	.10
14												14.77	16.38	20.0	.120	4.4	.027	.07
15												14.85	16.37	20.0	.120	4.2	.026	.11
16												14.81	16.35	20.0	.120	3.7	.023	.02
17												14.78	16.36	20.0	.120	3.9	.024	.04
18												14.73	16.37	20.0	.120	4.2	.026	.07
19												14.75	16.36	20.0	.120	3.9	.024	.07
20												14.77	16.36	20.0	.120	3.7	.024	.07
21												14.76	16.36	20.0	.120	3.4	.021	.06
22												14.78	16.32	13.3	.080	3.1	.019	.09
23												14.84	16.18			1.4	.007	.10
24	.25	.20	.25	.20	.25	.04	.03	.04	.05	.06	0.22	14.82	16.16			1.2	.007	.05
25												14.74	16.14			1.0	.006	.09
26												14.79	16.13			1.0	.006	.10
27												14.81	16.13			1.0	.006	.10
28												14.74	16.12			.9	.006	.07
29												14.75	16.12			.9	.006	.07
30												14.72	16.11			.9	.006	.08
31												14.66	16.10			.6	.005	.07
TOTAL	.30	.25	.30	.25	.30	.05	.04	.05	.06	.07	0.27			287.1	1.725	83.5	.514	2.34
		(.28)																

U.S.D.A., A.R.S., JULY 1959

DATE	RAINFALL											STAGE		IRRIGATION		RUNOFF		EVAP.
JAN MONTH 1963 YEAR	MEASURED RAINFALL					WEIGHTED RAINFALL					TOTAL WEIGHTED RAINFALL	ST. LUCIE CANAL	OUTLET WEIR	CFS X HRS / 24	(.00617)(CFS)	OUTLET WEIR	(.00617)(CFS)	STD. PAN
	GAGE 1	2	3	4	5	GAGE 1 18%	2 17%	3 16%	4 24%	5 25%								
	(INCHES)					(INCHES)					(INCHES)	(FT.	MSL)	(CFS)	(IN./AREA)	(CFS)	(IN/AREA)	(INCHES)
1												14.63	16.10			0.8	.005	.10
2												14.58	16.10			.8	.005	.10
3												14.57	16.09			.8	.005	.10
4												14.64	16.08			.7	.004	.14
5												14.69	16.08			.7	.004	.07
6	.10	.20	.40	.25	.25	.02	.03	.06	.06	.06	0.23	14.67	16.07			.7	.004	.15
7	.15	.05				.03	.01				0.04	15.03	16.08			.7	.004	.07
8												14.77	16.08			.7	.004	.12
9												14.64	16.08			.7	.004	.10
10												14.67	16.08			.7	.004	.09
11												14.67	16.07			.7	.004	.09
12												14.62	16.07			.7	.004	.08
13												14.69	16.07	6.7	.040	.7	.004	.08
14												14.64	16.12	20.0	.120	.9	.006	.11
15												14.67	16.21	20.0	.120	1.6	.010	.11
16												14.45	16.21	20.0	.120	1.4	.009	.10
17												14.52	16.19	20.0	.120	1.2	.007	.10
18												14.58	16.17	20.0	.120	1.2	.007	.07
19												14.58	16.16	14.2	.085	1.2	.007	.09
20												14.55	16.16			1.2	.007	.13
21	.75	.77	.70	.68	.73	.14	.13	.11	.16	.18	0.72	14.70	16.17			1.2	.007	.12
22												14.56	16.16			1.2	.007	.05
23	.05	.02	.05	.07	.07	.01	.00	.01	.02	.02	0.06	14.58	16.16			1.2	.007	.09
24												14.70	16.17			1.2	.007	.10
25												14.60	16.16			1.2	.007	.10
26			.04					.01			0.01	14.60	16.16			1.2	.007	.05
27												14.65	16.16			1.2	.007	.06
28												14.60	16.15			1.1	.007	.06
29												14.48	16.15			1.1	.006	.10
30												14.50	16.15			1.0	.006	.10
31												14.60	16.14			1.0	.006	.10
TOTAL	1.05	1.04	1.19	1.00	1.05	.20	.17	.19	.24	.26	1.06			120.9	.725	31.1	.192	2.93
		(1.07)																

U.S.D.A., A.R.S., JULY 1959

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COOPERATING WITH

CENTRAL AND SOUTHERN FLORIDA FLOOD CONTROL DISTRICT &
UNIVERSITY OF FLORIDA, AGRICULTURAL EXPERIMENT STATION

MONTHLY HYDROLOGIC DATA MONREVE RANCH

FLORIDA WATERSHED W—4

DATE	RAINFALL											STAGE		IRRIGATION		RUNOFF		EVAP.
APRIL MONTH 1963 YEAR	MEASURED RAINFALL GAGE 1	2	3	4	5	WEIGHTED RAINFALL GAGE 1 18%	2 17%	3 16%	4 24%	5 25%	TOTAL WEIGHTED RAINFALL	ST. LUCIE CANAL	OUTLET WEIR	CFS X HRS / 24	(.00617)(CFS)	OUTLET WEIR	(.00617)(CFS)	STD. PAN
	(INCHES)					(INCHES)					(INCHES)	(FT.	MSL)	(CFS)	(IN./AREA)	(CFS)	(IN./AREA)	(INCHES)
1												14.25	16.15			1.1	.007	.14
2												14.20	16.14			1.0	.006	.18
3												14 30	16.13	5.8	.635	1.0	.006	.18
4												14 36	16.18	5.8	035	1.4	009	.18
5												14 28	16.19	6.7	.040	1.4	.009	.20
6												14.45	16.24	20	.120	1.9	.012	.20
7												14.57	16.32	20	.120	3.1	.019	.19
8												14.37	16.27	20	.120	2.3	.014	.12
9												19 26	16.30	15	090	2.8	.017	.19
10												14 52	16.27	133	.080	2.3	.014	24
11												14.35	16.28	20	.120	2.5	.015	.29
12												14 24	16.28	20	.120	2.5	.015	20
13												14 30	16.27	20	.120	2 3	.014	22
14												14 27	16.23	20	.120	1 8	.011	.15
15												14.17	16.22	20	.120	1.7	.010	23
16												13 96	16 22	20	120	1.7	010	23
17												13.94	16 22	20	120	1 7	010	18
18												13 96	16.21	20	120	1.6	.010	20
19												13 92	16 20	20	120	1.5	.009	22
20												13.89	16.20	20	120	1.5	009	10
21												13 96	16 20	20	120	1.5	009	.20
22												13.85	16 21	10.8	065	1.6	010	20
23												14.10	16.17			1 2	.007	20
24												19.00	16.13			1 0	006	.21
25	.70	1.10	1.00	.74	.95	0.13	0.19	0.16	0.18	0.11	0 77	13.80	16.12			.9	.006	16
26												13.90	16 13			1 0	006	23
27												13.67	16 11			.9	006	19
28												13 54	16 10			.8	005	22
29												13.35	16.09			.8	.005	25
30												13 59	16.08			.7	.004	.15
31																		
TOTAL	0.70	1.10	1.00	0.74	0.95	0 13	0 19	0.16	0.18	0.11	0 77			337.4	2.025	47.5	.290	5 75

(0 80)

U.S.D.A., A.R.S., JULY 1959

DATE	RAINFALL											STAGE		IRRIGATION		RUNOFF		EVAP.
MAY MONTH 1963 YEAR	MEASURED RAINFALL GAGE 1	2	3	4	5	WEIGHTED RAINFALL GAGE 1 18%	2 17%	3 16%	4 24%	5 25%	TOTAL WEIGHTED RAINFALL	ST. LUCIE CANAL	OUTLET WEIR	CFS X HRS / 24	(.00617)(CFS)	OUTLET WEIR	(.00617)(CFS)	STD. PAN
	(INCHES)					(INCHES)					(INCHES)	(FT.	MSL)	(CFS)	(IN./AREA)	(CFS)	(IN./AREA)	(INCHES)
1	.20	.20	.26	.30	.15	.04	.03	.03	.07	.04	0.21	13 80	16.09	10 8	.065	.8	.005	.14
2												13 86	16.16	20	.120	1 2	.007	.14
3	2.05	2.00	2.10	2.05	2.30	.37	.34	.34	.49	.58	2 12	13 25	16.50	5.8	.035	14	.086	.18
4												13.85	16 56			11	.068	.37
5												13 83	16.38			4 4	.027	.19
6												13 97	16.29			2 6	.016	.20
7												13 74	16.24			1.9	.012	.20
8												13 68	16.19			1 4	.009	.21
9												13 77	16.13	9.2	.055	1.0	.006	.21
10												13.67	16.11	20	.120	.9	.006	.21
11												13.76	16.23	5.8	.035	1 8	.011	.29
12												13 77	16.11			.9	.006	.15
13												13 37	16.07			.7	.004	.20
14	.10					.02					0 02	13 47	16 04			.6	.004	.18
15												13.61	16 03			.5	.003	.20
16												13.60	16 02			.5	.003	25
17												13 61	16.01	10.8	.065	4	.002	.22
18												13.51	16.08	12.5	.075	7	.004	.24
19												13 50	16.09			5	.005	23
20												13 38	16 06	13 3	.080	6	.004	.26
21	.86	.37	.65	1.30	1.17	.15	.06	.10	.31	.29	0.91	13.94	16 25	8.3	.050	2.2	.014	20
22												13 34	16.12			9	.006	.13
23	.35	.25	.40	.15	.15	.06	.04	.06	.04	.04	0.24	13.45	16 08			.7	.004	.16
24												13 24	16 06			.6	.004	.21
25												13 27	16.03			.5	.003	.16
26	.15	.10	.10	.05	.10	.03	.02	.02	.01	.02	0 10	13 38	16.02			.5	.003	.07
27												13 35	16.02			.5	.003	.19
28	.05	.35	.25	.15	.15	.01	.06	.04	.04	.04	0 19	13 41	16.02			.5	.003	.14
29	.50	.90	.40	.85	.70	.09	.07	.06	.20	.18	0.60	13.24	16.10			1.3	.008	.09
30	1.15	.85	.90	1.00	1.20	.21	.14	.06	.24	.30	0.95	13.90	16 43			6 5	.040	.10
31												13.43	16.37			4.2	.026	.18
TOTAL	5.41	4.52	4.50	5.85	5.92	.98	.76	.71	1.40	1.49	5 34			116.5	.700	65.1	.402	5.90

(5.24)

U.S.D.A., A.R.S., JULY 1959

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MONTHLY HYDROLOGIC DATA MONREVE RANCH

FLORIDA WATERSHED W—4

DATE	RAINFALL											STAGE		IRRIGATION		RUNOFF		EVAP.
AUG MONTH 1963 YEAR	MEASURED RAINFALL GAGE 1	2	3	4	5	WEIGHTED RAINFALL GAGE 1 18%	2 17%	3 16%	4 24%	5 25%	TOTAL WEIGHTED RAINFALL	ST. LUCIE CANAL	OUTLET WEIR	CFS X HRS / 24	(.00617)(CFS)	OUTLET WEIR	(.00617)(CFS)	STD. PAN
	(INCHES)					(INCHES)					(INCHES)	(FT. MSL)		(CFS)	(IN./AREA)	(CFS)	(IN/AREA)	(INCHES)
1												12.77	16.08			07	.004	.17
2				.15					.04		0 04	12 77	16.05			6	.004	.24
3												12 80	16.03			5	.003	.19
4	.20		.10		.21	.04		02		.05	0 11	12 71	16.02			5	.003	20
5				.15					.04		0 04	12.76	16.02			5	.003	11
6												12.66	16.02			5	.003	.20
7												12 68	16 00			4	.002	28
8		.25	.25	.15			.04	.04	.04		0.12	12 60	16 00			4	.002	27
9	.10	.60	.15	30	.20	.02	.10	02	.07	.05	0.26	12 76	15 99	6 7	.040	4	002	.15
10	.10	.65	55	.60	.20	.02	.11	.09	.14	05	0.41	12.68	16 02	13 3	.080	.5	003	.11
11				.10	.25				.02	06	0 08	12 70	16 04			6	.004	29
12	.51	.20	.10	.35	.25	.09	.03	02	.08	.06	0 28	12 64	16.02			5	.003	.13
13				.10	.10				.02	02	0 04	12 60	16 01			.4	002	.17
14												12 65	16 00			4	.002	21
15	.10					02					0 02	12 62	15 95			4	.002	23
16	.55	1.30	.85	1.70	.80	.10	.22	.14	.41	.20	1.07	12 57	15 98			4	.002	32
17												12.55	16 00			4	002	.13
18		.50	.30	.20			.08	.05	.05		0 18	12.99	15 97			4	.002	24
19	.15	.30	.20	.30	.10	.03	.05	.03	.07	03	0 21	12.90	15.98			4	.002	.17
20	.55	.85	.90	.60	.45	.10	.14	.14	.14	.11	0.63	12 45	16 01			4	.002	17
21	.30	.30	.35	.90	.35	.05	.05	.06	.10	.09	0 35	12 43	16 28			48	.030	04
22			.05					.01			0.01	12 58	16 42			5.4	.033	13
23		.35	.20	.05			.09	.03	.01		0 13	12 58	16 29			26	.016	22
24												12 63	16 25			20	.012	.17
25												12 59	16 20			15	.009	13
26		.10	.10				.02	.02			0 04	12 52	16.24	5.8	035	23	.014	19
27												12 56	16 26			22	014	.12
28												12 58	16 14			10	.006	.20
29												12 53	16 04	13.3	.080	.6	.004	.18
30												12 32	16 01			4	.002	21
31												12.96	15 99			4	.002	20
TOTAL	256	560	4.10 (4.06)	5.15	291	.47	.93	.67	1.23	.72	4.02			39.1	.235	325	.199	577

U.S.D.A., A.R.S. JULY 1959

DATE	RAINFALL											STAGE		IRRIGATION		RUNOFF		EVAP.
SEPT MONTH 1963 YEAR	MEASURED RAINFALL GAGE 1	2	3	4	5	WEIGHTED RAINFALL GAGE 1 18%	2 17%	3 16%	4 24%	5 25%	TOTAL WEIGHTED RAINFALL	ST. LUCIE CANAL	OUTLET WEIR	CFS X HRS / 24	(.00617)(CFS)	OUTLET WEIR	(.00617)(CFS)	STD. PAN
	(INCHES)					(INCHES)					(INCHES)	(FT. MSL)		(CFS)	(IN./AREA)	(CFS)	(IN/AREA)	(INCHES)
1												12.49	15.98			4	.002	.20
2		.90	.25	.35			.07	.04	.08		0 19	12.33	15 98			4	.003	.10
3												12.45	15 97			3	.002	.06
4	.15		.25	.15	.90	.03		.04	04	.10	0.21	12 41	15.96			3	.002	.19
5												12 47	15 97			3	.002	.14
6	.65	.60	115	.65	195	.12	.10	.18	.16	.36	0 92	12.56	16.02			5	.003	.22
7	.10	.25	.15	.15		.02	.04	02	.04		0 12	12 37	16 02			5	.003	.19
8	.35	.15			.30	.06	.03			.08	0 17	12.50	16 01			4	.002	.23
9												12 43	16 01			.4	003	.45
10												12.41	16 01			4	002	.19
11	1.90	180	130	1.75	195	.25	.31	.21	.42	.36	1 55	12.30	16 01			4	.003	.17
12	.65			.10	195	.12			.02	.36	0 50	12.33	16 01			4	002	.13
13												12.33	16 01			4	.003	.23
14	.40		.10		.95	.07		.02		.24	0.33	12.34	16 03			.5	003	.11
15	.15		.40		.30	.03		.06		.08	0.17	12.21	16 05			6	.004	.15
16	.40	.35	.30	.80	60	.07	.06	.05	.19	.15	0.52	12.23	16 05			6	.004	.19
17												12.27	16 05			6	.004	.06
18			.05		.10			.01		.02	0 03	12.28	16 04			6	.004	.13
19	.75	.50	.65	.55	.50	.14	.08	.10	.13	.20	0 65	12.24	16 26			8.8	.054	.07
20	.05	.10	.10	.05	.05	.01	02	.02	.01	01	0 07	12.27	16.61			14	.086	.34
21	.10	.05		21	.20	.02	01		05	05	0 13	12.20	16 45			62	.038	.04
22	.20	.25	.20	.30	.30	.04	04	.03	07	.07	0 25	12.36	16 35			44	.027	.06
23	.50	.45	.40	.70	.65	.09	.08	.06	.17	.16	0 56	12.29	16 44			60	.037	.12
24	.80	.50	.75	1.40	1.60	.14	.08	.12	.34	.40	1 08	12.36	16 48			72	.044	.09
25	.45	45	.65	.40	.40	.08	08	.10	.10	.10	0 46	12.67	16 70			19	.117	.27
26												12.60	16 64			15	.093	.15
27												12.46	16 91			5 1	.031	.14
28												12.45	16 27			2 3	.014	.15
29												12.77	16 31			3 0	.018	.11
30												12.82	16 25			20	.012	.23
31																		
TOTAL	710	585 (7 69)	6.70	756	1100	129	100	1.06	182	274	7.91			—	—	1010	.622	5.01

U.S.D.A., A.R.S. JULY 1959

PART IV

Monthly Hydrologic Data

Plantation Field Laboratory

1963

Division 1 - Rainfall, Air Temperature, Wind, Relative Humidity

HYDROLOGIC DATA - PLANTATION FIELD LABORATORY
FORT LAUDERDALE, FLORIDA

DATE MAR.	RAINFALL	AIR TEMP. (°F)			WIND	MEAN WTD. REL. HUM.	REMARKS
(MO.)	(IN.)	MAX.	MIN.	MN	(MI.)	%	
1963 (YR.)							
1		75	58	66	38	79	
2		81	68	75	81	—	
3		88	65	77	41	—	
4		83	72	78	63	—	
5		82	71	77	72	93	
6		84	68	76	83	92	
7	0.04	89	62	76	67	—	
8		73	56	65	47	—	
9		77	64	71	73	80	
10		80	60	70	44	91	
11		86	71	79	43	89	
12		84	70	72	55	93	
13		85	63	74	44	94	
14		86	61	74	29	90	
15		85	63	74	28	85	
16		87	71	79	35	83	
17		85	68	77	50	87	
18		87	63	75	32	85	
19		88	61	74	29	87	
20		87	61	74	37	86	
21		91	61	76	84	73	
22		75	49	62	77	53	
23		72	48	60	60	67	
24		74	59	67	71	64	
25		76	62	69	79	74	
26		78	57	68	44	88	
27		87	57	70	42	86	
28		86	58	72	27	85	
29		85	60	72	29	84	
30	0.15	78	56	67	48	85	
31		81	68	74	160	84	
TOT.	0.19	2550	1931	2240	1,712		
MN.		82.3	62.3	72.3			

HYDROLOGIC DATA - PLANTATION FIELD LABORATORY
FORT LAUDERDALE, FLORIDA

DATE APR.	RAINFALL	AIR TEMP. (°F)			WIND	MEAN WTD. REL. HUM.	REMARKS
(MO.)	(IN.)	MAX.	MIN.	MN	(MI.)	%	
1963 (YR.)							
1	0.10	76	70	73	192	94	
2	0.05	78	70	74	176	97	
3		81	70	75	124	87	
4	0.02	82	63	72	82	92	
5		83	57	70	42	87	
6		84	60	72	24	85	
7		85	66	76	55	89	
8	0.64	81	57	69	53	90	
9		82	55	68	25	88	
10		85	57	71	55	83	
11		87	60	74	57	86	
12		90	63	76	44	—	
13		91	68	80	43	—	
14		90	52	71	51	—	
15		78	45	62	51	—	
16		79	48	64	35	65	
17		80	60	70	40	69	
18		79	60	70	50	80	
19		82	57	70	35	84	
20		84	56	70	51	85	
21		85	59	72	41	86	
22		86	59	72	32	87	
23		87	60	74	38	88	
24		87	61	74	42	90	
25		91	65	78	33	92	
26		89	64	76	35	89	
27		92	73	83	63	81	
28		84	71	78	83	80	
29		80	70	75	85	72	
30		82	70	76	77	77	
31							
TOT.	0.81	2520	1846	2185	1,814		
MN.		84.0	61.5	72.8			

HYDROLOGIC DATA - PLANTATION FIELD LABORATORY
FORT LAUDERDALE, FLORIDA

DATE JULY (MO.) 1963 (YR.)	RAINFALL (IN.)	AIR TEMP. (°F) MAX.	MIN.	MN	WIND (MI.)	MEAN WTD. REL. HUM. %	REMARKS
1		90	74	82	28	81	
2		90	73	82	32	—	
3		90	71	80	24	83	
4		93	72	82	48	84	
5	0.85	92	72	82	6	87	
6	0.05	93	72	82	17	—	
7		95	73	84	24	—	
8		97	73	85	26	—	
9	0.31	95	74	84	26	84	
10	0.17	93	71	82	30	86	
11		94	73	84	9	79	
12	0.23	91	72	82	19	91	
13		93	71	82	35	84	
14		91	74	82	22	82	
15		91	73	82	26	82	
16		91	73	82	38	—	
17		92	78	85	53	80	
18	0.47	92	75	84	85	85	
19		90	81	86	51	82	
20	0.73	90	69	80	27	87	
21		90	72	81	27	83	
22		95	76	86	33	85	
23		94	74	84	19	82	
24		93	72	82	51	84	
25	0.23	93	73	83	39	79	
26		93	78	86	64	—	
27	0.08	90	72	81	46	—	
28		90	74	82	21	—	
29		92	69	80	21	—	
30		92	72	82	23	81	
31	0.08	92	72	82	—	84	
TOT.	3.20	2857	2268	2563	970		
MN.		92.2	73.2	82.7			

HYDROLOGIC DATA - PLANTATION FIELD LABORATORY
FORT LAUDERDALE, FLORIDA

DATE AUG. (MO.) 1963 (YR.)	RAINFALL (IN.)	AIR TEMP. (°F) MAX.	MIN.	MN	WIND (MI.)	MEAN WTD. REL. HUM. %	REMARKS
1	0.04	91	71	81	28	82	
2		93	71	82	28	81	
3	0.04	92	71	82	40	81	
4		92	74	83	30	80	
5	0.10	92	77	84	71	—	
6	0.30	91	75	83	40	86	
7		90	74	82	38	84	
8		92	70	81	34	79	
9		95	71	83	25	75	
10		98	73	86	24	79	
11		96	72	84	33	76	
12	0.46	96	72	84	11	84	
13		94	75	84	27	84	
14	0.05	94	74	84	29	87	
15		92	74	83	26	86	
16		94	73	84	29	81	
17	T	94	73	84	22	80	
18	0.03	94	73	84	21	87	
19	0.09	92	71	82	28	88	
20	1.43	92	70	81	30	88	
21	1.02	92	72	82	18	91	
22	0.26	92	71	82	15	95	
23	0.20	90	70	80	10	92	
24		92	73	82	25	85	
25		92	72	82	19	—	
26		93	74	84	7	—	
27	0.11	93	73	83	15	89	
28	0.48	92	75	84	20	87	
29		90	76	83	43	78	
30		90	74	82	49	79	
31		90	74	82	60	81	
TOT.	4.61	2870	2258	2567	895		
MN.		92.6	72.8	82.8			

HYDROLOGIC DATA - PLANTATION FIELD LABORATORY
FORT LAUDERDALE, FLORIDA

DATE Nov.	RAINFALL	AIR TEMP. (°F)			WIND	MEAN WTD. REL. HUM.	REMARKS
(MO.)	(IN.)	MAX.	MIN.	MN	(MI.)	%	
1963 (YR.)							
1		78	57	68	19	76	
2		82	60	71	30	80	
3		81	53	67	12	83	
4		77	70	74	44	68	
5	0.01	80	72	76	28	85	
6	0.55	81	69	75	13	96	
7	T	85	60	72	22	87	
8		82	53	68	17	81	
9		81	59	70	18	81	
10	0.06	82	68	75	38	94	
11	0.13	81	68	74	20	96	
12	0.47	78	66	72	23	96	
13	T	81	60	70	27	91	
14		74	45	60	16	67	
15		64	41	52	9	66	
16		72	52	62	35	61	
17		75	66	70	47	68	
18		77	69	73	15	71	
19		79	71	75	32	81	
20		80	71	76	30	82	
21		–	72	–	36	76	
22		–	70	–	34	75	
23		77	62	70	18	82	
24		80	62	71	23	86	
25		83	61	72	8	84	
26		83	62	72	13	86	
27		82	63	72	17	88	
28		83	63	73	17	87	
29	0.08	81	68	74	32	90	
30		79	40	60	33	71	
31							
TOT.	1.30	2,218	1,853	1,964	726		
MN.		79.2	61.8	70.1			

HYDROLOGIC DATA - PLANTATION FIELD LABORATORY
FORT LAUDERDALE, FLORIDA

DATE DEC.	RAINFALL	AIR TEMP. (°F)			WIND	MEAN WTD. REL. HUM.	REMARKS
(MO.)	(IN.)	MAX.	MIN.	MN	(MI.)	%	
1963 (YR.)							
1		68	41	54	12	74	
2		67	43	55	2	66	
3		72	48	60	9	85	
4		76	51	64	9	86	
5		76	45	60	16	79	
6		70	42	56	14	69	
7		70	45	58	15	71	
8		61	51	56	18	76	
9		79	52	66	23	80	
10		67	38	52	10	76	
11		74	46	60	12	77	
12		77	51	64	14	86	
13		84	58	71	18	84	
14		82	58	70	16	88	
15		88	68	78	44	89	
16	0.01	72	60	66	9	96	
17	0.49	70	61	66	7	98	
18	0.50	66	61	64	9	98	
19		70	45	58	11	—	
20		71	45	58	10	—	
21		72	54	63	25	87	
22		76	52	64	20	83	
23		78	60	69	30	78	
24		76	54	65	11	94	
25		62	36	49	10	88	
26		63	36	50	7	81	
27		70	42	56	11	80	
28		77	46	59	16	80	
29		78	41	60	9	79	
30		69	48	58	33	84	
31	3.30	71	68	70	28	98	
TOT.	4.30	2,247	1,546	1,899	478		
MN.		72.5	49.9	61.2			

PART IV

Monthly Hydrologic Data

Plantation Field Laboratory

1963

Division 2 - Solar Radiation, Standard Pan Evaporation, Water Temperature

HYDROLOGIC DATA - PLANTATION FIELD LABORATORY
FORT LAUDERDALE, FLORIDA

DATE	SOLAR RADIATION			FREE WATER EVAP. - (CLASS A PAN)							
MAR (MO.) 1963 (YR.)	DURATION (HOURS)	TOT. INC. LIGHT	TOT. RADIATION (GUNN-BELLANI) UNITS	ALUM. (IN.)	BLACK (IN.)	WATER TEMP. (°F.)					
						ALUM.			BLACK		
						MAX.	MIN.	MN	MAX.	MIN.	MN
1	5.3	405	11.7	.14							
2	4.8	388	9.1	.12							
3	6.3	448	14.0	.14							
4	10.0	560	15.1	.22							
5	8.4	518	11.9	.18							
6	9.2	542	12.9	.21							
7	7.5	492	14.2	.30							
8	0.8	510	5.5	.16							
9	8.3	520	15.3	.24							
10	5.0	406	10.2	.11							
11	6.7	470	15.1	.22							
12	9.5	560	13.8	.22							
13	8.6	535	13.7	.19							
14	9.0	550	16.3	.23							
15	9.3	560	16.5	.22							
16	9.3	562	17.4	.25							
17	8.7	545	13.0	.22							
18	9.1	560	17.5	.26							
19	9.0	560	18.2	.24							
20	8.8	552	17.5	.27							
21	9.2	568	15.8	.35							
22	8.6	550	16.0	.33							
23	8.1	532	11.9	.28							
24	7.6	518	13.7	.20							
25	7.1	500	14.0	.26							
26	2.1	300	8.9	.17							
27	7.3	510	14.8	.21							
28	7.4	512	15.7	.23							
29	5.7	454	12.5	.18							
30	4.8	420	10.6	.27							
31	8.0	540	16.1	.28							
TOT.	229.5	15,647	427.9	6.90							
MN.	7.4		13.8	.22							

DATE	SOLAR RADIATION			FREE WATER EVAP. - (CLASS A PAN)							
APR (MO.) 1963 (YR.)	DURATION (HOURS)	TOT. INC. LIGHT	TOT. RADIATION (GUNN-BELLANI) UNITS	ALUM. (IN.)	BLACK (IN.)	WATER TEMP. (°F.)					
						ALUM.			BLACK		
						MAX.	MIN.	MN	MAX.	MIN.	MN
1	0.6	220	5.7	.16							
2	1.9	290	6.9	.22							
3	8.5	565	15.3	.28							
4	7.1	520	14.8	.25							
5	9.0	585	17.1	.23							
6	3.5	568	18.4	.24							
7	6.3	483	13.7	.23							
8	3.5	370	7.4	.19							
9	7.8	540	17.0	.19							
10	9.7	615	18.5	.30							
11	9.0	590	18.5	.27							
12	9.0	591	17.5	.24							
13	8.7	578	19.9	.29							
14	7.2	522	13.4	.28							
15	10.1	632	17.2	.34							
16	7.7	670	19.0	.26							
17	8.1	560	15.5	.24							
18	10.0	632	19.3	.29							
19	9.2	600	17.4	.24							
20	9.1	600	18.9	.27							
21	9.5	614	19.8	.28							
22	9.3	608	19.1	.28							
23	10.0	636	17.2	.28							
24	6.0	483	16.6	.28							
25	9.9	633	18.3	.25							
26	6.9	518	14.9	.22							
27	9.2	607	17.7	.29							
28	8.9	596	17.3	.34							
29	9.2	607	15.1	.37							
30	5.3	458	11.4	.28							
31											
TOT.	237.2	16,441	478.8	7.88							
MN.	7.9		16.0	.26							

HYDROLOGIC DATA - PLANTATION FIELD LABORATORY
FORT LAUDERDALE, FLORIDA

DATE	SOLAR RADIATION			FREE WATER EVAP. - (CLASS A PAN)							
JULY	DURATION	TOT. INC. LIGHT	TOT. RADIATION	ALUM.	BLACK	WATER TEMP. (°F.)					
(MO.) 1963	(HOURS)		(GUNN-BELLANI) UNITS	(IN.)	(IN.)	ALUM.			BLACK		
(YR.)						MAX.	MIN.	MN	MAX.	MIN.	MN
1	11.9	700	18.9	.28							
2	11.3	680	16.7	.28							
3	12.0	703	20.3	.29							
4	10.2	643	17.2	.27							
5	10.2	644	17.3	.25							
6	6.9	513	14.9	.23							
7	9.2	600	18.7	.27							
8	11.2	677	21.1	.31							
9	8.6	575	16.4	.30							
10	7.2	521	14.6	.23							
11	9.4	610	18.3	.27							
12	2.4	319	7.4	.14							
13	7.2	521	13.5	.19							
14	10.7	660	19.3	.29							
15	10.2	643	19.5	.30							
16	8.2	557	15.3	.25							
17	10.4	651	16.3	.28							
18	8.3	562	15.2	.31							
19	10.4	651	15.7	.31							
20	9.9	631	15.4	.34							
21	9.4	609	17.0	.25							
22	6.8	510	16.9	.25							
23	7.2	521	16.1	.26							
24	7.2	521	15.1	.23							
25	11.4	680	30.1	.28							
26	5.0	441	3.6	.28							
27	11.7	687	17.4	.32							
28	11.7	688	17.9	.29							
29	11.4	678	20.2	.29							
30	8.7	580	17.1	.28							
31	6.8	509	15.6	.26							
TOT.	283.1	18,485	519.0	8.38							
MN.	9.1		16.7	.27							

DATE	SOLAR RADIATION			FREE WATER EVAP. - (CLASS A PAN)							
AUG.	DURATION	TOT. INC. LIGHT	TOT. RADIATION	ALUM.	BLACK	WATER TEMP. (°F.)					
(MO.) 1963	(HOURS)		(GUNN-BELLANI) UNITS	(IN.)	(IN.)	ALUM.			BLACK		
(YR.)						MAX.	MIN.	MN	MAX.	MIN.	MN
1	10.8	659	18.1	.24							
2	9.0	590	16.1	.29							
3	9.9	628	18.0	.30							
4	10.5	650	17.3	.29							
5	11.6	679	18.0	.34							
6	9.0	590	14.0	.25							
7	10.7	652	16.7	.28							
8	11.9	683	19.9	.32							
9	9.9	624	19.0	.30							
10	8.6	575	16.0	.26							
11	10.6	646	17.7	.27							
12	9.4	602	15.9	.30							
13	8.4	567	15.6	.25							
14	6.3	485	10.3	.18							
15	5.3	444	12.5	.19							
16	7.5	531	14.9	.24							
17	7.6	534	16.6	.23							
18	3.2	354	7.9	.15							
19	5.9	464	9.6	.13							
20	5.9	463	12.6	.08							
21	3.2	352	8.7	.23							
22	4.1	390	7.1	.10							
23	5.8	456	7.6	.10							
24	8.0	543	15.3	.18							
25	9.9	610	15.3	.13							
26	8.4	558	14.2	.28							
27	6.2	470	10.6	.16							
28	6.4	477	12.7	.21							
29	11.2	641	17.0	.28							
30	10.4	620	18.0	.31							
31	10.3	615	16.0	.25							
TOT.	255.9	17,152	449.2	7.12							
MN.	8.3		14.5	.23							

HYDROLOGIC DATA - PLANTATION FIELD LABORATORY
FORT LAUDERDALE, FLORIDA

DATE	SOLAR RADIATION			FREE WATER EVAP. - (CLASS A PAN)							
Nov.	DURATION	TOT. INC. LIGHT	TOT. RADIATION	ALUM.	BLACK	WATER TEMP. (°F.)					
(MO.) 1963	(HOURS)		(GUNN-BELLANI) UNITS	(IN.)	(IN.)	ALUM.			BLACK		
(YR.)						MAX.	MIN.	MN	MAX.	MIN.	MN
1	8.5	454	10.3	.17							
2	8.8	461	10.9	.14							
3	6.5	393	8.2	.16							
4	7.7	429	11.3	.22							
5	1.7	230	3.7	.11							
6	1.8	242	5.3	.10							
7	6.2	380	8.4	.15							
8	8.2	436	11.8	.17							
9	8.7	447	12.1	.13							
10	3.6	304	7.1	.09							
11	0.2	158	2.2	.06							
12	0.6	174	2.7	.19							
13	3.4	285	6.4	.12							
14	9.2	449	9.9	.21							
15	9.6	457	8.8	.16							
16	7.7	409	9.7	.16							
17	5.0	334	8.2	.18							
18	7.8	408	8.4	.24							
19	8.0	412	8.9	.21							
20	7.7	402	9.9	.23							
21	5.0	330	7.5	.23							
22	8.8	426	10.6	.24							
23	6.5	358	7.4	.17							
24	4.5	308	7.5	.11							
25	4.3	300	7.0	.10							
26	7.5	389	9.9	.13							
27	7.6	390	8.0	.13							
28	7.9	396	8.8	.14							
29	2.9	257	6.3	.08							
30	4.6	306	4.7	.18							
31											
TOT.	180.5	10,774	241.9	4.71							
MN.	6.0		8.1	.16							

DATE	SOLAR RADIATION			FREE WATER EVAP. - (CLASS A PAN)							
DEC.	DURATION	TOT. INC. LIGHT	TOT. RADIATION	ALUM.	BLACK	WATER TEMP. (°F.)					
(MO.) 1963	(HOURS)		(GUNN-BELLANI) UNITS	(IN.)	(IN.)	ALUM.			BLACK		
(YR.)						MAX.	MIN.	MN	MAX.	MIN.	MN
1	8.5	405	7.9	.13							
2	8.5	403	9.1	.14							
3	7.0	367	7.2	.08							
4	3.6	274	6.4	.11							
5	5.8	339	6.9	.12							
6	8.3	394	8.7	.13							
7	8.2	391	9.8	.14							
8	3.6	272	6.7	.06							
9	6.9	358	8.7	.15							
10	8.4	390	8.0	.14							
11	8.4	390	9.0	.11							
12	8.5	391	9.4	.09							
13	8.3	386	10.0	.11							
14	8.4	387	9.9	.14							
15	8.1	380	8.7	.11							
16	0.1	143	1.9	.10							
17	0.0	140	0.6	.00							
18	0.0	140	0.5	.02							
19	1.1	183	3.2	.08							
20	8.1	379	8.1	.09							
21	6.4	341	7.6	.09							
22	5.9	329	8.0	.11							
23	8.8	395	9.0	.07							
24	1.5	200	3.5	.10							
25	3.5	266	4.5	.13							
26	8.8	397	7.1	.10							
27	8.5	393	7.5	.08							
28	8.4	392	9.1	.10							
29	6.3	343	8.7	.08							
30	8.3	392	4.9	.12							
31	8.3	393	4.9	.10							
TOT.	194.5	10,353	215.5	3.13							
MN.	6.3		7.0	.10							

PART IV

Monthly Hydrologic Data

Plantation Field Laboratory

1963

Division 3 - Evapotranspiration of Tifway Bermudagrass at 12-, 18-, 24-, and 36-inch depth - 12/31/62 to 12/31/63

HYDROLOGIC DATA - PLANTATION FIELD LABORATORY
FORT LAUDERDALE FLA.

DATE	EVAPOTRANSPIRATION *															AVG. WATER CONTENT		
JULY	W.T. LEVEL - 12 "					W.T. LEVEL - 24 "					W.T. LEVEL - 36 "					UPPER FT. SOIL **		
(MO)	1	2	3	4	AVG.	1	2	3	4	AVG.	1	2	3	4	AVG.	"W.T.	"W.T.	"W.T.
1963	(IN)					(IN)					(IN)					(IN)	(IN)	(IN)
(YR)	3	4	9	12		1	6	8	11		2	5	7	10				
1	.17	.19	.16	.20	.18	.15	.17	.19	.12	.18	.10	.07	.14	.12	.11			
2	.11	.10	.09	.16	.12	.10	.13	.14	.07	.11	.12	.07	.08	.08	.09			
3	.14	.13	.13	.16	.14	.08	.25	.11	.03	.13	.14	.08	.14	.12	.12			
4	.15	.16	.15	.17	.16	.17	.19	.18	.18	.18	.20	.19	.21	.17	.19			
5	.15	.16	.16	.16	.16	.17	.19	.18	.18	.18	.20	.19	.21	.17	.19			
6	.15	.15	.16	.17	.16	.18	.18	.18	.19	.18	.20	.18	.22	.16	.19			
7	.15	.16	.16	.17	.16	.17	.19	.18	.18	.18	.20	.19	.21	.17	.19			
8	.15	.16	.16	.17	.16	.17	.19	.18	.18	.18	.20	.19	.21	.17	.19			
9	.15	.16	.16	.17	.16	.16	.23	.17	.20	.19	.20	.20	.20	.21	.20			
10	.15	.16	.15	.17	.16	.17	.19	.17	.19	.18	.20	.20	.20	.20	.20			
11	.15	.16	.15	.17	.16	.16	.18	.17	.20	.18	.20	.20	.20	.21	.20			
12	.13	.13	.11	.13	.12	.10	.08	.10	.13	.10	.09	.13	.17	.19	.14			
13	.14	.13	.12	.14	.13	.11	.14	.11	.12	.12	.02	.14	.18	.06	.10			
14	.14	.13	.11	.17	.14	.10	.14	.15	.11	.12	.18	.05	.07	.06	.09			
15	.16	.13	.15	.18	.16	.15	.11	.18	.14	.14	.28	.05	.07	.05	.11			
16	.15	.23	.13	.17	.17	.05	.16	.08	.10	.12	.16	.12	.12	.06	.12			
17	.12	.11	.10	.13	.12	.14	.07	.16	.11	.10	.25	.18	.06	.06	.14			
18	.20	.18	.19	.22	.20	.18	.30	.22	.25	.24	.26	.25	.22	.27	.25			
19	.20	.19	.19	.21	.20	.18	.31	.23	.26	.24	.06	.26	.23	.28	.21			
20	.21	.19	.13	.20	.18	.19	.18	.18	.16	.18	.17	.18	.22	.12	.17			
21	.20	.19	.14	.20	.18	.18	.19	.17	.17	.18	.17	.19	.23	.15	.18			
22	.12	.15	.13	.14	.14	.19	.18	.18	.16	.18	.16	.18	.22	.10	.16			
23	.15	.14	.14	.17	.15	.18	.19	.21	.17	.19	.17	.19	.23	.12	.18			
24	.14	.13	.10	.15	.13	.11	.10	.13	.08	.10	.17	.18	.22	.12	.17			
25	.17	.16	.15	.18	.17	.14	.17	.18	.16	.16	.10	.09	.13	.18	.12			
26	.18	.17	.18	.18	.18	.14	.16	.17	.16	.16	.10	.10	.12	.19	.13			
27	.15	.16	.12	.16	.15	.23	.25	.26	.21	.24	.18	.24	.22	.18	.20			
28	.13	.10	.16	14	.13	.10	.14	.10	.08	.10	.16	.10	.16	.09	.13			
29	.08	.10	.09	.07	.08	.10	.12	.11	.11	.11	.20	.18	.20	.08	.16			
30	.13	.12	.12	.14	.13	.10	.13	.14	.10	.12	.09	.05	.07	.09	.08			
31	.21	.21	.18	.23	.21	.10	.12	.14	.11	.12	.09	.06	.08	.09	.08			
TOT.	4.73	4.77	4.40	5.18	4.77	4.45	5.33	5.05	4.67	4.88	5.02	4.68	5.24	4.32	4.82			
MEAN	.15	.15	.14	.17	.15	.14	.17	.16	.15	.16	.16	.15	.17	.14	.16			

* - TIFWAY BERMUDAGRASS
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DATE	EVAPOTRANSPIRATION *															AVG. WATER CONTENT		
AUG	W.T. LEVEL - 12 "					W.T. LEVEL - 24 "					W.T. LEVEL - 36 "					UPPER FT. SOIL **		
(MO)	1	2	3	4	AVG.	1	2	3	4	AVG.	1	2	3	4	AVG.	"W.T.	"W.T.	"W.T.
1963	(IN)					(IN)					(IN)					(IN)	(IN)	(IN)
(YR)	3	4	9	12		1	6	8	11		2	5	7	10				
1	.16	.14	.15	.18	.16	.12	.11	.13	.10	.12	.08	.09	.14	.09	.10			
2	.15	.14	.16	.18	.16	.12	.12	.13	.11	.12	.09	.08	.14	.09	.10			
3	.20	.20	.18	.21	.20	.12	.14	.19	.13	.14	.09	.16	.14	.10	.10			
4	.14	.13	.16	.16	.15	.12	.15	.17	.13	.14	.10	.15	.14	.12	.13			
5	.14	.12	.16	.17	.15	.13	.15	.17	.12	.14	.17	.16	.14	.12	.15			
6	.13	.13	.18	.09	.13	.11	.13	.17	.13	.14	.18	.15	.16	.17	.16			
7	.14	.12	.18	.10	.14	.12	.14	.17	.13	.14	.18	.16	.17	.18	.17			
8	.14	.13	.18	.20	.16	.12	.13	.13	.08	.12	.18	.15	.16	.18	.17			
9	.20	.17	.18	.19	.18	.12	.14	.14	.08	.12	.13	.16	.17	.13	.15			
10	.18	.16	.16	.19	.17	.13	.14	.14	.10	.13	.12	.15	.16	.12	.14			
11	.18	.18	.17	.19	.18	.14	.15	.14	.10	.13	.15	.16	.17	.12	.15			
12	.12	.10	.09	.12	.11	.14	.15	.16	.10	.14	.16	.16	.16	.16	.16			
13	.11	.11	.08	.13	.11	.14	.15	.16	.10	.14	.15	.16	.15	.16	.16			
14	.11	.10	.09	.11	.10	.14	.15	.12	.10	.13	.15	.16	.16	.16	.16			
15	.12	.11	.09	.12	.11	.07	.08	.12	.10	.09	.15	.16	.15	.16	.16			
16	.14	.13	.14	.16	.14	.10	.12	.12	.07	.10	.08	.16	.16	.16	.14			
17	.15	.14	.14	.16	.15	.11	.11	.14	.08	.11	.07	.16	.16	.11	.12			
18	.10	.10	.10	.11	.10	.12	.14	.11	.11	.12	.12	.16	.18	.11	.14			
19	.10	.10	.10	.10	.10	.13	.14	.11	.11	.12	.12	.17	.19	.10	.14			
20	.10	.09	.10	.11	.10	.11	.11	.11	.11	.11	.18	.16	.18	.17	.17			
21	.10	.09	.09	.10	.10	.10	.10	.12	.12	.11	.19	.17	.19	.17	.18			
22	.10	.09	.10	.10	.10	.11	.11	.11	.11	.11	.18	.16	.18	.18	.18			
23	.10	.09	.10	.10	.10	.11	.10	.11	.12	.11	.19	.17	.19	.18	.18			
24	.10	.09	.10	.10	.10	.11	.10	.11	.11	.11	.18	.16	.18	.18	.18			
25	.11	.09	.10	.10	.10	.11	.10	.11	.11	.11	.19	.17	.18	.18	.18			
26	.11	.10	.12	.12	.11	.06	.10	.11	.08	.12	.18	.16	.18	.18	.18			
27	.13	.11	.13	.13	.12	.14	.13	.13	.11	.13	.19	.17	.15	.16	.17			
28	.14	.11	.12	.14	.13	.15	.14	.14	.12	.14	.18	.16	.14	.16	.16			
29	.14	.11	.13	.14	.13	.15	.13	.13	.11	.13	.19	.17	.15	.16	.17			
30	.14	.14	.12	.16	.14	.08	.11	.14	.12	.11	.18	.16	.14	.16	.16			
31	.15	.14	.17	.17	.16	.08	.11	.14	.11	.11	.24	.16	.15	.15	.18			
TOT.	4.13	3.76	4.07	4.34	4.08	3.61	3.88	4.13	3.31	3.74	4.74	4.83	5.01	4.57	4.79			
MEAN	.13	.12	.13	.14	.13	.12	.13	.14	.11	.12	.15	.16	.16	.15	.15			

* - TIFWAY BERMUDAGRASS
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HYDROLOGIC DATA - PLANTATION FIELD LABORATORY
FORT LAUDERDALE FLA.

DATE	EVAPOTRANSPIRATION *															AVG. WATER CONTENT		
MAR	W.T. LEVEL - 12"					W.T. LEVEL - 24"					W.T. LEVEL - 36"					UPPER FT. SOIL **		
(MO)	1	2	3	4	AVG.	1	2	3	4	AVG.	1	2	3	4	AVG.	"W.T.	"W.T.	"W.T.
1963	(IN)					(IN)					(IN)					(IN)	(IN)	(IN)
(YR)	3	4	9	12		1	6	8	11		2	5	7	10				
1	.07	.08	.07	.08	.08	.11	.10	.08	.05	.09	.09	.06	.05	.08	.07			
2	.08	.08	.06	.07	.07	.05	.07	.08	.07	.07	.04	.03	.06	.05	.05			
3	.14	.14	.15	.14	.14	.10	.11	.08	.06	.09	.04	.17	.03	.03	.07			
4	.20	.22	.20	.20	.21	.21	.18	.19	.20	.20	.08	.17	.20	.24	.17			
5	.05	.05	.04	.05	.05	.04	.03	.04	.04	.04	.09	.05	.06	.01	.05			
6	.06	.05	.05	.05	.05	.04	.04	.05	.05	.05	.08	.06	.06	.01	.05			
7	.21	.23	.22	.21	.22	.19	.21	.18	.16	.19	.16	.05	.06	.14	.10			
8	.09	.06	.06	.07	.07	.04	.02	.03	.05	.04	.04	.09	.04	.04	.05			
9	.17	.17	.18	.17	.18	.14	.18	.16	.11	.15	.09	.08	.04	.09	.08			
10	.07	.07	.04	.02	.05	.04	.10	.02	.09	.06	.06	.07	.06	.08	.07			
11	.16	.17	.17	.13	.17	.17	.11	.17	.11	.14	.16	.07	.16	.04	.11			
12	.14	.14	.12	.13	.13	.09	.08	.09	.10	.09	.07	.10	.07	.20	.11			
13	.14	.13	.13	.12	.13	.13	.14	.12	.10	.12	.10	.14	.08	.10	.11			
14	.16	.16	.15	.15	.16	.12	.14	.12	.12	.13	.14	.13	.10	.12	.12			
15	.14	.13	.12	.13	.13	.14	.12	.08	.12	.12	.09	.11	.14	.12	.12			
16	.17	.18	.17	.18	.18	.14	.16	.17	.12	.15	.14	.18	.05	.06	.11			
17	.17	.15	.12	.14	.15	.14	.15	.09	.11	.12	.06	.02	.20	.16	.11			
18	.18	.18	.19	.16	.18	.16	.18	.18	.16	.17	.22	.30	.08	.16	.19			
19	.13	.12	.11	.14	.13	.13	.09	.08	.11	.10	.08	.08	.13	.20	.12			
20	.16	.17	.15	.14	.16	.14	.18	.17	.11	.15	.14	.12	.10	.08	.11			
21	.21	.21	.20	.21	.21	.18	.19	.15	.15	.17	.15	.22	.16	.18	.18			
22	.23	.24	.23	.23	.23	.19	.18	.17	.15	.17	.13	.12	.08	.14	.09			
23	.18	.17	.17	.12	.16	.09	.10	.11	.10	.10	.07	.15	.12	.05	.10			
24	.16	.14	.12	.19	.15	.20	.17	.12	.11	.15	.16	.02	.14	.10	.11			
25	.15	.17	.15	.15	.16	.08	.16	.16	.12	.13	.08	.28	.06	.22	.16			
26	.12	.10	.10	.02	.09	.05	.12	.09	.03	.07	.07	.13	.09	.06	.09			
27	.13	.11	.10	.19	.13	.17	.12	.09	.13	.13	.11	.12	.04	.06	.08			
28	.15	.13	.13	.15	.14	.29	.06	.11	.13	.15	.12	.13	.20	.18	.16			
29	.11	.11	.09	.10	.10	.04	.05	.10	.07	.07	.11	.12	.04	.01	.07			
30	.14	.14	.13	.13	.14	.21	.22	.16	.18	.19	.11	.11	.16	.25	.13			
31	.15	.14	.12	.14	.14	.14	.15	.16	.10	.14	.18	.12	.14	.10	.14			
TOT.	4.42	4.34	4.04	4.16	4.24	3.96	3.93	3.60	3.31	3.70	3.26	3.60	3.00	3.36	3.30			
MEAN	.14	.14	.13	.13	.14	.13	.13	.12	.11	.12	.11	.12	.10	.11	.11			

* - TIFWAY BERMUDAGRASS
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DATE	EVAPOTRANSPIRATION *															AVG. WATER CONTENT		
APR	W.T. LEVEL - 12"					W.T. LEVEL - 24"					W.T. LEVEL - 36"					UPPER FT. SOIL **		
(MO)	1	2	3	4	AVG.	1	2	3	4	AVG.	1	2	3	4	AVG.	"W.T.	"W.T.	"W.T.
1963	(IN)					(IN)					(IN)					(IN)	(IN)	(IN)
(YR)	3	4	9	12		1	6	8	11		2	5	7	10				
1	.06	.06	.03	.02	.04	.08	.15	.03	.12	.10	.06	.08	.04	.08	.07			
2	.19	.19	.20	.21	.20	.17	.18	.19	.11	.16	.15	.07	.15	.11	.12			
3	.15	.16	.15	.16	.16	.11	.08	.13	.12	.11	.17	.24	.12	.16	.17			
4	.13	.11	.11	.12	.12	.11	.15	.10	.09	.11	.05	.02	.08	.11	.07			
5	.14	.15	.14	.14	.14	.14	.16	.15	.13	.15	.15	.22	.12	.08	.14			
6	.14	.14	.11	.15	.14	.13	.07	.11	.09	.10	.06	.06	.12	.10	.09			
7	.07	.03	.04	.04	.05	.05	.06	.07	.09	.07	.12	.20	.04	.10	.12			
8	.16	.16	.15	.16	.16	.15	.17	.18	.19	.17	.24	.32	.29	.27	.28			
9	.16	.16	.16	.16	.16	.15	.18	.18	.19	.18	.24	.32	.29	.27	.28			
10	.17	.17	.15	.19	.17	.28	.28	.15	.13	.21	.30	.09	.02	.12	.13			
11	.17	.18	.15	.17	.17	.11	.12	.15	.11	.12	.01	.09	.10	.10	.08			
12	.16	.14	.14	.15	.15	.14	.16	.13	.13	.14	.15	.11	.12	.06	.11			
13	.19	.18	.17	.17	.18	.14	.12	.13	.11	.13	.07	.11	.02	.12	.08			
14	.17	.15	.14	.20	.17	.14	.22	.17	.10	.16	.08	.18	.24	.08	.15			
15	.22	.23	.23	.22	.23	.20	.16	.18	.20	.19	.20	.18	.10	.20	.17			
16	.20	.20	.18	.19	.19	.14	.20	.17	.15	.17	.10	.05	.18	.14	.11			
17	.16	.17	.14	.17	.16	.14	.12	.13	.13	.13	.12	.22	.06	.07	.12			
18	.17	.16	.15	.17	.16	.14	.20	[illegible]	.14	.16	.12	.08	.18	.18	.14			
19	.15	.16	.13	.15	.15	.14	.12	.13	.11	.13	.10	.18	.11	.06	.11			
20	.17	.22	.15	.17	.18	.14	.19	.17	.11	.15	.14	.16	.06	.12	.12			
21	.18	.12	.17	.18	.16	.14	.16	.16	.20	.17	.06	.10	.24	.12	.13			
22	.19	.18	.14	.16	.17	.19	.19	.14	.12	.16	.26	.28	.06	.20	.20			
23	.16	.16	.17	.17	.17	.10	.15	.16	.15	.14	.05	.07	.23	.14	.12			
24	.18	.19	.15	.18	.18	.20	.20	.16	.15	.18	.20	.24	.08	.11	.16			
25	.17	.17	.16	.17	.17	.14	.14	.12	.14	.14	.10	.15	.18	.12	.16			
26	.15	.14	.11	.17	.14	.10	.14	.14	.11	.12	.12	.10	.08	.12	.11			
27	.19	.21	.19	.18	.19	.19	.22	.17	.11	.17	.14	.20	.12	.08	.16			
28	.22	.19	.19	.22	.21	.18	.22	.17	.21	.20	.16	.28	.22	.20	.22			
29	.20	.22	.21	.19	.21	.17	.18	.18	.16	.17	.16	.13	.08	.16	.13			
30	.14	.12	.11	.14	.13	.07	.08	.06	.08	.07	.07	.12	.15	.01	.09			
31																		
TOT.	4.92	4.85	4.42	4.87	4.76	4.28	4.77	4.27	3.98	4.32	3.95	4.63	3.88	3.79	4.06			
MEAN	.16	.16	.15	.16	.16	.14	.16	.14	.13	.14	.13	.15	.13	.13	.14			

* - TIFWAY BERMUDAGRASS
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HYDROLOGIC DATA - PLANTATION FIELD LABORATORY
FORT LAUDERDALE FLA.

DATE	EVAPOTRANSPIRATION *															AVG. WATER CONTENT		
NOV.	W.T. LEVEL - 12"					W.T. LEVEL - 24"					W.T. LEVEL - 36"					UPPER FT. SOIL **		
(MO)	1	2	3	4	AVG.	1	2	3	4	AVG.	1	2	3	4	AVG.	"W.T.	"W.T.	"W.T.
1963	(IN)					(IN)					(IN)					(IN)	(IN)	(IN)
(YR)	3	4	9	12		1	6	8	11		2	5	7	10				
1	.09	.09	.08	.09	.09	.05	.06	.08	.03	.06	.05	.04	.05	.05	.05			
2	.09	.08	.08	.03	.08	.09	.06	.08	.03	.06	.06	.04	.04	.05	.05			
3	.12	.12	.09	.10	.11	.07	.09	.08	.04	.07	.05	.04	.05	.05	.05			
4	.08	.07	.10	.11	.09	.10	.08	.07	.03	.07	.05	.04	.04	.04	.04			
5	.06	.04	.05	.05	.05	.05	.09	.07	.04	.06	.12	.04	.05	.05	.06			
6	.06	.05	.05	.06	.06	.05	.10	.11	.08	.08	.11	.13	.11	.15	.12			
7	.06	.04	.05	.05	.05	.05	.10	.12	.08	.09	.12	.12	.12	.16	.13			
8	.11	.10	.11	.12	.11	.05	.09	.11	.08	.08	.12	.13	.12	.15	.13			
9	.09	.10	.09	.09	.09	.05	.04	.07	.05	.05	.12	.12	.12	.12	.12			
10	.09	.09	.08	.08	.08	.10	.05	.09	.05	.07	.12	.13	.12	.13	.12			
11	.09	.10	.09	.09	.09	.10	.11	.11	.09	.10	.14	.11	.13	.12	.12			
12	.09	.09	.08	.08	.08	.09	.11	.11	.09	.10	.13	.11	.14	.13	.13			
13	.09	.10	.09	.09	.09	.10	.12	.11	.09	.10	.14	.11	.13	.13	.13			
14	.17	.15	.13	.15	.15	.10	.11	.06	.09	.09	.13	.11	.13	.13	.12			
15	.13	.13	.14	.10	.12	.07	.07	.08	.03	.06	.14	.11	.13	.03	.10			
16	.06	.08	.07	.08	.07	.05	.05	.05	.02	.04	.03	.11	.04	.02	.05			
17	.11	.08	.08	.07	.08	.05	.06	.04	.04	.05	.03	.10	.04	.03	.05			
18	.07	.07	.08	.08	.08	.05	.07	.04	.03	.05	.03	.03	.04	.03	.03			
19	.09	.03	.08	.08	.08	.05	.07	.06	.03	.05	.03	.04	.04	.03	.04			
20	.08	.07	.08	.07	.08	.08	.06	.06	.04	.06	.03	.03	.04	.03	.03			
21	.07	.08	.07	.06	.07	.03	.05	.05	.02	.04	.03	.04	.03	.02	.03			
22	.07	.07	.07	.08	.07	.03	.04	.04	.02	.03	.03	.03	.04	.03	.03			
23	.08	.08	.05	.07	.07	.04	.03	.04	.01	.03	.03	.04	.03	.02	.03			
24	.05	.07	.05	.07	.06	.04	.04	.03	.02	.03	.02	.05	.04	.03	.04			
25	.09	.07	.07	.06	.07	.06	.09	.07	.04	.06	.03	.04	.03	.02	.03			
26	.07	.08	.08	.09	.08	.05	.06	.06	.03	.05	.03	.05	.04	.03	.04			
27	.09	.08	.09	.08	.08	.05	.06	.05	.05	.05	.04	.04	.03	.05	.04			
28	.09	.09	.08	.09	.09	.04	.08	.06	.04	.06	.03	.05	.04	.06	.04			
29	.09	.10	.09	.09	.09	.03	.08	.06	.05	.06	.04	.04	.08	.05	.05			
30	.09	.09	.08	.09	.09	.04	.08	.06	.03	.05	.03	.04	.08	.05	.05			
31																		
TOT.	2.62	2.54	2.43	2.50	2.52	1.81	2.20	2.12	1.37	1.88	2.06	2.11	2.12	1.99	2.07			
MEAN	.09	.08	.08	.08	.08	.06	.07	.07	.05	.06	.07	.07	.07	.07	.07			

* - TIFWAY BERMUDAGRASS

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DATE	EVAPOTRANSPIRATION *															AVG. WATER CONTENT		
DEC.	W.T. LEVEL - 12"					W.T. LEVEL - 24"					W.T. LEVEL - 36"					UPPER FT. SOIL **		
(MO)	1	2	3	4	AVG.	1	2	3	4	AVG.	1	2	3	4	AVG.	"W.T.	"W.T.	"W.T.
1963	(IN)					(IN)					(IN)					(IN)	(IN)	(IN)
(YR)	3	4	9	12		1	6	8	11		2	5	7	10				
1	.11	.10	.10	.10	.10	.09	.06	.06	.02	.06	.04	.06	.04	.05	.05			
2	.11	.10	.10	.10	.10	.03	.06	.05	.02	.06	.03	.05	.03	.05	.04			
3	.05	.05	.04	.05	.05	.04	.04	.04	.02	.04	.04	.06	.03	.03	.04			
4	.04	.04	.04	.06	.04	.04	.03	.05	.02	.04	.03	.05	.03	.03	.04			
5	.08	.08	.07	.05	.07	.09	.05	.05	.02	.05	.04	.06	.03	.02	.04			
6	.12	.12	.12	.13	.12	.09	.08	.09	.06	.08	.08	.05	.08	.06	.07			
7	.13	.12	.13	.13	.13	.09	.08	.09	.07	.08	.07	.06	.07	.07	.07			
8	.06	.06	.06	.05	.06	.03	.08	.08	.07	.06	.08	.05	.08	.06	.07			
9	.06	.06	.07	.04	.06	.07	.06	.06	.07	.06	.07	.05	.07	.06	.06			
10	.10	.08	.07	.10	.09	.04	.06	.06	.02	.04	.07	.04	.07	.06	.06			
11	.05	.05	.05	.06	.05	.06	.04	.06	.02	.04	.04	.05	.05	.06	.05			
12	.07	.06	.05	.06	.06	.04	.05	.05	.02	.04	.03	.04	.04	.06	.04			
13	.02	.04	.05	.05	.04	.06	.04	.06	.02	.04	.04	.04	.05	.06	.05			
14	.09	.06	.05	.04	.06	.06	.05	.05	.02	.04	.03	.04	.04	.04	.04			
15	.06	.04	.04	.05	.06	.05	.05	.06	.02	.04	.03	.04	.05	.04	.04			
16	.06	.05	.05	.04	.05	.07	.06	.06	.02	.05	.05	.04	.04	.07	.05			
17	.05	.04	.04	.05	.04	.08	.05	.07	.06	.06	.10	.10	.09	.08	.09			
18	.06	.04	.03	.04	.04	.07	.04	.07	.07	.06	.11	.11	.08	.08	.10			
19	.06	.04	.04	.05	.05	.07	.05	.07	.06	.06	.10	.10	.09	.08	.09			
20	.06	.05	.08	.05	.06	.03	.05	.03	.06	.04	.11	.10	.08	.07	.09			
21	.04	.09	.10	.07	.08	.02	.05	.04	.02	.03	.11	.10	.09	.08	.10			
22	.07	.06	.10	.07	.08	.03	.05	.03	.01	.03	.11	.10	.08	.07	.09			
23	.07	.06	.03	.04	.05	.04	.05	.05	.01	.04	.11	.10	.09	.07	.09			
24	.07	.09	.04	.04	.06	.04	.06	.05	.03	.04	.03	.04	.08	.07	.06			
25	.11	.08	.09	.06	.08	.05	.05	.05	.02	.04	.02	.03	.04	.04	.03			
26	.11	.09	.09	.07	.09	.06	.10	.07	.03	.04	.03	.03	.04	.04	.04			
27	.05	.06	.04	.06	.05	.06	.11	.06	.04	.04	.02	.03	.03	.04	.03			
28	.04	.07	.04	.06	.05	.06	.06	.06	.03	.05	.03	.03	.03	.04	.03			
29	.04	.05	.04	.06	.05	.07	.07	.03	.03	.05	.02	.03	.03	.04	.03			
30	.07	.07	.06	.06	.06	.06	.06	.06	.03	.05	.06	.06	.06	.06	.06			
31	.07	.07	.07	.07	.07	.07	.07	.06	.04	.06	.06	.06	.06	.06	.06			
TOT.	2.15	2.12	1.98	1.96	2.06	1.81	1.81	1.77	1.06	1.61	1.79	1.80	1.77	1.74	1.78			
MEAN	.07	.07	.06	.06	.07	.06	.06	.06	.03	.05	.06	.06	.06	.06	.06			

* - TIFWAY BERMUDAGRASS

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PART V

Monthly Hydrologic Data

Everglades Experiment Station

1963

Division 1 - Rainfall, Air Temperature, Wind

HYDROLOGIC DATA - EVERGLADES EXPERIMENT STATION
BELLE GLADE, FLORIDA

DATE MAR	RAINFALL	AIR TEMP. (°F)			WIND	MAX. - MIN. REL. HUM.		REMARKS
MO. 1963 (YR.)	(IN.)	MAX.	MIN.	MN	(MI.)	(%)		
1		74	51	62.5	35	100	51	
2	0.02	81	62	71.5	116	100	68	
3		86	58	72.0	79	100	54	
4		85	63	74.0	58	100	63	
5		83	61	72.0	63	100	62	
6		85	63	74.0	116	100	57	
7	0.12	85	56	70.5	101	100	58	
8	0.10	65	51	58.0	35	99	69	
9		75	56	62.5	71	100	55	
10	0.10	80	58	69.0	68	100	64	
11		82	60	71.0	40	100	65	
12		85	61	73.6	68	100	64	
13		87	64	75.5	71	100	58	
14		88	62	75.0	26	100	53	
15		87	68	77.5	19	100	51	
16		84	59	71.5	49	100	68	
17		85	61	73.0	73	100	60	
18		88	61	74.5	30	100	51	
19		86	61	73.5	17	100	55	
20		87	62	74.5	58	100	54	
21		87	57	72.0	160	100	52	
22		71	47	59.0	153	66	42	
23		67	40	53.5	89	100	50	
24		74	40	57.0	72	100	50	
25		75	50	62.5	40	100	50	
26		76	52	64.0	56	100	70	
27		82	56	69.0	51	100	54	
28		84	59	71.5	43	100	48	
29		83	58	70.5	49	100	55	
30	0.08	79	55	67.0	81	100	59	
31		81	60	70.5	138	100	56	
TOT.	0.42	2,517	1,766	—	2,115	—		
MN.		81.2	57.0	69.1		—		

HYDROLOGIC DATA - EVERGLADES EXPERIMENT STATION
BELLE GLADE, FLORIDA

DATE APR	RAINFALL	AIR TEMP. (°F)			WIND	MAX. - MIN. REL. HUM.		REMARKS
MO. 1963 (YR.)	(IN.)	MAX.	MIN.	MN	(MI.)	(%)		
1	0.03	79	59	69.0	148	100	67	
2		79	61	70.0	130	100	69	
3		81	56	68.5	84	100	58	
4		82	56	69.0	65	100	58	
5		84	54	69.0	27	100	58	
6		84	54	69.0	31	100	56	
7	0.25	86	62	74.0	107	100	49	
8		80	56	68.0	119	100	54	
9		79	54	66.5	45	100	53	
10		84	58	71.0	90	100	46	
11		87	61	74.0	110	100	53	
12		88	62	75.0	89	100	54	
13		90	66	78.0	104	100	56	
14		85	58	71.5	156	98	49	
15		75	46	60.5	58	100	40	
16		76	46	61.0	53	98	41	
17		79	50	64.5	52	100	54	
18		80	51	65.5	53	100	53	
19		84	52	68.0	42	100	54	
20		87	55	71.0	50	100	50	
21		88	57	72.5	48	100	52	
22		89	61	75.0	62	100	54	
23		89	61	75.0	62	100	56	
24		89	60	74.5	63	100	52	
25		89	66	77.5	38	100	54	
26		86	65	75.5	52	99	62	
27		87	62	74.5	48	99	42	
28		83	60	71.5	66	99	55	
29		80	58	69.0	74	99	50	
30		80	58	69.0	73	97	52	
31								
TOT.	0.28	2,509	1,725	—	2,199	—		
MN.		83.6	57.5	70.5		—		

HYDROLOGIC DATA - EVERGLADES EXPERIMENT STATION
BELLE GLADE, FLORIDA

DATE JULY	RAINFALL	AIR TEMP. (°F)			WIND	MAX. - MIN. REL. HUM.		REMARKS
MO. 1963 (YR.)	(IN.)	MAX.	MIN.	MN	(MI.)	(%)		
1		90	70	80.0	26	100	68	
2		90	70	80.0	45	100	60	
3		90	70	80.0	22	100	54	
4		91	71	81.0	24	100	60	
5	0.32	92	70	81.0	19	100	58	
6	0.01	92	72	82.0	2	100	60	
7		93	74	83.5	16	100	54	
8		93	73	83.0	25	100	60	
9		93	72	82.5	45	100	54	
10		92	70	81.0	24	100	52	
11		90	71	80.5	96	100	58	
12	0.05	89	69	79.0	20	100	60	
13		94	69	81.5	21	100	46	
14	0.26	90	68	79.0	18	100	62	
15		92	69	80.5	20	100	61	
16	0.08	92	71	81.5	17	100	56	
17	0.16	88	71	79.5	18	100	68	
18		92	71	81.5	47	100	54	
19		92	71	81.5	59	100	58	
20		93	69	81.0	51	100	58	
21	0.04	92	74	83.0	23	100	60	
22		93	74	83.5	55	100	52	
23		92	72	82.0	61	100	52	
24		89	72	80.5	37	100	56	
25		92	69	80.5	39	100	51	
26		92	72	82.0	61	100	57	
27		91	71	81.0	70	100	58	
28	0.01	91	69	80.0	41	100	—	
29	0.01	91	69	80.0	32	100	54	
30	0.03	87	70	78.5	13	99	70	
31	0.81	88	67	77.5	23	100	60	
TOT.	1.78	2,826	2,190	—	1,070			
MN.		91.2	70.6	80.9				

HYDROLOGIC DATA - EVERGLADES EXPERIMENT STATION
BELLE GLADE, FLORIDA

DATE AUG	RAINFALL	AIR TEMP. (°F)			WIND	MAX. - MIN. REL. HUM.		REMARKS
MO. 1963 (YR.)	(IN.)	MAX.	MIN.	MN	(MI.)	(%)		
1	0.66	90	69	79.5	24	99	54	
2		93	69	81.0	28	99	95	
3	0.03	92	69	80.5	18	99	96	
4	1.08	90	71	80.5	23	99	52	
5	0.10	91	73	82.0	60	99	—	
6		90	71	80.5	30	99	60	
7		93	71	82.0	55	100	52	
8		90	68	79.0	27	100	55	
9		94	72	83.0	36	97	39	
10		93	71	82.0	43	98	52	
11		94	75	84.5	61	95	47	
12		94	72	83.0	36	98	48	
13		95	72	83.5	41	100	44	
14	0.02	91	73	82.0	40	98	54	
15	0.01	94	72	83.0	36	100	55	
16		93	73	83.0	33	100	53	
17	0.57	94	70	82.0	33	100	54	
18		90	70	80.0	15	100	76	
19	1.10	91	67	79.0	22	100	55	
20	0.73	91	70	80.5	18	100	54	
21	0.13	88	69	78.5	27	100	70	
22	0.20	89	68	78.5	25	100	75	
23		89	68	78.5	19	100	80	
24		91	71	81.0	26	100	50	
25		92	70	81.0	34	100	48	
26	0.01	92	70	81.0	31	100	52	
27		92	70	81.0	9	100	51	
28	0.30	90	72	81.0	50	100	80	
29		92	70	81.0	48	100	67	
30		93	72	82.5	49	100	65	
31	0.01	90	70	80.0	39	100	59	
TOT.	4.95	2,841	2,188		1,036	—		
MN.		91.6	70.6	81.1		—		

HYDROLOGIC DATA - EVERGLADES EXPERIMENT STATION
BELLE GLADE, FLORIDA

DATE NOV	RAINFALL	AIR TEMP. (°F)			WIND	MAX. - MIN. REL. HUM.		REMARKS
MO. 1963 (YR.)	(IN.)	MAX.	MIN.	MN	(MI.)	(%)		
1		79	53	66.0	42	96	51	
2		81	61	71.0	46	100	53	
3		70	46	58.0	68	100	46	
4		77	57	67.0	68	97	51	
5	0.30	80	67	73.5	70	100	60	
6	0.05	81	66	73.5	68	100	66	
7	0.01	80	58	69.0	54	100	60	
8		80	47	63.5	59	100	44	
9		79	51	65.0	21	100	47	
10	0.06	83	65	74.0	39	100	60	
11	1.78	78	67	72.5	71	100	95	
12	0.58	75	64	69.5	29	100	89	
13		78	58	68.0	99	98	74	
14		69	41	55.0	87	89	39	
15		61	39	50.0	90	92	43	
16		72	49	60.5	69	100	50	
17		76	51	63.5	46	100	47	
18		78	53	65.5	63	100	50	
19		80	53	66.5	69	100	54	
20		81	53	67.0	60	100	52	
21		81	57	69.0	70	100	52	
22		82	58	70.0	69	100	51	
23		81	55	68.0	32	100	59	
24		82	62	72.0	16	100	55	
25		83	57	70.0	19	100	51	
26		84	59	71.5	8	100	52	
27		84	59	71.5	10	100	55	
28		85	60	72.5	12	100	52	
29	0.01	81	63	72.0	63	100	60	
30		78	47	62.5	235	64	46	
31				—				
TOT.	2.79	2,359	1,676		1,747	—		
MN.		78.6	55.9	67.2		—		

HYDROLOGIC DATA - EVERGLADES EXPERIMENT STATION
BELLE GLADE, FLORIDA

DATE DEC	RAINFALL	AIR TEMP. (°F)			WIND	MAX. - MIN. REL. HUM.		REMARKS
MO. 1963 (YR.)	(IN.)	MAX.	MIN.	MN	(MI.)	(%)		
1		62	45	53.5	79	95	50	
2		62	39	50.5	16	96	36	
3		71	43	57.0	75	100	51	
4		73	43	58.0	78	100	50	
5		65	43	54.0	55	92	51	
6		68	43	55.5	66	100	42	
7		68	43	55.5	56	100	43	
8		72	55	63.5	23	100	60	
9		78	50	64.0	61	100	50	
10		66	37	51.5	62	100	50	
11		67	44	55.5	22	96	40	
12		78	48	63.0	20	100	51	
13		83	50	66.5	31	100	55	
14		84	55	69.5	31	100	54	
15	0.02	86	59	72.5	73	100	67	
16	0.02	68	56	62.0	125	100	58	
17	0.17	68	56	62.0	95	100	58	
18	0.89	62	58	60.0	121	100	58	
19		68	43	55.5	119	100	56	
20		63	42	52.5	81	100	58	
21		66	47	56.5	45	100	61	
22		72	44	58.0	52	100	57	
23		77	53	65.0	19	100	53	
24	0.12	76	53	64.5	117	100	76	
25		60	39	49.5	151	98	64	
26		58	33	45.5	60	100	58	
27		64	39	51.5	40	100	50	
28		73	44	58.5	20	100	48	
29		75	46	60.5	12	100	52	
30		76	53	64.5	59	100	50	
31	4.44	72	61	66.5	119	100	79	
TOT.	5.66	2185	1,464	—	1,993	—		
MN.		70.5	47.2	58.8		—		

PART V

Monthly Hydrologic Data

Everglades Experiment Station

1963

Division 2 - Standard Pan and Land Tank Evaporation

HYDROLOGIC DATA - EVERGLADES EXPERIMENT STATION
BELLE GLADE, FLORIDA

DATE	SOLAR RADIATION		FREE WATER EVAPORATION				EVAPOTRANSPIRATION	
MAR	NET R.	TOTAL R.	STD. CLASS A		LAND TANKS		EVAPOTRANSPIROMETERS	
(MO.)	LANGLEY'S	GUNN-BELLANI UNITS	P2	P3	T7 (ALUM.)	T8 (BLACK)	T1	T2
1963 (YR.)			(IN.)	(IN.)	(IN.)	(IN.)	(IN.)	(IN.)
1			.12	.13	.11	.11		
2			.11	.12	.06	.06		
3			.22	.20	.11	.10		
4			.16	.16	.10	.11		
5			.21	.20	.12	.11		
6			.18	.19	.15	.15		
7			.18	.18	.15	.15		
8			.08	.07	.12	.13		
9			.18	.21	.19	.20		
10			.14	.13	.13	.12		
11			.16	.16	.10	.10		
12			.20	.20	.13	.13		
13			.21	.21	.15	.14		
14			.16	.17	.11	.12		
15			.18	.18	.13	.12		
16			.16	.16	.14	.15		
17			.22	.24	.18	.18		
18			.21	.20	.16	.16		
19			.17	.16	.13	.14		
20			.22	.23	.17	.18		
21			.30	.32	.34	.34		
22			.34	.34	.41	.44		
23			.24	.22	.28	.27		
24			.20	.23	.21	.21		
25			.18	.19	.15	.15		
26			.12	.12	.11	.12		
27			.24	.22	.16	.15		
28			.19	.21	.13	.13		
29			.23	.24	.17	.16		
30			.19	.20	.19	.19		
31			.24	.15	.21	.22		
TOT.			5.94	5.94	5.00	5.04		
MN.								

DATE	SOLAR RADIATION		FREE WATER EVAPORATION				EVAPOTRANSPIRATION	
APR	NET R.	TOTAL R.	STD. CLASS A		LAND TANKS		EVAPOTRANSPIROMETERS	
(MO.)	LANGLEY'S	GUNN-BELLANI UNITS	P2	P3	T7 (ALUM.)	T8 (BLACK)	T1	T2
1963 (YR.)			(IN.)	(IN.)	(IN.)	(IN.)	(IN.)	(IN.)
1			.15	.20	.14	.13		
2			.11	.16	.10	.11		
3			.22	.24	.19	.19		
4			.20	.21	.17	.17		
5			.17	.17	.14	.14		
6			.19	.20	.15	.15		
7			.26	.26	.23	.23		
8			.19	.20	.21	.20		
9			.22	.23	.17	.15		
10			.23	.27	.25	.25		
11			.27	.27	.22	.21		
12			.25	.28	.18	.19		
13			.26	.27	.20	.19		
14			.34	.36	.33	.36		
15			.27	.26	.28	.27		
16			.27	.27	.25	.25		
17			.22	.22	.21	.21		
18			.25	.25	.22	.22		
19			.26	.24	.18	.18		
20			.26	.27	.20	.20		
21			.24	.25	.19	.19		
22			.23	.25	.18	.18		
23			.28	.26	.22	.22		
24			.23	.27	.20	.20		
25			.23	.21	.19	.15		
26			.26	.23	.18	.19		
27			.24	.20	.21	.21		
28			.23	.21	.23	.25		
29			.25	.27	.25	.26		
30			.22	.21	.24	.23		
31								
TOT.			6.47	7.29	6.11	6.08		
MN.								

HYDROLOGIC DATA - EVERGLADES EXPERIMENT STATION
BELLE GLADE, FLORIDA

DATE	SOLAR RADIATION		FREE WATER EVAPORATION				EVAPOTRANSPIRATION	
JULY	NET R.	TOTAL R.	STD. CLASS A		LAND TANKS		EVAPOTRANSPIROMETERS	
(MO.) 1963 (YR.)	LANGLEY'S	GUNN-BELLANI UNITS	P2 (IN.)	P3 (IN.)	T7 (ALUM.) (IN.)	T8 (BLACK) (IN.)	T1 (IN.)	T2 (IN.)
1			.22	7/1/63	.16	.13		
2			.27		.24	.22		
3			.21	DISCONTINUED	.21	.19		
4			.27		.24	.21		
5			.22		.19	.20		
6			.21		.18	.14		
7			.25		.23	.27		
8			.31		.20	.22		
9			.29		.25	.25		
10			.30		.30	.31		
11			.21		.22	.21		
12			.13		.14	.17		
13			.27		.13	.22		
14			.13		.12	.12		
15			.20		.19	.20		
16			.19		.14	.14		
17			.10		.14	.12		
18			.29		.23	.23		
19			.25		.22	.22		
20			.22		.23	.24		
21			.16		.17	.15		
22			.25		.22	.23		
23			.28		.27	.27		
24			.18		.17	.16		
25			.30		.25	.25		
26			.30		.25	.25		
27			.26		.22	.25		
28			.18		.18	.15		
29			.16		.17	.17		
30			.07		.09	.10		
31			.15		.16	.18		
TOT.			6.83		6.11	6.20		
MI.								

DATE	SOLAR RADIATION		FREE WATER EVAPORATION				EVAPOTRANSPIRATION	
AUG	NET R.	TOTAL R.	STD. CLASS A		LAND TANKS		EVAPOTRANSPIROMETERS	
(MO.) 1963 (YR.)	LANGLEY'S	GUNN-BELLANI UNITS	P2 (IN.)	P3 (IN.)	T7 (ALUM.) (IN.)	T8 (BLACK) (IN.)	T1 (IN.)	T2 (IN.)
1			.19		.15	.16		
2			.24		.18	.17		
3			.20		.19	.18		
4			.22		.18	.21		
5			.27		.24	.22		
6			.19		.17	.17		
7			.27		.22	.22		
8			.19		.19	.18		
9			.28		.23	.21		
10			.20		.22	.25		
11			.29		.24	.22		
12			.30		.22	.23		
13			.28		.23	.24		
14			.18		.18	.17		
15			.20		.19	.19		
16			.23		.14	.18		
17			.21		.27	.23		
18			.12		.12	.13		
19			.16		.18	.19		
20			.19		.18	.27		
21			.14		.12	.03		
22			.12		.14	.12		
23			.13		.14	.12		
24			.25		.17	.17		
25			.26		.20	.20		
26			.25		.18	.18		
27			.21		.22	.21		
28			.17		.18	.17		
29			.21		.10	.19		
30			.22		.31	.22		
31			.13		.14	.14		
TOT.			6.50		5.82	5.77		
MI.								

HYDROLOGIC DATA - EVERGLADES EXPERIMENT STATION
BELLE GLADE, FLORIDA

DATE	SOLAR RADIATION		FREE WATER EVAPORATION				EVAPOTRANSPIRATION	
NOV	NET R.	TOTAL R.	STD. CLASS A		LAND TANKS		EVAPOTRANSPIROMETERS	
(MO.)	LANGLEY'S	GUNN-BELLANI UNITS	P2 (IN.)	P3 (IN.)	T7 (ALUM.) (IN.)	T8 (BLACK) (IN.)	T1 (IN.)	T2 (IN.)
1963 (YR.)								
1			.15		.17	.17		
2			.12		.11	.12		
3			.11		.19	.17		
4			.15		.12	.14		
5			.14		.07	.05		
6			.06		.03	.05		
7			.14		.11	.12		
8			.16		.16	.17		
9			.13		.14	.14		
10			.05		.00	.01		
11			.10		.07	.05		
12			.04		.03	.04		
13			.14		.13	.12		
14			.22		.28	.26		
15			.16		.26	.24		
16			.12		.14	.14		
17			.12		.10	.10		
18			.13		.09	.11		
19			.15		.11	.12		
20			.17		.10	.11		
21			.16		.10	.11		
22			.16		.10	.11		
23			.11		.08	.08		
24			.09		.05	.05		
25			.12		.08	.09		
26			.11		.08	.08		
27			.11		.07	.07		
28			.11		.07	.07		
29			.07		.07	.07		
30			.26		.10	.37		
31								
TOT.			3.86		3.21	3.53		
MI.								

DATE	SOLAR RADIATION		FREE WATER EVAPORATION				EVAPOTRANSPIRATION	
DEC	NET R.	TOTAL R.	STD. CLASS A		LAND TANKS		EVAPOTRANSPIROMETERS	
(MO.)	LANGLEY'S	GUNN-BELLANI UNITS	P2 (IN.)	P3 (IN.)	T7 (ALUM.) (IN.)	T8 (BLACK) (IN.)	T1 (IN.)	T2 (IN.)
1963 (YR.)								
1			.12		.18	.18		
2			.17		.20	.19		
3			.08		.09	.10		
4			.11		.08	.11		
5			.12		.12	.09		
6			.12		.13	.15		
7			.14		.12	.15		
8			.05		.06	.02		
9			.11		.19	.11		
10			.14		.16	.13		
11			.14		.13	.11		
12			.07		.06	.08		
13			.10		.03	.06		
14			.12		.09	.04		
15			.14		.06	.06		
16			.06		.02	.11		
17			.08		.10	.08		
18			.00		.02	.01		
19			.14		.15	.15		
20			.11		.14	.13		
21			.06		.08	.10		
22			.10		.08	.09		
23			.08		.05	.06		
24			.07		.05	.03		
25			.11		.21	.19		
26			.19		.11	.11		
27			.09		.09	.09		
28			.06		.07	.08		
29			.10		.06	.07		
30			.11		.06	.07		
31			.10		.05	.10		
TOT.			3.15		3.09	3.07		
MI.								

PART VI

Daily Mean Ground Water Stage

Upper Taylor Creek Watershed

(W-2), (W-3)

MEAN DAILY GROUND-WATER STAGE (WATERSHED AREAS)
(FEET BELOW GRD. SURF.)

DATE	UPPER TAYLOR CREEK							INDIAN RIVER FARMS					MONREVE RANCH				
DEC	1	2	3	4	5	6	7	1	2	3	4	5	1	2	3	4	5
(MO) 1962 (YR)									⑦ AVG. W-2		② AVG W-3		Line A		Line B		
1	1.80	2.14	3.48	3.71	3.32	3.31	1.86		2.80		1.97		2.42		2.54		
2	1.93	2.18	3.50	3.74	3.35	3.34	1.92		2.85		2.06		2.45		2.62		
3	1.98	2.22	3.55	3.75	3.38	3.38	1.99		2.89		2.10		2.51		2.67		
4	2.01	2.25	3.61	3.77	3.41	3.41	2.05		2.93		2.13		2.54		2.69		
5	1.82	2.29	3.61	3.78	3.42	3.43	2.00		2.91		2.06		2.54		2.47		
6	1.81	2.32	3.65	3.80	3.43	3.44	2.09		2.93		2.06		2.52		2.39		
7	2.06	2.35	3.72	3.82	3.45	3.46	2.13		3.00		2.26		2.57		2.49		
8	2.05	2.38	3.70	3.83	3.48	3.47	2.17		3.01		2.22		2.60		2.53		
9	1.86	2.90	3.63	3.85	3.48	3.48	2.03		2.96		2.13		2.51		2.14		
10	2.00	2.44	3.76	3.68	3.49	3.49	2.12		3.02		2.22		2.54		2.25		
11	2.17	2.47	3.76	3.90	3.53	3.50	2.23		3.08		2.32		2.59		2.36		
12	2.12	2.49	3.79	3.92	3.55	3.53	2.26		3.09		2.30		2.61		2.37		
13	2.18	2.52	3.81	3.93	3.57	3.55	2.30		3.12		2.35		2.63		2.41		
14	2.20	2.54	3.82	3.94	3.58	3.58	2.33		3.14		2.38		2.65		2.43		
15	2.19	2.57	3.83	3.96	3.59	3.61	2.35		3.16		2.38		2.66		2.43		
16	2.18	2.60	3.83	3.97	3.61	3.65	2.37		3.17		2.39		2.66		2.42		
17	2.15	2.63	3.86	3.98	3.63	3.68	2.39		3.19		2.39		2.67		2.40		
18	2.17	2.64	3.93	3.99	3.64	3.69	2.42		3.26		2.40		2.68		2.41		
19	2.19	2.65	3.96	4.00	3.65	3.71	2.45		3.23		2.42		2.69		2.42		
20	2.20	2.67	3.96	4.01	3.66	3.72	2.98		3.24		2.44		2.70		2.43		
21	2.21	2.68	3.99	4.01	3.67	3.73	2.41		3.24		2.44		2.71		2.44		
22	2.23	2.70	3.98	4.01	3.67	3.75	2.43		3.25		2.46		2.72		2.46		
23	2.25	2.70	4.00	4.02	3.70	3.74	2.46		3.27		2.48		2.74		2.46		
24	2.17	2.71	3.98	4.02	3.70	3.72	2.58		3.27		2.44		2.75		2.44		
25	1.59	2.72	3.98	4.03	3.69	3.70	2.43		3.16		2.16		2.66		2.18		
26	1.94	2.73	3.99	4.03	3.65	3.67	2.45		3.21		2.34		2.67		2.24		
27	2.09	2.73	3.97	4.03	3.71	3.69	2.55		3.25		2.41		2.71		2.32		
28	2.16	2.74	3.97	4.04	3.73	3.71	2.60		3.29		2.45		2.74		2.35		
29	2.21	2.75	4.00	4.04	3.74	3.73	2.63		3.30		2.48		2.76		2.38		
30	1.98	2.78	4.03	4.05	3.79	3.75	2.66		3.27		2.38		2.71		—		
31	2.22	2.78	4.02	4.06	3.82	3.77	2.72		3.34		2.50		2.74		2.57		
MEAN	2.07	2.14	3.83	3.93	3.58	3.60	2.31		3.12		2.31						

DATE	UPPER TAYLOR CREEK							INDIAN RIVER FARMS					MONREVE RANCH				
JAN	1	2	3	4	5	6	7	1	2	3	4	5	1	2	3	4	5
(MO) 1963 (YR)									AVG ⑦ W-2		AVG ② W-3		Line A		Line B		
1	—	2.80	4.05	4.07	3.85	3.80	2.77	*	3.54		—		2.79		2.63		
2	—	2.83	4.11	4.08	3.87	3.82	2.79	*	3.58		—		2.81		2.66		
3	—	2.84	4.15	4.09	3.90	3.84	2.82	*	3.61		—		2.84		2.71		
4	—	2.86	4.15	4.10	3.92	3.87	2.87	*	3.63		—		2.89		2.74		
5	—	2.88	4.18	4.12	3.94	3.89	2.87	*	3.65		—		2.96		2.74		
6	—	2.89	4.20	4.13	3.96	3.89	2.84	*	3.66		—		2.98		2.74		
7	—	2.90	4.09	4.16	3.92	3.88	2.74	*	3.62		—		2.72		2.32		
8	2.12	2.90	4.07	4.18	3.94	3.87	2.72		3.40		2.51		2.67		2.21		
9	2.34	2.91	4.11	4.19	3.95	3.88	2.82		3.46		2.62		2.70		2.30		
10	2.42	2.92	4.14	4.19	3.97	3.91	2.89		3.49		2.67		2.76		2.38		
11	2.48	2.93	4.16	4.19	3.98	3.93	2.92		3.51		2.70		2.81		2.44		
12	2.45	2.93	4.17	4.19	3.99	3.94	2.93		3.51		2.69		2.83		2.44		
13	2.45	2.94	4.16	4.19	4.00	3.94	2.93		3.52		2.69		2.83		2.46		
14	2.21	2.95	4.15	4.19	4.00	3.95	2.86		3.47		2.58		2.75		2.22		
15	1.78	2.95	4.04	4.18	3.89	3.89	2.59		3.33		2.36		2.59		1.86		
16	1.98	2.95	4.02	4.19	3.83	3.84	2.59		3.34		2.46		2.57		1.91		
17	2.11	2.96	4.02	4.19	3.82	3.82	2.62		3.36		2.53		2.61		1.98		
18	2.23	2.96	4.01	4.19	3.82	3.82	2.68		3.39		2.59		2.65		2.10		
19	2.36	2.96	4.00	4.19	3.83	3.84	2.76		3.42		2.66		2.70		2.26		
20	2.43	2.97	3.99	4.19	3.86	3.87	2.82		3.45		2.70		2.75		2.34		
21	2.06	2.97	3.98	4.21	3.85	3.84	2.63		3.36		2.51		2.62		1.25		
22	2.17	2.96	3.95	4.21	3.75	3.70	3.52		3.47		2.56		2.63		1.15		
23	2.30	2.96	3.97	4.21	3.75	3.66	3.61		3.49		2.63		2.71		1.33		
24	2.41	2.96	4.01	4.23	3.78	3.66	3.68		3.53		2.68		2.76		1.54		
25	2.52	2.97	4.04	4.23	3.82	3.68	3.77		3.58		2.74		2.82		1.72		
26	2.20	2.98	4.04	4.23	3.78	3.69	3.74		3.52		2.59		2.76		1.30		
27	2.18	2.98	4.01	4.24	3.81	3.66	3.69		3.51		2.58		2.73		1.42		
28	2.44	2.98	4.05	4.24	3.81	3.67	3.79		3.57		2.71		2.77		1.83		
29	2.56	2.99	4.09	4.24	3.85	3.71	2.89		3.48		2.77		2.83		2.02		
30	2.59	3.00	4.15	4.26	3.90	3.76	2.94		3.51		2.79		2.88		2.11		
31	2.63	3.00	4.23	4.27	3.96	3.81	2.96		3.55		2.81		2.89		2.19		
MEAN	2.31	2.93	4.08	4.19	3.88	3.82	3.00		3.50	*	2.63		2.76		2.11		

MEAN DAILY GROUND-WATER STAGE (WATERSHED AREAS)
(FEET BELOW GRD. SURF.)

DATE	UPPER TAYLOR CREEK							~~INDIAN RIVER FARMS~~					~~MONREVE RANCH~~				
APRIL	1	2	3	4	5	6	7	1	2	3	4	5	1	2	3	4	5
(MO) 1963 (YR)									⑦ AVG. W-2		② AVG W-3		LINE "A"		LINE "B"		
1	243	274	4.10	3.83	395	380	238		332		2.58		301		3.31		
2	262	277	4.13	3.85	396	386	253		3.39		2.70		311		336		
3	2.77	280	422	3.87	400	390	267		3.46		2.78		320		3.90		
4	288	2.84	429	388	404	393	277		352		286		3.26		394		
5	297	2.88	435	391	407	397	285		3.57		2.92		330		348		
6	301	291	438	393	410	401	2.92		361		296		334		3.51		
7	306	2.96	438	396	4.13	404	298		3.64		301		337		3.51		
8	312	300	441	398	4.12	4.07	307		368		3.06		3.41		3.54		
9	315	307	448	401	413	4.12	314		3.72		309		343		357		
10	320	3.07	453	4.03	4.17	4.16	3.21		376		314		3.45		3.60		
11	324	312	458	406	4.19	420	327		381		3.18		349		362		
12	329	316	462	405	4.22	423	3.31		3.84		3.22		352		364		
13	333	319	467	4.11	424	427	3.36		3.89		326		356		3.66		
14	337	3.23	466	414	427	430	3.43		392		331		359		369		
15	345	3.29	469	4.17	432	434	350		3.97		3.37		3.63		3.71		
16	3.47	333	478	4.23	434	4.38	355		401		3.40		367		374		
17	351	337	483	4.26	436	442	361		405		3.44		371		376		
18	354	341	4.85	429	438	4.45	3.66		4.08		348		3.73		3.78		
19	357	345	490	4.32	4.41	449	370		4.12		3.51		3.75		3.79		
20	360	348	495	435	442	452	3.75		4.15		354		3.77		3.81		
21	363	351	499	4.38	444	4.56	3.80		4.18		3.57		380		3.83		
22	367	354	500	443	448	4.61	3.86		4.22		360		384		3.86		
23	368	357	506	4.46	451	465	3.91		4.26		362		388		3.89		
24	371	3.60	5.11	449	453	468	395		429		3.66		3.90		3.90		
25	372	363	5.13	451	4.54	472	398		432		3.68		3.92		3.89		
26	354	3.65	5.10	443	437	473	387		424		3.60		394		368		
27	353	367	5.07	438	4.35	476	391		424		3.60		3.95		3.68		
28	362	369	5.12	440	4.40	477	400		429		366		397		3.75		
29	370	374	5.19	4.46	447	4.82	405		4.35		372		4.00		3.83		
30	374	376	523	449	453	485	408		438		3.75		4.03		393		
31																	
MEAN	334	3.28	473	419	428	4.35	344		394		331		362		3.67		

DATE	UPPER TAYLOR CREEK							~~INDIAN RIVER FARMS~~					MONREVE RANCH				
MAY	1	2	3	4	5	6	7	1	2	3	4	5	1	2	3	4	5
(MO) 1963 (YR)									⑦ AVG W-2		② AVG W-3		Line "A"		Line "B"		
1	370	378	521	450	457	487	398		4.87		374		3.99		385		
2	361	379	520	442	456	465	3.82		431		365		387		3.77		
3	[illegible]	368	5.03	433	435	435	352		4.14		3.46		3.57		3.26		
4	264	334	4.55	392	368	457	300		3.70		3.09		3.18		2.77		
5	[illegible]	330	492	370	362	444	303		363		3.10		318		2.93		
6	301	328	443	367	367	490	313		364		314		323		3.09		
7	3.12	329	453	370	3.76	441	3.23		3.72		3.20		331		3.22		
8	322	330	461	3.75	386	445	3.34		377		326		3.40		334		
9	3.30	332	464	3.81	3.95	450	3.45		385		3.31		3.49		343		
10	339	3.34	475	387	405	457	3.55		393		336		3.58		3.51		
11	345	337	482	393	414	465	3.64		400		391		3.65		3.58		
12	351	340	486	401	4.21	473	373		3.92		346		3.71		3.64		
13	353	344	493	409	425	482	3.81		4.12		348		3.59		3.25		
14	356	344	4.97	414	428	489	388		4.17		350		3.59		3.73		
15	361	3.49	503	420	432	492	3.95		4.21		352		3.67		379		
16	3.66	345	5.11	426	437	495	4.01		424		356		375		3.84		
17	370	3.47	5.18	4.32	442	498	406		430		3.55		382		397		
18	375	349	5.25	438	496	5.01	4.12		4.35		3.62		3.88		3.93		
19	378	352	526	443	4.51	504	4.17		4.38		365		395		399		
20	3.82	354	5.27	4.52	4.58	5.05	423		4.43		368		402		404		
21	385	356	5.35	455	460	5.08	425		446		3.70		405		405		
22	387	359	5.40	457	461	5.10	428		4.49		3.73		4.07		406		
23	390	3.62	5.43	460	464	5.12	416		449		3.76		408		407		
24	391	365	5.42	460	4.54	5.14	331		436		3.78		399		393		
25	391	3.58	5.39	447	446	5.15	318		4.30		3.74		375		3.81		
26	390	297	5.34	396	400	5.15	3.15		399		344		2.85		3.44		
27	388	290	5.24	340	3.78	5.17	3.21		394		339		287		3.34		
28	375	290	5.24	341	3.78	5.17	323		392		332		2.77		3.29		
29	3.37	290	531	342	380	5.18	326		389		3.14		2.76		3.31		
30	330	290	540	343	384	5.19	334		391		3.10		2.75		3.36		
31	288	2.90	538	3.36	383	5.19	343		385		2.89		2.67		3.34		
MEAN	352	337	506	404	418	489	363		4.10		3.45		3.52		355		

MEAN DAILY GROUND-WATER STAGE (WATERSHED AREAS)
(FEET BELOW GRD. SURF.)

DATE	UPPER TAYLOR CREEK							~~INDIAN RIVER FARMS~~					~~MONREVE RANCH~~				
AUG	1	2	3	4	5	6	7	1	2	3	4	5	1	2	3	4	5
(MO) 1963 (YR)									AVG ⑦ W-2		AVG ② W-3		LINE "A"		LINE "B"		
1	222	231	481	361	375	530	479		397		2.26		313		360		
2	2.28	2.41	487	3.64	3.82	532	484		388		2.34		318		334		
3	241	249	493	3.68	3.86	5.33	489		394		245		3.22		301		
4	250	257	497	372	3.92	5.35	4.95		400		254		3.27		316		
5	259	2.65	498	376	3.97	537	498		4.04		262		3.30		332		
6	270	272	5.06	380	401	539	498		4.09		2.71		3.32		344		
7	276	282	5.10	388	407	5.44	498		415		279		3.37		358		
8	2.85	288	516	3.92	4.12	546	5.00		420		2.86		3.41		3.68		
9	290	295	523	395	410	5.48	5.00		422		292		3.45		3.74		
10	2.97	300	528	4.00	412	530	5.01		427		298		3.50		375		
11	305	305	530	4.06	4.17	5.52	502		4.31		3.05		3.54		3.82		
12	310	310	5.28	4.08	4.19	5.59	5.05		4.33		3.10		3.57		3.84		
13	3.15	315	5.27	4.12	3.76	556	5.07		4.30		3.15		3.60		387		
14	3.21	3.21	527	4.18	366	5.59	5.05		431		321		365		389		
15	3.25	3.25	529	421	3.72	561	482		4.31		325		3.63		375		
16	3.30	3.28	532	424	3.81	562	470		432		329		3.68		316		
17	3.35	3.32	536	427	393	564	468		436		334		373		321		
18	3.41	3.36	537	430	399	5.66	463		439		338		377		332		
19	3.43	3.40	533	433	375	567	465		4.37		342		3.76		3.39		
20	3.30	3.43	538	4.00	365	5.68	448		427		336		341		330		
21	2.98	342	5.42	358	364	5.67	410		408		320		3.13		306		
22	2.94	341	541	353	362	565	373		404		318		332		2.88		
23	2.77	340	537	3.42	3.60	5.58	356		396		309		326		210		
24	2.79	337	533	342	328	5.30	298		378		308		325		114		
25	2.93	3.35	5.35	347	325	490	298		377		3.14		3.25		147		
26	3.07	333	539	354	336	477	308		378		320		3.25		1.82		
27	3.21	332	543	361	348	4.67	318		384		326		326		210		
28	3.36	331	548	370	357	465	3.30		391		334		3.28		233		
29	3.43	3.36	5.54	3.77	370	4.67	343		398		336		3.53		298		
30	3.49	3.34	556	356	380	4.70	352		404		3.42		3.62		261		
31	3.54	3.37	5.61	393	390	474	367		4.10		346		3.70		275		
MEAN	301	311	527	386	379	5.33	435		4.10		3.06		343		306		

DATE	UPPER TAYLOR CREEK							INDIAN RIVER FARMS					MONREVE RANCH				
SEPT	1	2	3	4	5	6	7	1	2	3	4	5	1	2	3	4	5
(MO) 1963 (YR)									AVG ⑦ W-2		AVG ② W-3		Line "A"		Line "B"		
1	3.58	3.39	5.64	401	399	479	369		4.15		348		377		270		
2	3.62	3.43	566	406	4.05	483	370		4.14		352		381		255		
3	3.66	3.45	565	411	4.09	486	373		422		356		382		2.66		
4	3.68	347	5.60	418	4.12	482	376		423		358		376		270		
5	3.71	349	551	422	415	473	381		4.23		360		3.78		266		
6	3.65	351	545	401	4.18	465	332		4.11		358		383		247		
7	3.39	352	6.26	377	4.21	457	327		400		346		3.60		267		
8	3.40	3.52	509	367	423	452	319		394		349		318		2.82		
9	3.49	349	5.08	369	428	449	3.00		399		349		3.18		2.91		
10	3.60	349	5.10	375	4.31	447	307		397		355		3.29		300		
11	3.70	348	5.18	376	4.35	447	314		401		359		390		247		
12	3.73	348	529	384	490	495	302		4.02		360		3.51		1.13		
13	3.77	349	527	391	491	448	304		405		363		357		105		
14	3.57	3.51	5.31	388	492	452	287		4.01		3.54		3.23		0.76		
15	3.20	270	5.03	353	443	454	2.76		374		295		2.64		092		
16	3.20	268	4.87	346	444	458	2.76		3.71		294		2.68		1.17		
17	3.20	265	483	348	496	462	276		372		249		2.76		1.57		
18	3.20	271	480	349	447	466	272		372		295		279		1.78		
19	3.10	2.62	473	345	497	470	235		363		286		259		1.71		
20	2.91	2.43	458	324	495	462	170		342		267		2.41		1.63		
21	2.72	213	490	296	4.35	4.28	145		3.18		242		2.47		1.55		
22	2.53	210	427	298	410	412	131		306		232		2.47		1.47		
23	1.98	162	412	290	383	397	117		280		180		175		137		
24	1.04	0.81	400	229	299	3.40	075		2.18		092		1.02		1.28		
25	031	041	334	156	269	266	0.45		1.62		036		0.65		1.19		
26	037	042	3.20	1.69	270	257	040		162		0.40		0.35				
27	054	045	326	182	283	2.73	0.66		175		050		105				
28	0.87	051	334	193	2.96	2.86	0.85		191		0.69		125				
29	112	061	343	207	309	300	1.05		205		086		1.45				
30	139	075	3.56	224	3.21	314	1.20		221		1.07		1.65				
31																	
MEAN	274	248	469	326	395	4.17	237		338		261		2.67		1.96		