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GEOLOGICAL SURVEY

WATER-QUALITY ASSESSMENT OF THE L'ANGUILLE RIVER BASIN, ARKANSAS

PROGRESS REPORT

By Charles T. Bryant, Edward E. Morris, and John E. Terry

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Prepared in cooperation with the

Arkansas Department of Pollution Control and Ecology,

Little Rock, Arkansas

1979

UNITED STATES DEPARTMENT OF THE INTERIOR

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METRIC CONVERSION FACTORS

The United States customary units used in this report can be converted to the metric system of units as follows:

Multiply inch-pound units	By	To obtain metric units
foot (ft)	0.3048	meter (m)
cubic foot per second (ft^3/s)	0.0283	cubic meter per second (m^3/s)
mile (mi)	1.609	kilometer (km)
square mile (mi^2)	2.509	square kilometer (km^2)
pound (lb)	0.454	kilogram (km)
acre	$4.07X10^{-3}$	square kilometer (km^2)
acre foot (acre-ft)	$1.233X10^{-3}$	cubic hectometer (hm^3)
ton	$9.072X10^{-1}$	metric ton
inch (in.)	$2.540X10^{+1}$	millimeter (mm)

WATER-QUALITY ASSESSMENT OF THE L'ANGUILLE RIVER BASIN, ARKANSAS

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ABSTRACT

For several years, dissolved oxygen in the L'Anguille River has been reduced to concentrations of less than 5.0 milligrams per liter during the summer and fall. The dissolved-oxygen reduction is due only in part to the municipal-waste discharges which enter the river. In addition, concentrations of pesticides have been reported consistently at one long-term station on the river, and trace metals have been reported at two long-term monitoring sites.

The U.S. Geological Survey conducted an intensive study of the L'Anguille River basin during the summer and fall of 1978. This study was done in cooperation with the Arkansas Department of Pollution Control and Ecology to fulfill the requirements of section 208 of Public Law 92-500. An assessment of the general water quality was made, the causes of stream-dissolved-oxygen reductions were determined, and the occurrence of pesticides and trace metals in the basin was documented. A steady-state, segmented, dissolved-oxygen model was calibrated and used to project simulated dissolved-oxygen profiles.

Pesticides are used extensively in the basin and their occurrence in streams throughout the basin is documented. Concentrations of DDT from the river were as high as 110 micrograms per kilogram in streambed material, whereas 1,600 micrograms per kilogram of DDE and 530 micrograms per kilogram of DDD were found in bottom-feeding fish. In addition, toxaphene concentrations of 45 micrograms per kilogram were found in streambed material and concentrations of 3,400 micrograms per kilogram were found in fish.

Concentrations of iron and manganese, at times, exceeded recommended limits for human consumption. Also, dissolved solids, chloride, and sulfate occasionally exceeded the water-quality standards set by the State.

Streambed materials consist of deposited sand, silt, clay, and organic matter. The respiration of bacteria, fungi, and benthic invertebrates, which feed on the organic matter, accounts for most of the dissolved-oxygen reduction in the river. The sources of the streambed materials include municipal wastes, agricultural fertilizers, fluvial sediment, and natural organic matter. Model projections indicate that a reduction of 60 percent in the streambed-oxygen demand would allow the stream-dissolved-oxygen concentrations to remain at or greater than 5.0 milligrams per liter.

INTRODUCTION

Purpose and Scope

The objective of the 1972 Amendments of the Federal Water Pollution Control Act (Public Law 92-500) is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. Section 208 of Public Law 92-500 gave local and State governments the responsibility for water-quality-management planning to accomplish the objective of the law. Local governments were given these responsibilities for designated areas (generally large municipal areas), whereas States were given water-quality-management responsibilities for undesignated areas. The ADPC&E (Arkansas Department of Pollution Control and Ecology) was the State agency selected to implement a water-quality-management plan for undesignated areas in Arkansas. To fulfill planning responsibilities in order to meet the goals of Public Law 92-500, existing and potential water problems must be known.

Although water-quality problems associated with point sources of waste discharges are fairly well documented within the State, little work has been done to determine water quality resulting from nonpoint sources of pollution such as agriculture, silviculture, construction, and mining.

The L'Anguille River in northeast Arkansas (fig. 1) was selected for intensive study by the ADPC&E. This stream is in a primarily agricultural area, it is known to have water-quality problems, and it is considered fairly representative of streams in the area. The U.S. Geological Survey was requested by the ADPC&E to assess water-quality problems in the L'Anguille River basin. The purpose of this study was to document types, sources, and occurrences of pollutants in the basin, and to make some predictions of water quality under varying conditions.

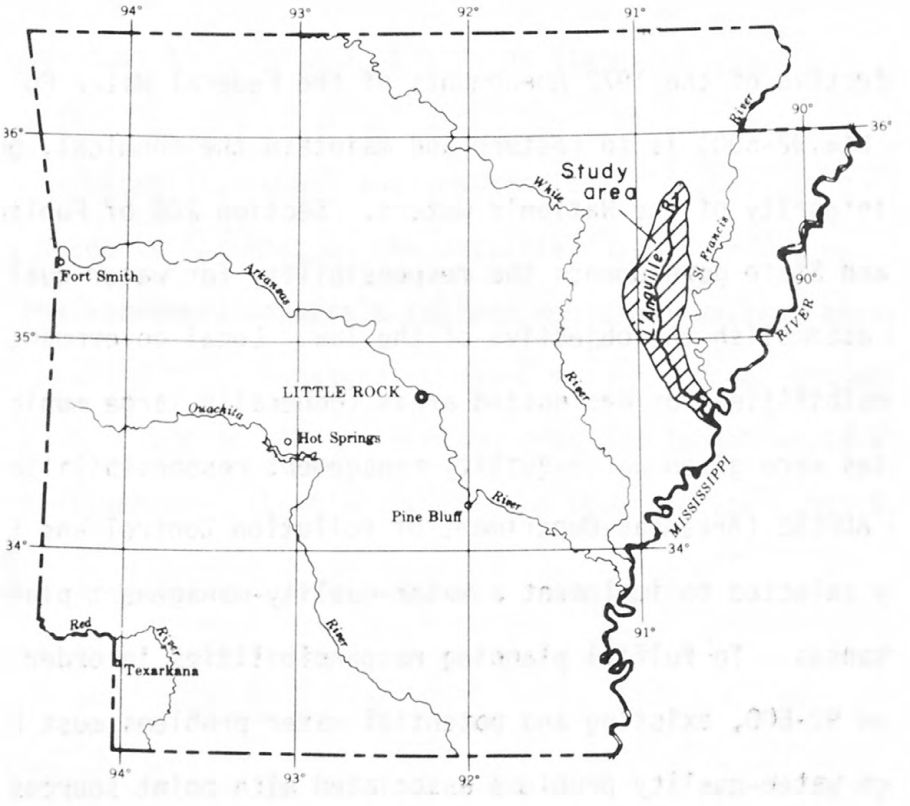


Figure 1.-Location of the study area.

Physical Setting

The L'Anguille River, tributary to the St. Francis River, drains a flat-lying alluvial plain in northeast Arkansas. The L'Anguille basin comprises an area of 938 mi^2, practically all of which is west of Crowleys Ridge and in the western parts of Poinsett, Cross, St. Francis, and Lee Counties (fig. 2). The study reach of the L'Anguille River extends from its mouth near Marianna to river-mile 96 near Harrisburg.

The L'Anguille River basin is largely underlain by alluvial-terrace deposits of Pleistocene age (Haley, 1976). The main channel and flood plain of the L'Anguille River are underlain by a comparatively narrow zone of alluvial deposits of Holocene age. The flood plain of the L'Anguille widens downstream from about 1 mi in the upper reach of the study area to about 10 mi in the lower reach. The relief between the flood plain and terrace surfaces is from about 10 to 20 ft.

The composition of the flood plain and terrace deposits is similar, with both deposits generally grading from gravelly sand at the bottom to silty clay at the top. The sand and gravel of both deposits are hydrologically connected; together, they constitute a highly productive aquifer which is used extensively as a source of water for irrigation in the L'Anguille River basin.

Crowleys Ridge rises abruptly about 150 ft above the alluvial plain along the eastern edge of the study area (fig. 2). The ridge is formed by outcropping beds of clay, silt, and sand of Tertiary age, and gravel, silt, clay, and loess of Pleistocene age (Haley, 1976).

Within the flood plain of the river, soils are fine textured, slowly permeable loams which generally comprise silt loams and silty clay loams. Away from the flood plain, where terrace deposits are found, the soils are medium textured and slightly more permeable than soils in the flood plain. The lower end of the basin east of Marianna, Ark., comprises deep, fine-textured, very slowly permeable, wet

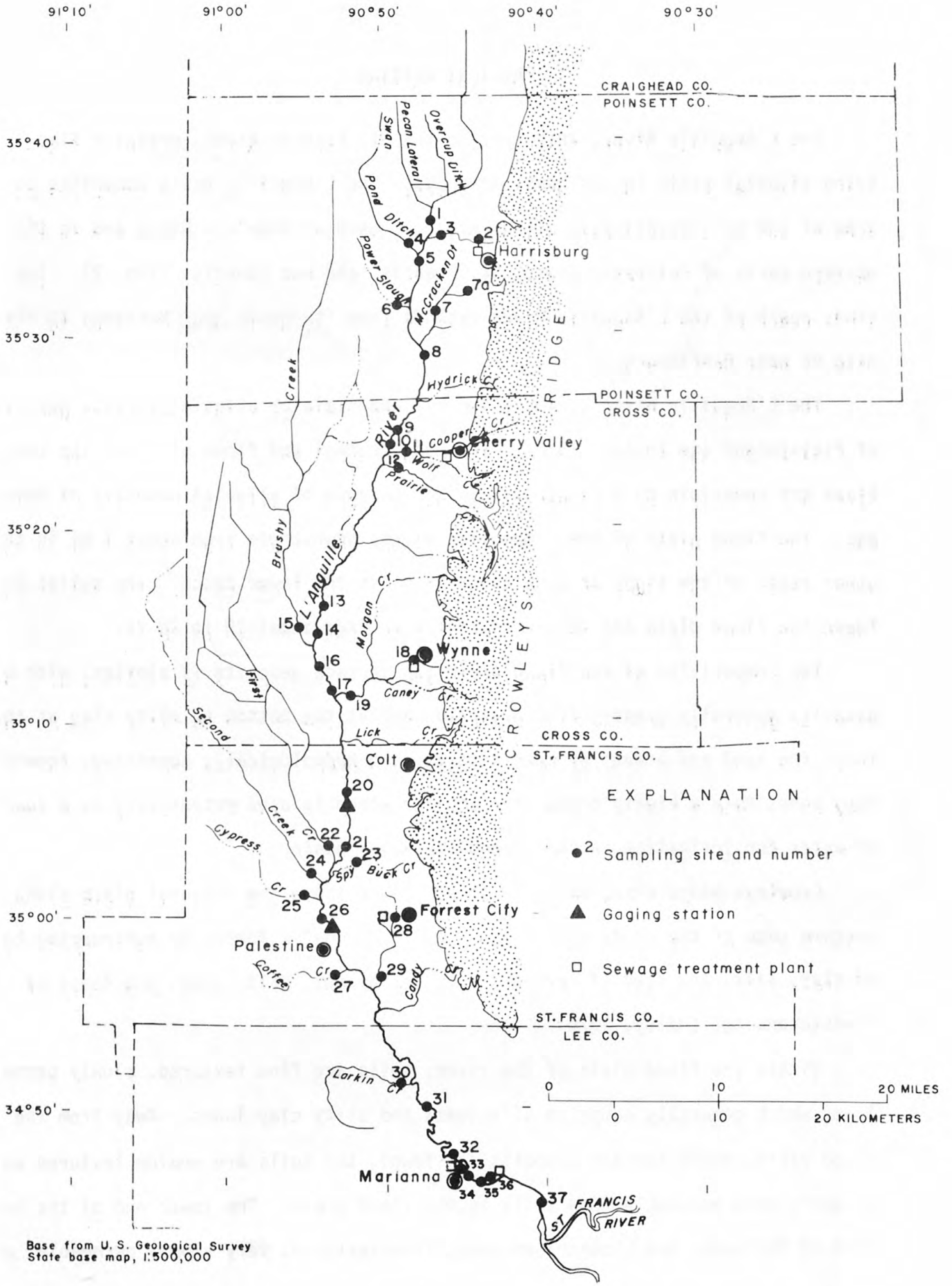


Figure 2.–L'Anguille River basin showing sampling sites.

bottomland soils made up of dark clay. Crowleys Ridge soils are generally medium textured and moderately to slowly permeable and comprise clays and silt loams (U.S. Soil Conservation Service, 1967). Erosion has been severe on Crowleys Ridge, exposing sand and gravel, which can be observed as deposits on the beds of streams draining the ridge.

Channel Morphology

The L'Anguille River was once a meandering stream throughout its length. However, within the last 50 years, as more land has been put into use for agricultural production, some of the stream's channel and some of its tributary streams have been altered to improve drainage and flood control.

In Poinsett County much of the channel of the L'Anguille has been straightened and deepened. Several drainage canals have been dug in the headwater of the river. In Poinsett and Cross Counties, most of the tributary streams have been straightened by ditching to more readily move floodwater into the L'Anguille River.

Tributary streams draining Crowleys Ridge flow intermittently. During flow events, velocities are generally high, resulting in no significant clay and silt deposition along the streambeds. Generally, some sand and gravel are found in these streambeds, particularly in the three northern counties where the ridge is higher. Tributary streams on the west side of the basin, draining somewhat flat land, have low velocities and generally have significant silt and clay deposits at their mouths.

Beginning at the Poinsett-Cross County line, the L'Anguille River meanders for the rest of its length. In Cross County, much of the stream channel is wide and marshy. In St. Francis and Lee Counties, the channel is deeper and narrower than it is upstream.

The gradient of the channel from the headwaters to the mouth is small, averaging about 1.6 ft/mi. The resulting low velocities allow much of the sediment carried into the stream to be deposited on the streambed. Inasmuch as most of the basin is covered by silts and clays, the streambed of the L'Anguille River is composed of mostly silts and clays. In a few locations some sand-and-gravel deposits, originating on Crowleys Ridge, are present.

Streamflow

Streamflow of the L'Anguille River fluctuates seasonally and from year to year. During 8 years of streamflow-data collection at station 20 near Colt (mile 52.8), streamflow ranged from 1.0 ft^3/s in 1972 to 11,400 ft^3/s in 1973 (fig. 3). Low flows generally occur in October, and high flows occur from December through June.

Discharge records for station 26 near Palestine, at mile 33.6, show an increase in streamflow of approximately 60 percent. No records are available for the lower end of the river, but streamflow increases substantially because of ground-water discharge. The streamflow characteristics of the L'Anguille River are closely related to the occurrence and development of water in the alluvial aquifer.

Ground Water-Surface Water Relations

The L'Anguille River and the alluvial aquifer are hydraulically connected to the extent that where there is a head difference between the river and the aquifer, there is an exchange of flow between the river and the aquifer. Therefore, where the river stage is higher than the ground-water level in the aquifer, the river loses water to the aquifer; where the ground-water level in the aquifer is higher than the river stage, the river gains water from the aquifer (Broom, written commun., 1979). Hydraulic head relation between the L'Anguille River and the alluvial aquifer is indicated in figure 4.

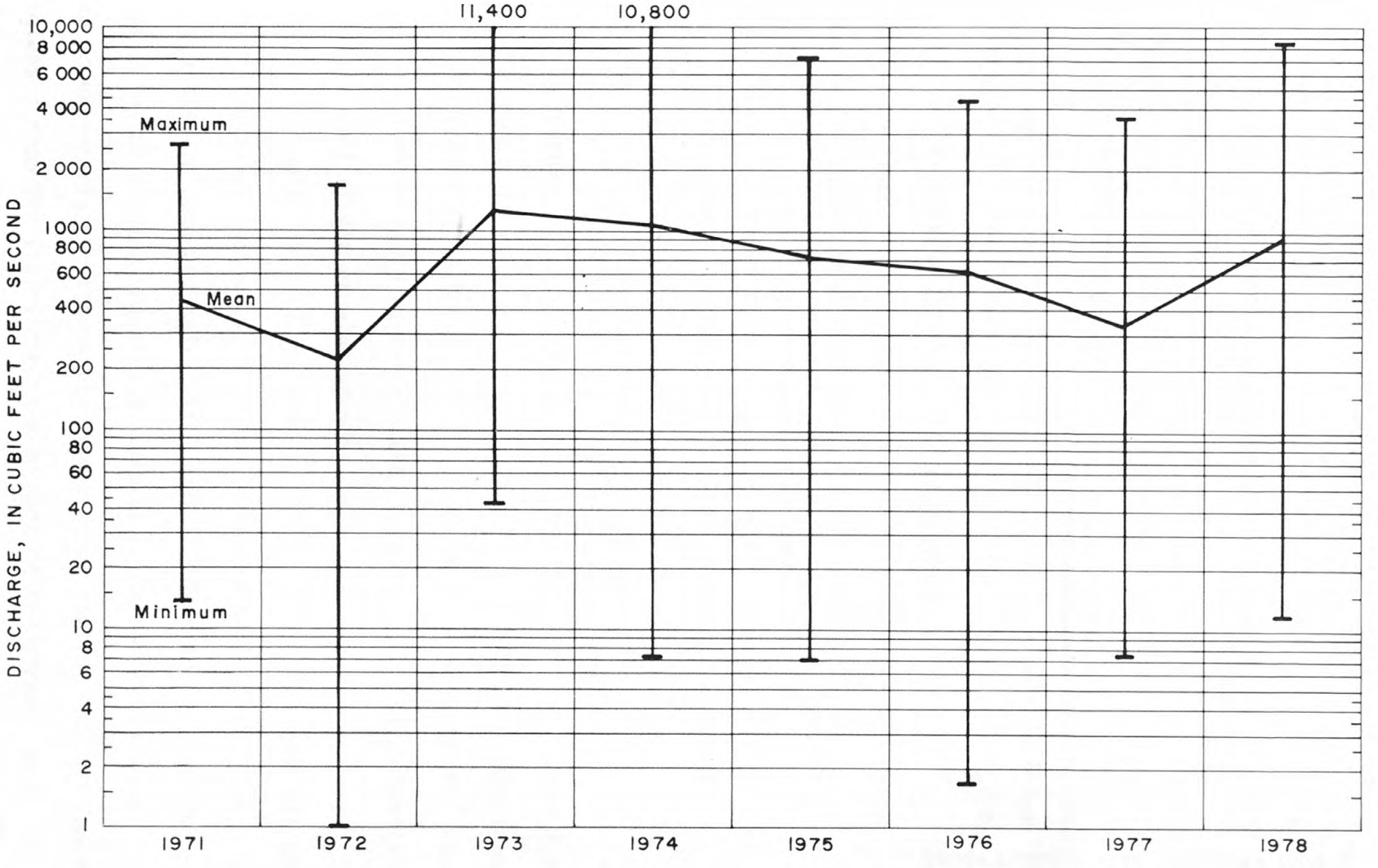


Figure 3.—Maximum, minimum, and mean annual water discharges for the L'Anguille River near Colt, 1971 through 1978 water years.

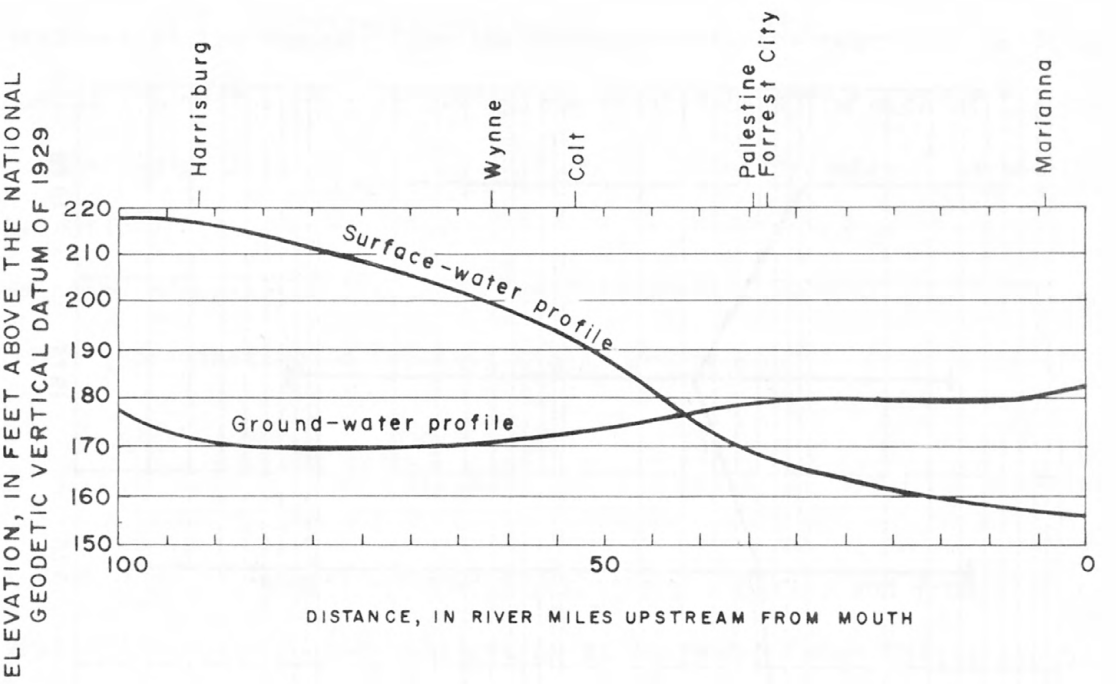


Figure 4.—Ground water-surface water relation along the L'Anguille River.

The upstream half of the L'Anguille River basin is in an area where there are large withdrawals of water from the aquifer for irrigation, used mostly for rice production. Since the beginning of rice production in the area in the early 1900's, the water table has dropped nearly 50 ft below the land surface. Consequently, the L'Anguille River is a losing stream in the upstream half of its basin. Here, streamflow is not perennial and the sources of streamflow are limited to runoff from rainfall, municipal-waste effluent, and surface drainage of excess irrigation water. In the downstream half of the basin, the water table is higher than normal stream stage and the L'Anguille is a gaining stream. Here, natural aquifer discharge normally sustains a perennial flow in the L'Anguille. However, during flood stage on the St. Francis River, backwater effect may cause zero flow in the lower reach of the L'Anguille.

Land and Water Use

Land and water in the L'Anguille River basin is used primarily for agriculture. Of the 468,000 acres reported in production in 1978, 55 percent of the acreage was planted in soybeans, 27 percent in rice, 10 percent in hardwood, and 4 percent in cotton. The remaining reported acreage (about 4 percent) comprised grassland and orchards. In addition, 36,000 acres of winter wheat were reported. Generally, the wheat is harvested in early summer and the acreage is planted in soybeans or other crops for the rest of the growing season.

Rice is irrigated chiefly for weed control. Irrigation consists of keeping the fields flooded with about 6 in. (inch) of water throughout about a 90-day period, starting in June and ending in August. Fields are drained one or two times early in the growing season and again prior to the rice harvest. The final draining occurs nearly simultaneously from all the fields, and the quantity of water released from the fields can make up most of the streamflow in the L'Anguille River during this time.

According to Halberg (1977), water applied to rice during its growing season in the L'Anguille River basin averages about 31 in. Of this amount, about 75 percent is consumed through evapotranspiration, and almost 25 percent is released to surface drainage. Because rice is selectively planted in areas with clay subsoil to inhibit percolation losses, practically none of the applied irrigation water returns to ground-water storage at the site of application. However, about 25 percent or more of the released irrigation water returns to ground-water storage after it enters the L'Anguille River.

The estimated quantity of water applied to rice in the L'Anguille River basin in 1978 was about 323,000 acre-ft, all of which was pumped from the alluvial aquifer. Of this quantity, about 81,000 acre-ft of excess water was released to the L'Anguille River, from which about 20,000 acre-ft returned to ground-water storage.

Irrigation pumpage for soybeans and cotton in the L'Anguille River basin is highly variable from season to season. The amount of pumpage is from practically none to 8 in. or more. In 1978, an unusually dry season, it was estimated that about 97,000 acre-ft of ground water was applied to the row crops, mostly soybeans. Most of this water applied to the row crops was consumed, resulting in practically no return of the applied water to streamflow and ground-water storage.

Previous Investigations

A water-pollution-control survey of the St. Francis River basin, including the L'Anguille River basin, was conducted by the Arkansas Pollution Control Commission (now the ADPC&E) in 1965 and 1968. A study was made by Bryant, Jennings, and Reed (1974), in which a steady-state, digital water-quality model was used to determine effects of point-source waste effluents on the L'Anguille River.

POLLUTION SOURCES

Point Sources

Five of the population centers in the study area have central sewage-collection and treatment systems (fig. 2). Harrisburg, near the upper end of the L'Anguille River, has a 10.7-acre oxidation lagoon. The effluent from the lagoon empties into a drainage ditch to Hollow Branch, a tributary to the L'Anguille River. Cherry Valley uses a 6-acre oxidation lagoon that empties into Cooper Creek, to Wolf Creek, then to the L'Anguille River. No effluent was observed from this lagoon during the study. Wynne has a 38-acre oxidation lagoon. The effluent from this lagoon reaches the L'Anguille River through a drainage ditch to Caney Creek, a L'Anguille River tributary. Forrest City operates three sewage-treatment plants, but only one, a 145-acre oxidation lagoon, discharges wastes to the L'Anguille River. The discharge flows 6 mi through a drainage ditch to reach the L'Anguille River. Marianna operates two oxidation lagoons. The wastes from the older lagoon are discharged directly into the L'Anguille River, whereas wastes from the new lagoon are discharged into a drainage ditch about one-half mile from the L'Anguille River.

Nonpoint Sources

Significant concentrations of nitrogen, phosphorus, and pesticides are commonly found in the water and sediment of the L'Anguille River. The presence of these constituents probably stems from the use of fertilizers and pesticides on farmlands in the study area. Nitrogen, phosphorus, and potassium, are used on crops in the L'Anguille River basin. Table 1 (tables are at end of report) shows a compilation of average application rates reported for 1978. As many as three applications of nitrogen may be made during the growing season.

A variety of pesticides were applied to crops throughout the basin during 1978. Common ones used, which have been found in samples from streams in the basin, include the herbicides 2,4-D and 2,4,5-T, and the insecticides methyl parathion and toxaphene. The herbicides 2,4-D and 2,4,5-T are usually applied in May and July to rice, soybeans, and grain sorghum. Very small amounts of 2,4-D have been applied to some grasslands. The insecticides methyl parathion and toxaphene were applied from May through September to soybeans, cotton, and, in a few areas, to rice. Tributylphosphorotrithioite was used to defoliate cotton in late September and October.

Fluvial sediments, mainly silt and clay, are being washed into the L'Anguille River from adjacent farmlands. Silt, clay, sand, and some gravel are also carried into the L'Anguille River from Crowleys Ridge, where severe erosion has occurred. Commercial sand-and-gravel operations on Crowleys Ridge are probably contributing some sediment to the river by way of tributaries draining the ridge.

ANALYSIS OF HISTORICAL DATA

Available Data

Data from two long-term water-quality stations, L'Anguille River near Colt (station 20) and L'Anguille River at Marianna (station 34), have been used in this study. The station near Colt has been operated by the Geological Survey since October 1970. The Marianna station has been operated by the ADPC&E since April 1974.

Common Constituents

A plot of the maximum, minimum, and mean specific conductance for the L'Anguille River near Colt (fig. 5) illustrates the seasonal variation of mineralization in the river. Higher values are recorded in the summer, coinciding with the release of irrigation water. Recorded values of specific conductance of ground water in the basin range from 239 μmho (micromhos per centimeter at 25° Celsius) to 916 μmho, with 86 percent of the values exceeding 500 μmho (table 2).

Statistical summaries of common constituents for long-term water-quality stations near Colt and Marianna are shown in tables 3 and 4. Water from the L'Anguille River is predominantly a calcium bicarbonate type that varies in hardness from 23 mg/L (soft) to 310 mg/L (very hard). Common constituents that fall under State or Federal regulations for human consumption are well within established standards. However, dissolved solids, sulfate, and chloride sometimes exceed the State water-quality standards. The standards are: Dissolved solids, 230 mg/L; chloride, 20 mg/L; and sulfate, 30 mg/L. The regulations require that not more than one sample in 10 exceed these concentrations (ADPC&E, 1975). For the station near Colt, three of 15 samples exceeded the dissolved solids limit, and seven of 12 exceeded the limit at Marianna. Two of 16 samples from the Colt station exceeded the limit for chloride; and seven of 41 exceeded the limit at Marianna. No sulfate concentrations at Colt exceeded the limit, and only two of 41 samples at Marianna exceeded the limit.

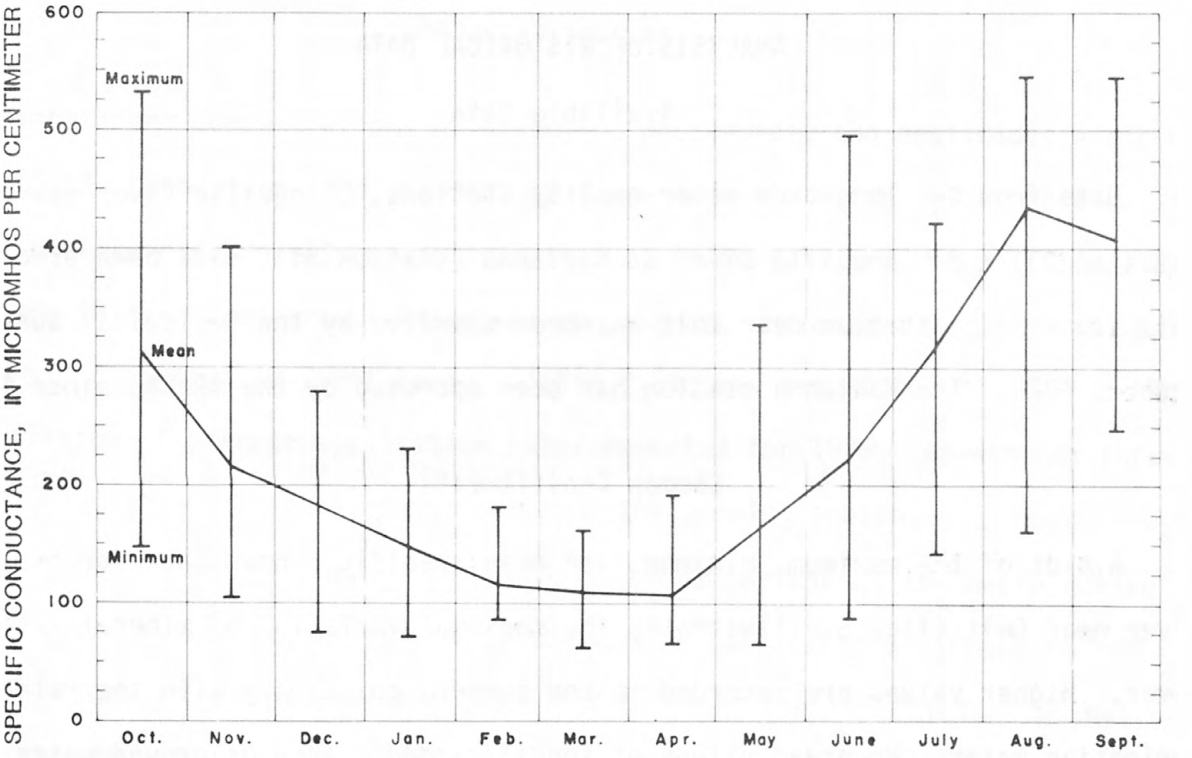


Figure 5.—Maximum, minimum, and mean specific conductance, L'Anguille River near Colt, 1971 through 1978 water years.

There is a small increase in concentrations of common constituents from the upstream station near Colt to the downstream station at Marianna. This increase is due to inflow of ground water between the two stations. The ground water generally has higher concentrations of these constituents than does the surface water.

Water Temperature

Water temperature in the L'Anguille River ranges from 0°C to 31°C. Maximum, minimum, and mean temperatures for the L'Anguille River near Colt and at Marianna are shown in figures 6 and 7. High temperatures generally occur in July, when the stream is at low flow and streamflow is sluggish. Low temperatures occur in January and February.

Trace Metals

Trace metals move in a stream as either dissolved (ions in solution), suspended (adsorbed on sediment particles) or as a mixture of the two, called the whole-water phase. Changing stream conditions may change the phase in which metals travel at any time. The principal cause of this phase change is a change in hydrogen-ion concentration, measured as pH. Because the phases in which metals travel in a stream are constantly changing and because some metals are toxic in both phases, whole-water samples are generally used to set water-quality criteria.

Historical analyses of trace metals in both the dissolved- and whole-water phases are available for the station near Colt (table 5). Whole-water analyses of trace metals are available for the station near Marianna (table 6). Iron concentrations (greater than 300 µg/L (micrograms per liter)) and manganese concentrations (greater than 50 µg/L) in the L'Anguille River have exceeded criteria for public-water supplies (U.S. Environmental Protection Agency, 1976). Mercury concentrations (greater than 0.05 µg/L) have exceeded criteria for freshwater aquatic life (U.S. Environmental Protection Agency, 1976).

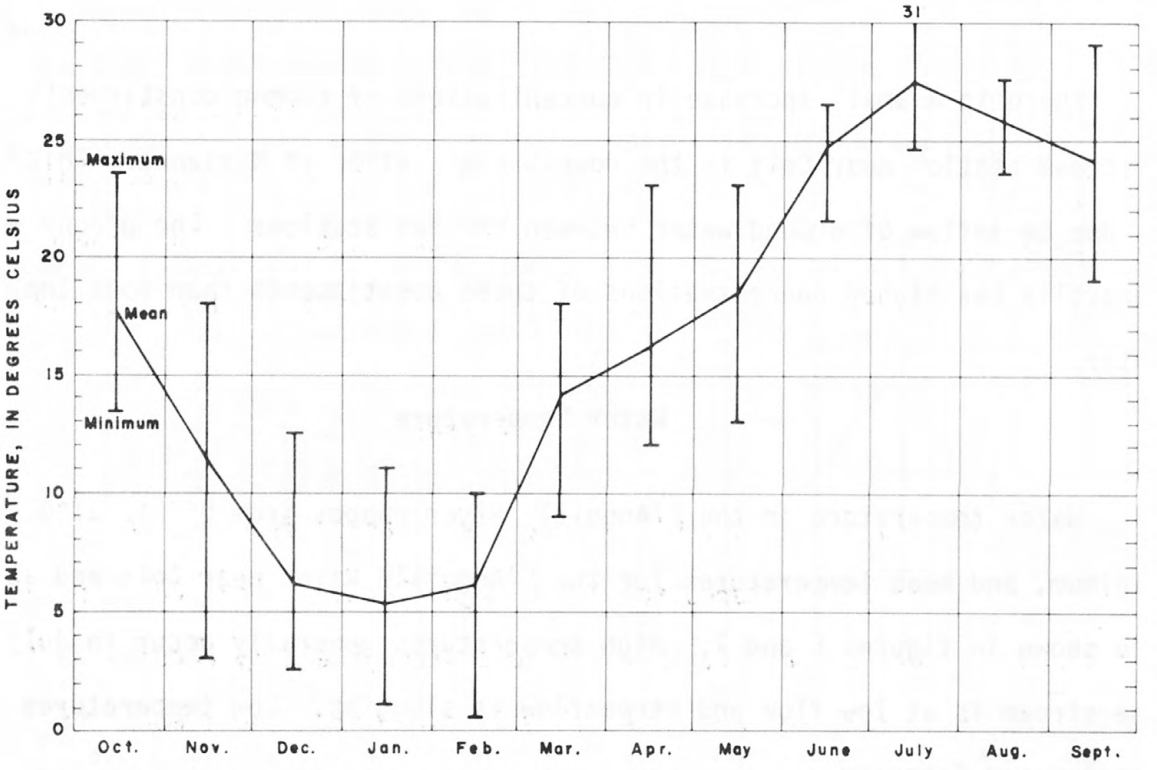


Figure 6.—Maximum, minimum, and mean water temperature, L'Anguille River near Colt, 1971 through 1978 water years.

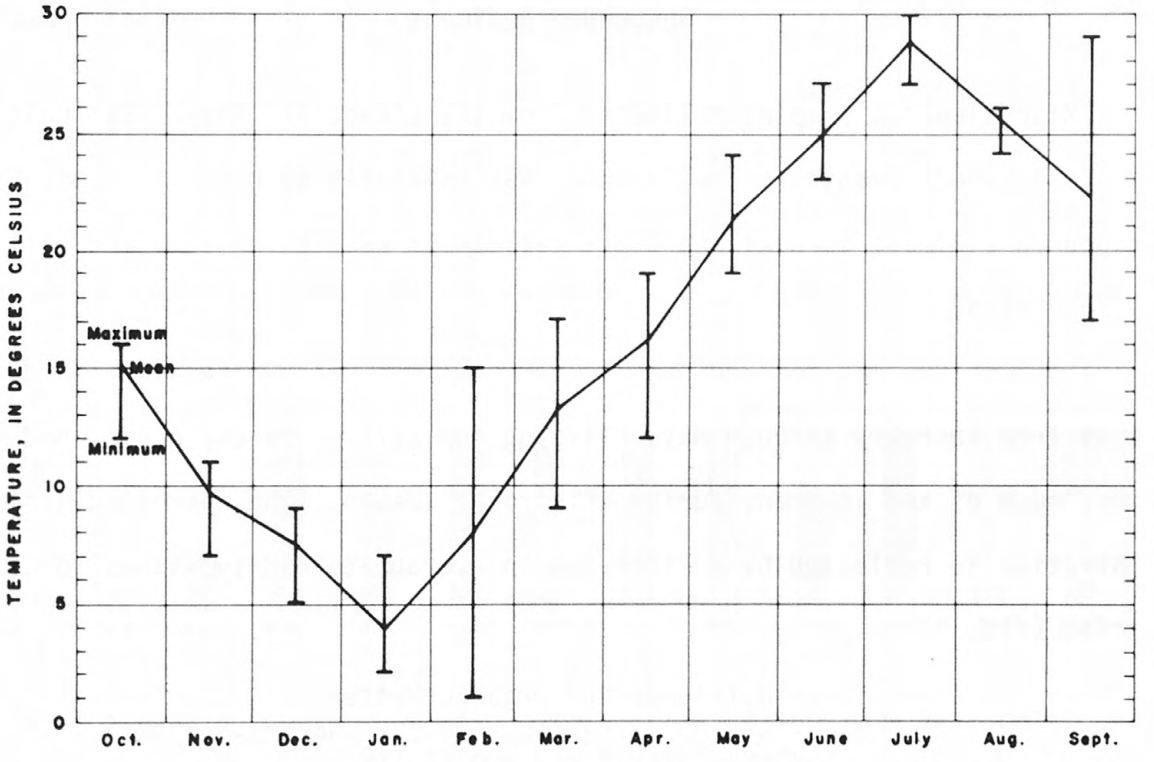


Figure 7.—Maximum, minimum, and mean water temperature, L'Anguille River at Marianna, 1975 through 1978 water years.

Suspended Sediment

Miscellaneous samples collected from the L'Anguille River near Colt during rainfall-runoff events (table 7) show that generally 90 percent or more of the suspended sediment is silt and clay, reflecting erosion of clay and silty loams in the basin.

Most of the sediment enters the L'Anguille River during winter and spring rains from February through May. Tilling the soil in March, April, and May provides much of the sediment during this rainy season. The increased sediment concentration is reflected by an increase in average turbidity values for the same period (fig. 8).

Nutrients and Organic Matter

Historical nitrogen and phosphorus data for the Colt and Marianna stations were plotted to show the nutrient concentrations of the stream (fig. 9). The plotted values indicate continued nutrient loading.

The loading patterns are similar with respect to average nutrient concentrations in whole-water samples. Concentrations begin increasing about the time land preparation for planting begins, usually late February to early March. As fertilizers are applied throughout the growing season, some are washed into the L'Anguille and its tributaries. Concentrations in the stream decrease as fertilizer use decreases and rainfall decreases. Another increase in nutrient concentration is seen in November. This can probably be attributed to some tilling that occurs after the harvesting of crops, when rainfall and runoff will wash some residual nutrients into the stream.

A large part of the nutrients entering the river appear to be adsorbed on sediment particles. Because of low stream velocities (0.25 ft^3/s, average), much of the sediment settles to the streambed, carrying with it nitrogen and phosphorus. Velocities are not high enough in the river to scour the streambed, resulting in

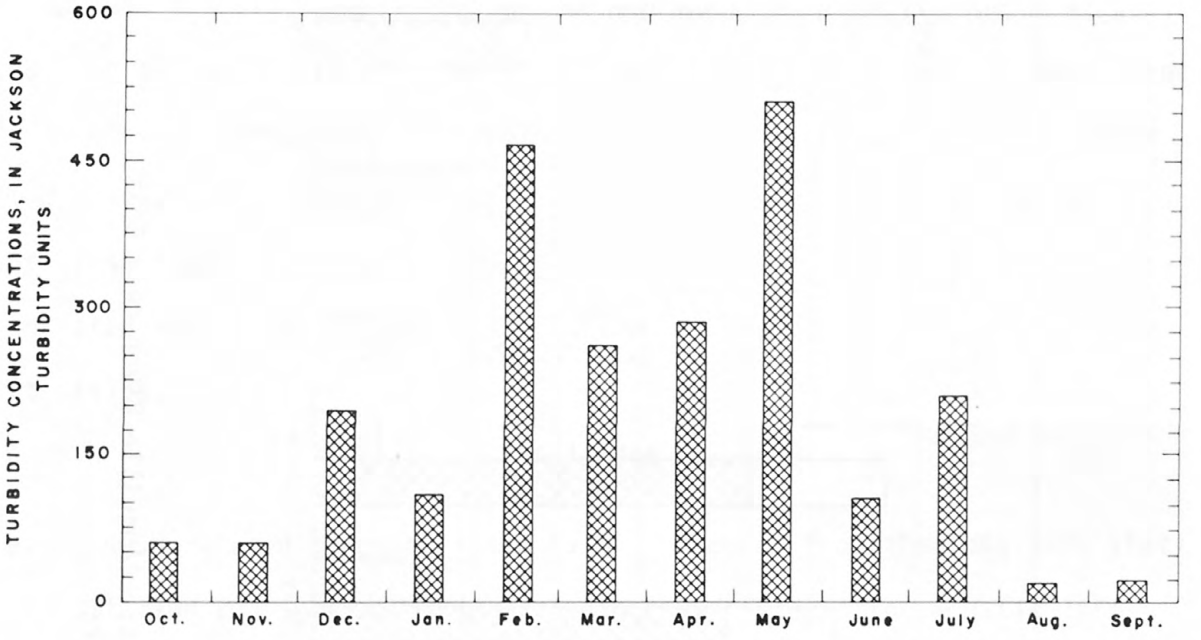


Figure 8.—Mean turbidity values, L'Anguille River near Colt, 1971 through 1976 water years.

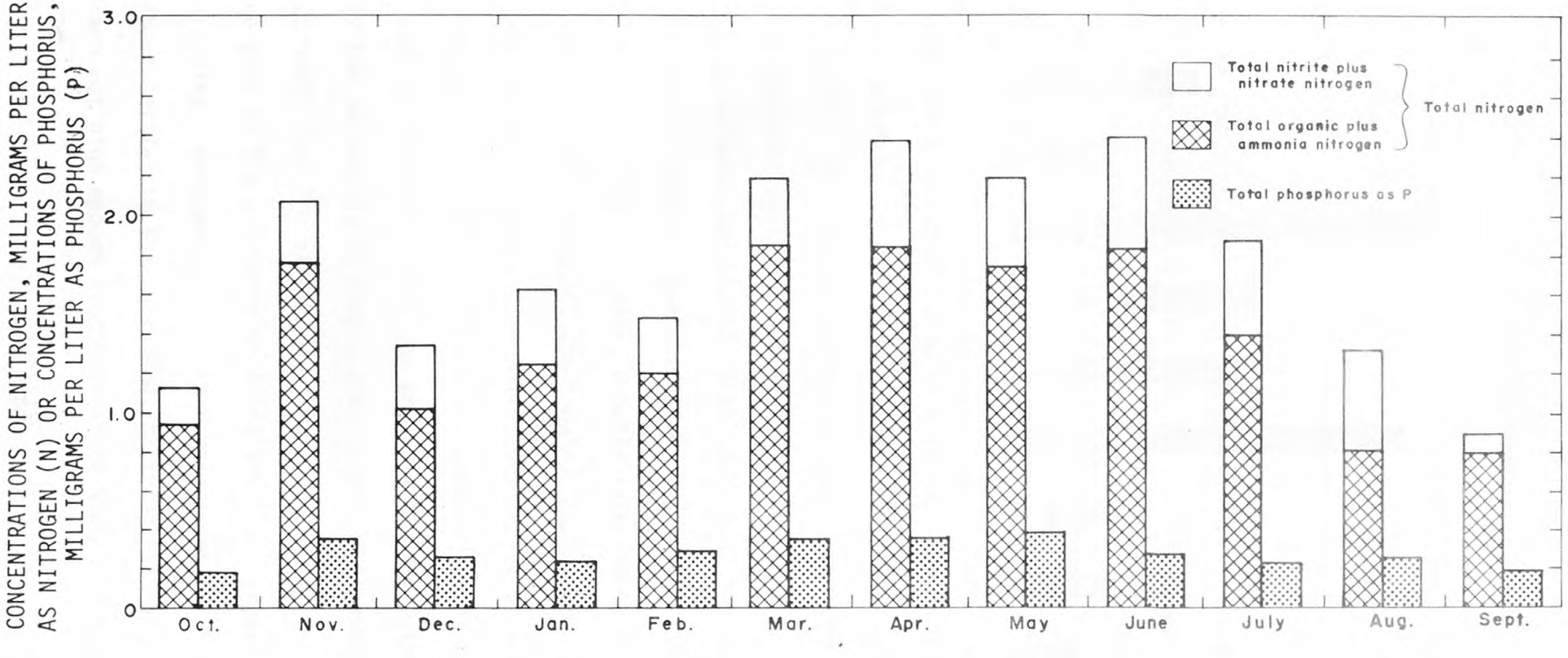


Figure 9.—Mean nitrogen and phosphorus concentrations, L'Anguille River near Colt, 1970 through 1978 water years.

continued sediment fill and continued high concentrations of nitrogen and phosphorus. Bottom-material samples collected near Colt (station 20) in 1974, 1975, and 1978, and a sample collected near Harrisburg (station 5) in 1978, show large concentrations of nitrogen and phosphorus (table 8). A bottom-material sample collected near Cherry Valley (station 10) had much lower concentrations of nutrients than samples collected from stations 5 and 20. Deposits at this location consisted mostly of sand, which originated on Crowleys Ridge and not from adjacent fields.

Pesticides

Pesticides are used throughout the basin. Records from the long-term station near Colt (station 20) show dieldrin exceeding the criteria for aquatic life (0.003 µg/L) (U.S. Environmental Protection Agency, 1976) many times during the period of record (table 9). Concentrations of DDT exceeded the criteria for aquatic life three times during the period of record, the latest being June 28, 1977. Concentrations of 2,4-D and 2,4,5-T were present at Colt but meet criteria for public-water supplies. Higher concentrations of 2,4-D and 2,4,5-T generally are present during June through August, which correlates with the period of application. Occasionally, the DDT metabolites, DDE and DDD, were found at Colt.

All pesticides measured in bed-material samples from the same location have concentrations, at certain times, that are significant when bioaccumulation is considered (table 10).

Presumably, DDT has not been used in the study area since about 1970. Because DDT breaks down into its metabolites DDD and DDE, the metabolites are usually found in higher concentrations than DDT. However, the DDT concentrations of October 11, 1972, June 5, 1975, and January 5, 1978, exceeded the concentrations of DDD and DDE. The high concentrations of DDT in 1978 may indicate either recent use of DDT or the existence of a storage pile of DDT at some point upstream from station 20. Recently, toxaphene, a common cotton insecticide, has been detected along with small concentrations of endrin and polychlorinated biphenyl forms (PCBs).

Dissolved Oxygen

Records from the stations near Colt and at Marianna indicate that dissolved-oxygen depletions occur in the summer and fall. A plot of ranges and mean dissolved-oxygen concentrations for the station near Colt shows that the minimum dissolved-oxygen concentrations fall below the State standard of 5.0 mg/L in May and remain below 5.0 mg/L through October (fig. 10). A similar plot for the station at Marianna, near the mouth of the river, indicates that the minimum dissolved-oxygen concentrations at this location fall below 5.0 mg/L in April and remain below 5.0 mg/L through September (fig. 11).

ADDITIONAL DATA COLLECTION AND ANALYSIS

Purpose

The two water-quality stations on the L'Anguille River (stations 20 and 34), plus two water-discharge stations (stations 20 and 26), did not provide sufficient information to make an accurate water-quality assessment of the basin. Modeling done for the waste-load allocation study of 1974 indicated that all waste loads were not being measured. To accomplish the water-quality assessment and with the intent of including modeling in the present study, additional data were collected in the summer and fall of 1978.

Data Collection

From August 21 through 25, and October 31 through November 2, 1978, synoptic water sampling for chemical, physical, and bacteriological constituents was done on streams throughout the L'Anguille River basin. Additional samples collected from August through December included diel-oxygen and temperature measurements, collection of benthic invertebrates and fish, and streambed-oxygen-demand samples. Additional samples were collected on November 17, 1978, after a 3-in. rainfall in the basin.

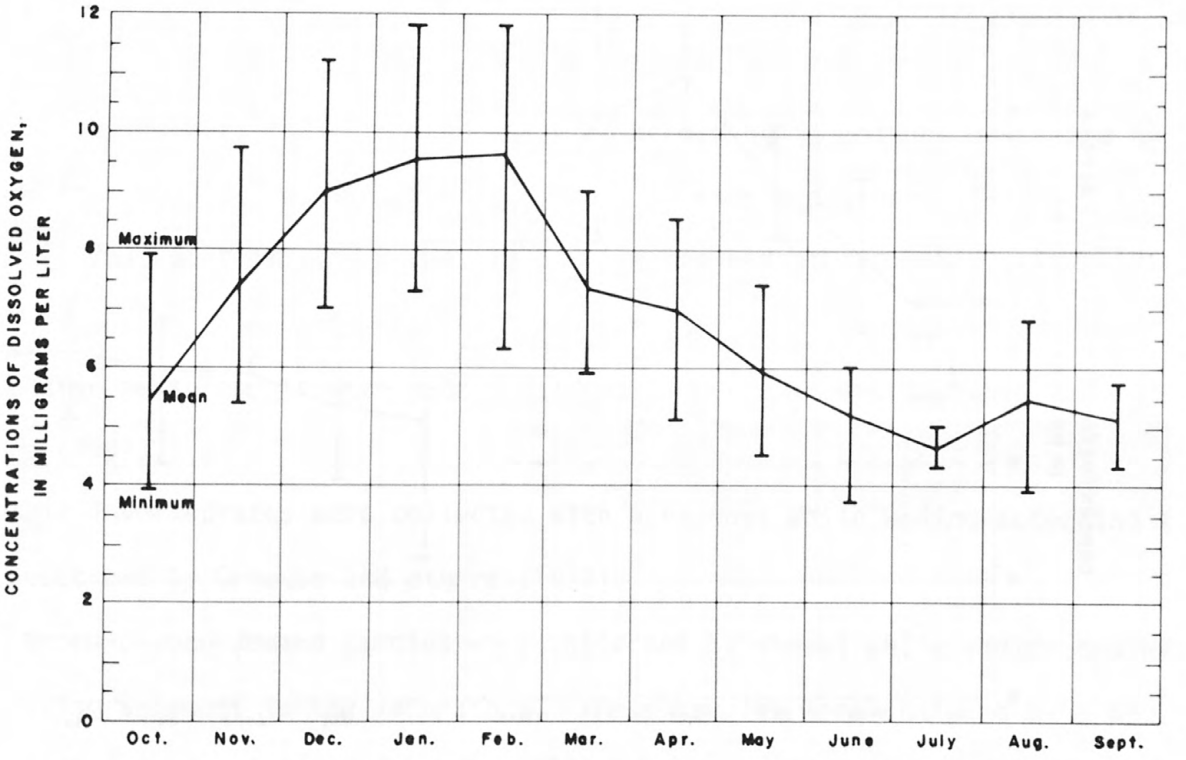


Figure 10.—Maximum, minimum, and mean dissolved-oxygen concentrations, L'Anguille River near Colt, 1971 through 1978 water years.

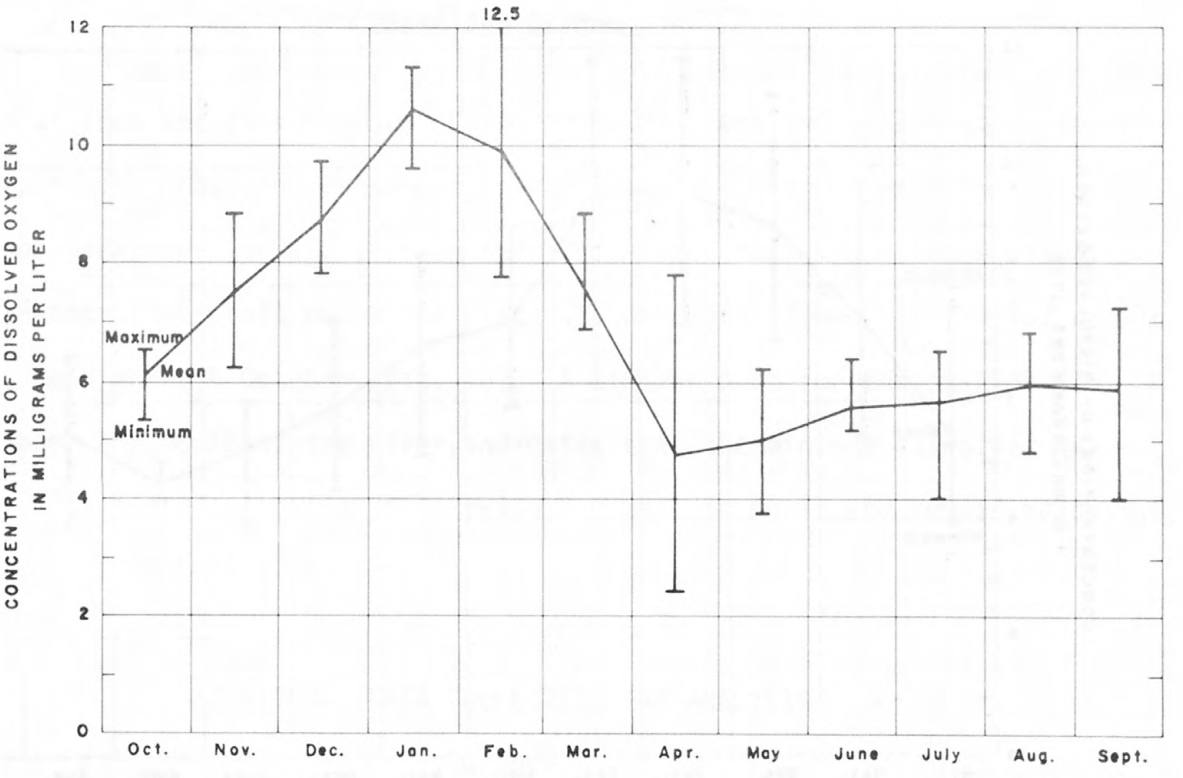


Figure 11.—Maximum, minimum, and mean dissolved-oxygen concentrations, L'Anguille River at Marianna, 1975 through 1978 water years.

Water samples were collected and analyzed according to methods described by Brown and others (1970), Guy and Norman (1970), Greeson and others (1977), Fishman and Brown (1976), Goerlitz and Brown (1972), Stevens and others (1975), Guy (1969), and the U.S. Geological Survey National Handbook (1977).

Discharge measurements were made according to methods described by Buchanan and Somers (1969).

Benthic invertebrates were collected with a handnet while wading according to methods described by Greeson and others (1977).

Streambed-oxygen-demand samples were collected by shovel while wading and were chilled during shipment to the laboratory. These samples were analyzed by a procedure modified from Nolan and Johnson (1979).

Fish were collected with gill nets, according to methods described by Greeson and others (1977). The nets were set near Marianna, Ark., on December 8, 1978, and retrieved on December 9, 1978. From the numerous fish collected, seven carp, *Cyprinus carpio* and five smallmouth buffalo, *Ictiobus bubalus* considered representative of the sizes normally found in the river, were chosen for analyses. These fish were weighed, measured for length, and each fish was wrapped in aluminum foil, frozen, and shipped to the laboratory in dry ice. Length and weight data are shown in table 11. The techniques of preparation and analyses are discussed by Marvin Yates (written commun., 1979).

Common Constituents

Common constituents found in samples collected during August indicate that streams throughout the basin were similar in water-quality characteristics during the sampling period (table 12). These data reflect the influence of irrigation

waters and are probably unlike water quality resulting from normal rainfall and runoff. During low-flow periods, when only streams receiving municipal wastes are flowing, these streams reflect to some degree the quality of the waste outfalls. During the October 31 to November 2 sampling, the only tributaries having flow were those receiving municipal-waste effluents.

Trace Metals

Data collected in August 1978 showed low concentrations of arsenic, chromium, copper, lead, selenium, and zinc, and high concentrations of mercury, iron, and manganese, as did previous investigations (table 13). Concentrations of iron and manganese exceeded limits for human consumption. High concentrations of iron and manganese are common in ground water used for irrigation in the basin (table 2). Although adequate data are not available, ground water may be one of the sources of metals in the L'Anguille River. Effluents from waste-treatment plants also contained trace metals. Fertilizers and some pesticides could be sources of trace metals. Until more research is done, the soils cannot be ruled out as possible sources of trace metals.

Results of analyses of fish samples for selected trace metals are shown in table 14. Because carp and buffalo fish are bottom feeders, the source of these metals may be the streambed deposits. Data on trace-metal concentrations in bed-material samples published by the Geological Survey in 1974 and 1975 give the following concentration ranges in micrograms per gram: Chromium, 5 to 16; copper, 10 to 32; lead, <10 to 20; and mercury, 0.0 to 0.2 (Water-resources data for Arkansas, 1974, 1975).

Suspended Sediment

Most of the samples collected basinwide in 1978 show sediment characteristics similar to the L'Anguille River (table 12). There are exceptions to this trend.

Tributaries originating on Crowleys Ridge and draining the east side of the basin have a greater percentage of sand than do those that drain the west side. Because of low velocities, most of this sand is deposited on the streambed of the L'Anguille River. Large sand deposits were found in the streambed near Cherry Valley (station 10). During periods of high flow, this sand is carried by the river as suspended sediment and bedload.

Concentrations of suspended sediment reflect varying flow conditions in the basin. Samples collected during the intensive sampling runs of August 21-25 ranged in concentrations from 35 to 253 mg/L. Flow at this time consisted primarily of released irrigation water which contained very little sediment. Because there were no contributions from storm runoff, samples collected during this time contained primarily sediment picked up from the streambed. Samples collected October 31-November 2 ranged in concentrations from 40 to 208 mg/L; most samples contained less than 100 mg/L. The October sampling was done during very low-flow conditions. The samples collected November 16-17, after a 3-in. rainfall, ranged in concentrations from 109-942 mg/L. Concentrations in these samples were higher because of the additional contributions of sheet and rill erosion.

Erosion rates and sediment delivered to streams could not be calculated from the sparse data available. However, both erosion rates and sediment delivery in the L'Anguille River basin have been estimated by the U.S. Department of Agriculture under the Resource Information Data System (RIDS) (J. L. Arrington, oral commun., 1979). The basinwide erosion rate was estimated, using the universal soil-loss equation at 4 tons per acre per year with 96 percent resulting from sheet and rill erosion. The remaining 4 percent resulted from road-surface, road-bank, gully, and streambank erosion. Sediment delivered to the L'Anguille from all watersheds in the basin was estimated at 788,600 tons/yr, of which an estimated 410,400 tons was delivered to the mouth of the L'Anguille River.

Nutrients and Organic Matter

Samples collected in August 1978 showed that nitrogen, in the forms of organic, ammonia, nitrite and nitrate, and phosphorus as both organic phosphorus and inorganic phosphorus, principally orthophosphate, were being discharged to the L'Anguille River and its tributaries (table 12). At the time of the sampling, most of the water in the river was irrigation water released from ricefields. Nitrogen and phosphorus concentrations were low, indicating that these nutrients are probably attached to sediments which remain on the fields until disturbed during a storm.

The high concentrations of nutrients in the streambed material seem to verify this conclusion (table 8). Low velocities in the river allowed some of the suspended materials to deposit on the streambed, carrying attached nutrients with them.

As shown by BOD concentrations, organic matter has also been carried into the stream. An extensive canopy of trees along the river provides large amounts of leaf litter to the stream. The leaf litter, along with other organic material that had washed in from fields, likely caused the BOD concentrations that were present.

Effluents from municipal waste-treatment plants supply oxygen-demanding wastes to the L'Anguille River. Data collected during August and November 1978 (medium and high-flow periods, respectively) are shown in table 15. Effluents from oxidation ponds at Harrisburg, Wynne, and Forrest City are presently discharged to tributary streams several miles from where the streams enter the L'Anguille. Although the effluents contain high concentrations of BOD, nitrogen species, and phosphorus, by the time the effluents reach the L'Anguille River, the concentrations are generally reduced by dilution, chemical reaction, and by biological decomposition. Consequently, the municipal-waste effluents have little impact on the L'Anguille River during periods of medium to high flows. During periods of low flow, however, municipal-waste discharges have more impact on the river than at any

other time. Data collected during a very low-flow period--October 31 through November 1, 1978--showed increased BOD and nutrient concentrations, resulting in lower dissolved-oxygen concentrations in the L'Anguille River. The tributaries that were flowing during the period October 31 through November 1 were those which received waste water. The new Cherry Valley oxidation lagoon discharges to Wolf Creek. However, during the synoptic sampling periods, the Cherry Valley oxidation lagoon was not discharging any waste water and Wolf Creek was dry. The Marianna effluents caused little discernible effects on the river, with the exception of an increased BOD concentration downstream from the new oxidation lagoon during the low-flow sampling period.

Pesticides

Data from table 16 indicate basinwide occurrence of certain pesticides in whole-water samples, particularly 2,4-D and 2,4,5-T. Other pesticides found in water-sediment mixtures, but in smaller concentrations, were aldrin, chlordane, DDD, DDE, DDT, dieldrin, lindane, methyl parathion, and silvex. With the exception of lindane, the widespread occurrence of these pesticides correlate with long-term records for the L'Anguille River near Colt. Higher pesticide concentrations generally occur from June through September (table 10).

Although toxaphene was not found in any of the samples collected during the synoptic samplings, it was found in recent bed-material samples at Colt (table 10). Significant concentrations of toxaphene were also found in carp and buffalo fish. In addition, DDE and DDD, along with PCB forms, were also found in fish (table 17). DDT and its metabolites have been found in the streambed for several years (table 10). No PCBs were detected in samples collected during the intensive sampling periods of 1978, and only small concentrations have been found in bed-material

samples from the station at Colt (table 10). The higher concentrations of DDD, DDE, and PCBs in the fish than in bottom sediments indicate that these compounds are being accumulated in these bottom-feeding fish.

Dissolved Oxygen

Dissolved-oxygen concentrations were determined at a number of sites on the L'Anguille River on August 23-24, September 26-27, October 31, November 1, and December 26-27, 1978. Dissolved-oxygen profiles for these dates are plotted in figures 12 and 13. Each of the profiles displays similar patterns. The dissolved-oxygen sags in the profiles cannot be attributed totally to outfalls from waste-treatment plants. The September measurements were made 10 days after a major flood, when 20 in. of rain fell in Cross County. Flow in the L'Anguille River at river-mile 53 at the time of the September sampling was 2,400 ft^3/s.

Diel-oxygen and temperature measurements were made at a number of sites on the L'Anguille River and selected tributaries to determine the effects of photosynthesis and respiration upon dissolved oxygen. The resulting curves shown in figures 14 and 15 indicate some fluctuation in the dissolved-oxygen concentrations due to photosynthesis and respiration. However, the net impact was not significant enough to account for the oxygen sags shown on the profiles (figs. 12 and 13).

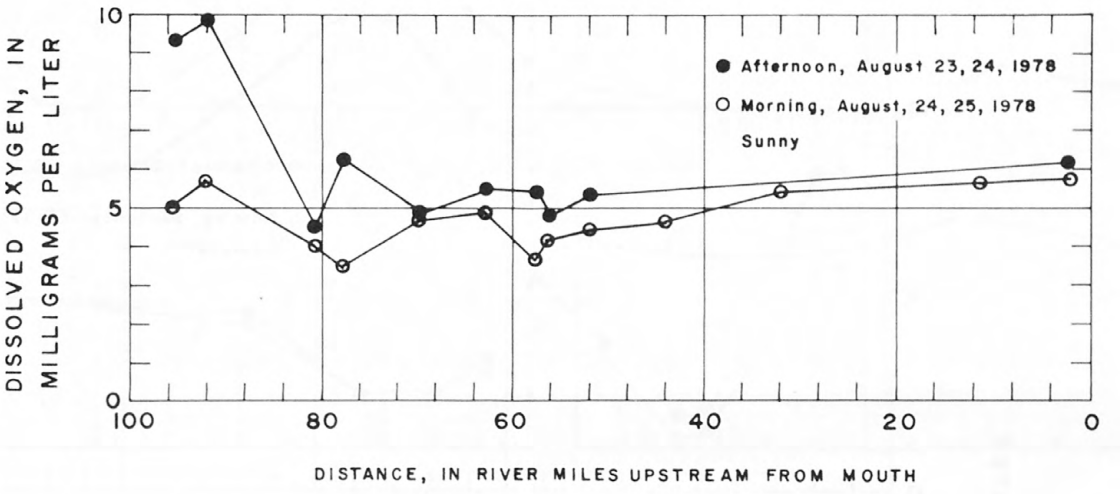


Figure 12.—Dissolved-oxygen sag curve during August synoptic sampling.

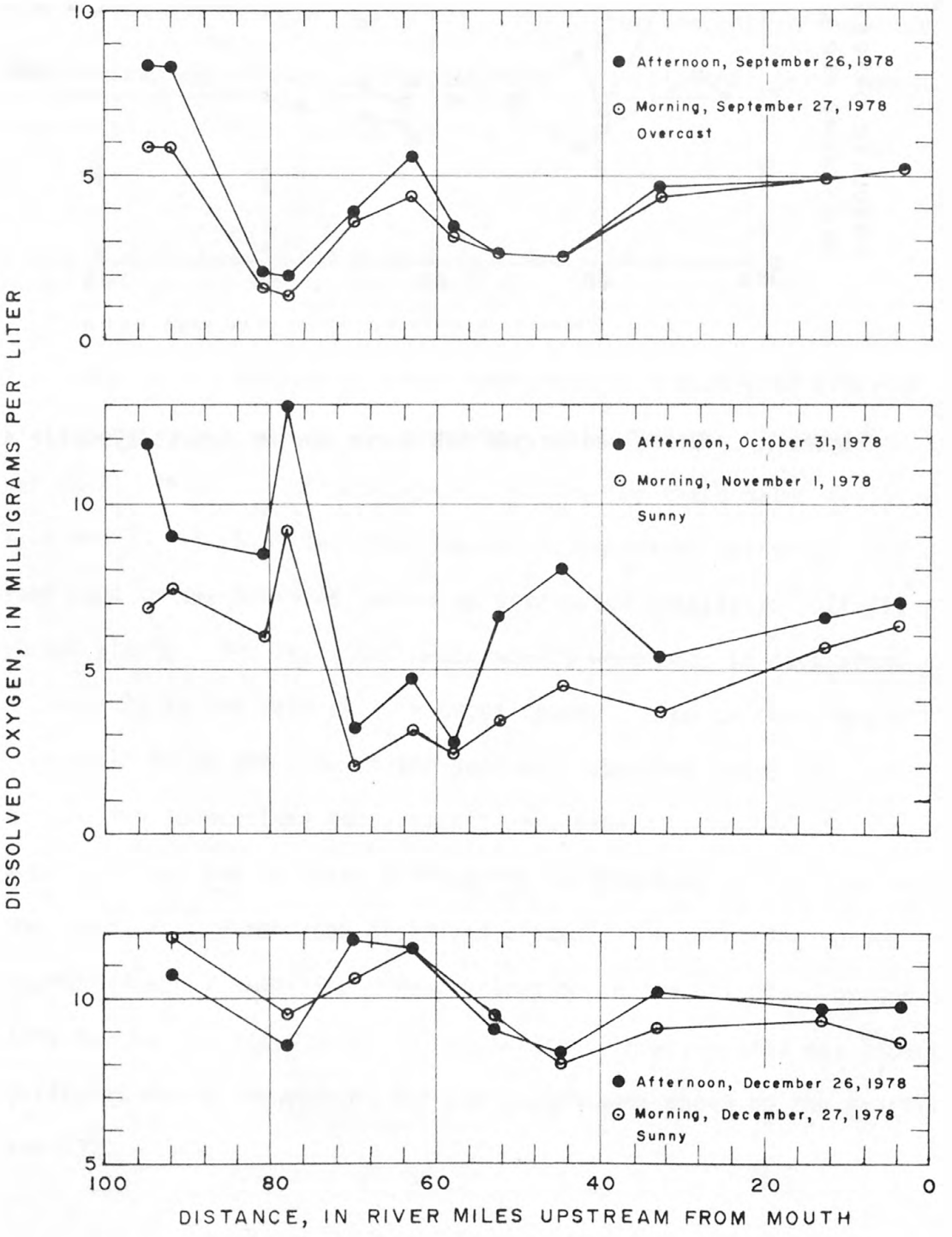


Figure 13.—Dissolved-oxygen sag curves for L'Anguille River.

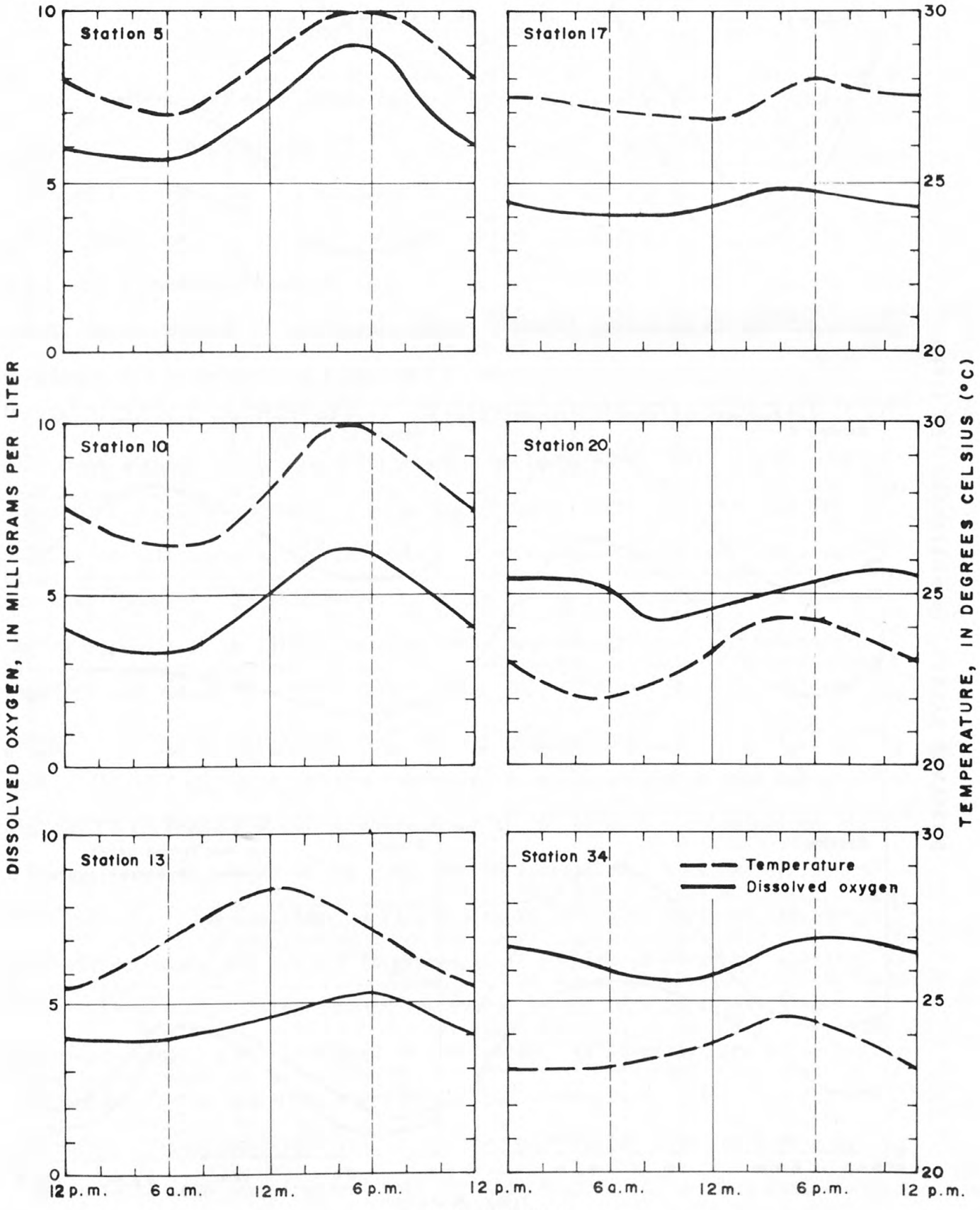


Figure 14.—Diel dissolved-oxygen and temperature for selected stations. L'Anguille River, August 21-25, 1978.

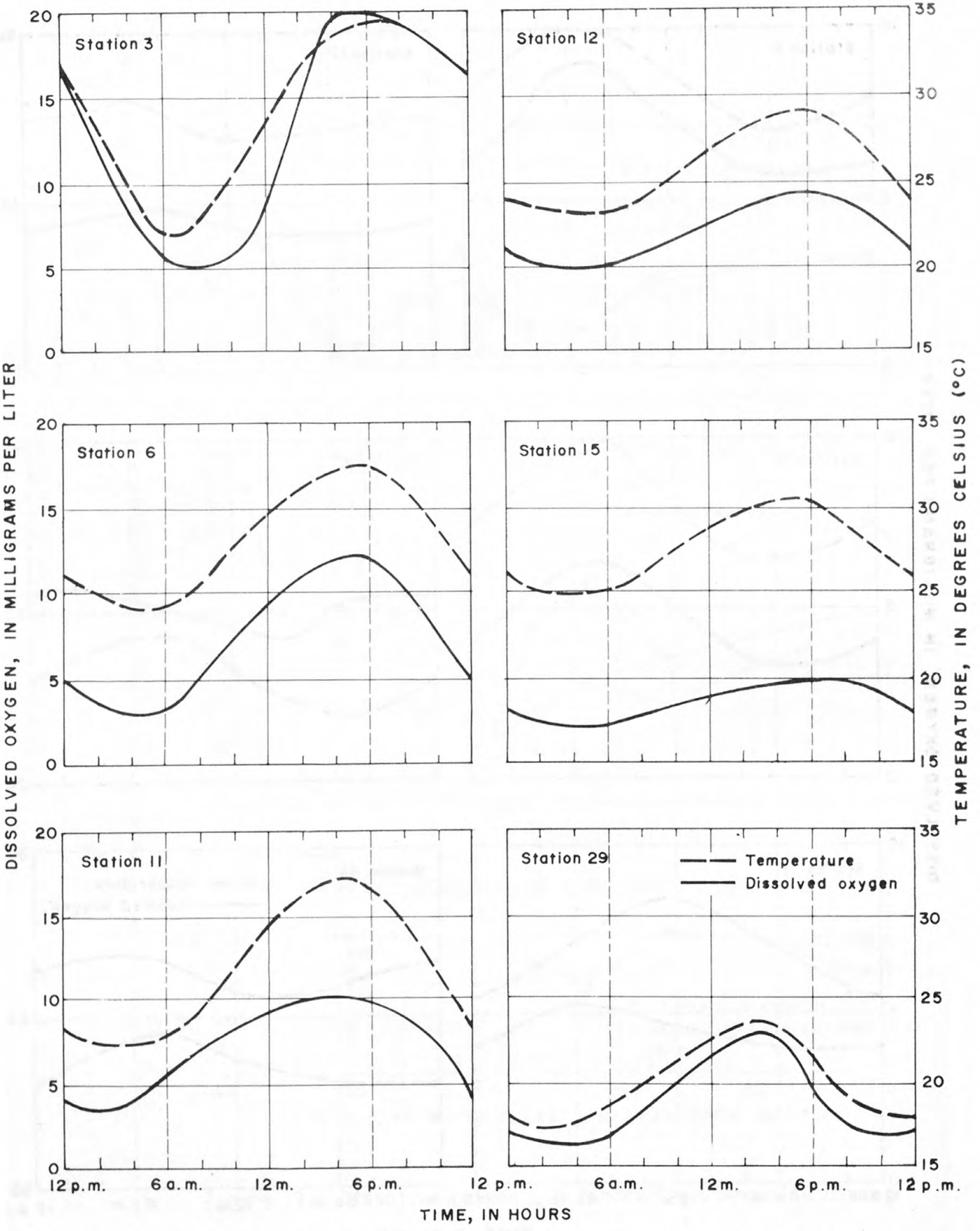


Figure 15.—Diel dissolved-oxygen and temperature for selected tributaries to the L'Anguille River, August 21-25, 1978.

Streambed-Oxygen Depletion

The oxygen budget of a stream can be significantly altered by the demand for oxygen from the streambed. This demand is primarily exerted from two sources: (1) respiration by fungi and bacteria as primary consumers of allochthonous organic matter, and (2) by microinvertebrates and macroinvertebrates living in the streambed deposits and acting as primary and secondary consumers of this organic matter. To a lesser extent, chemical oxidation of bed deposits and respiration by periphyton also exert a demand.

Measuring this respiration rate can be difficult. Ideally, an onsite measurement without disturbing the streambed would be made. This can be done using a dome over the sediment or by using sediment cores, but these are difficult to operate and are time consuming. A more practical approach is a laboratory measurement. In this method, the top 5-8 cm of bed material is removed from the stream with as little disturbance as possible and carried back to the laboratory and placed in a respirometer (fig. 16). The method of determining streambed-oxygen demand was adapted from Nolan and Johnson (1979). The respirometer, which is constructed of clear acrylic, is a closed system that has an inlet port 3 cm above the sample surface and an outlet port 9 cm below the lid. The bed material is placed in the container to a depth of 2.5 cm, with 0.069 m^2 of surface area. The container is filled with 24 liters of buffered, aerated, demineralized water, and the lid is placed on it forming an airtight container. The water is then circulated through the system by use of a peristaltic pump. A dissolved-oxygen probe is placed in the system, calibrated, and connected to a recorder. The system is operated at room temperature (21°±1°C) for 18-24 hours. Dissolved-oxygen values are then plotted for each tenth of a day. In determining the respiration rate for the sample, only that part of the

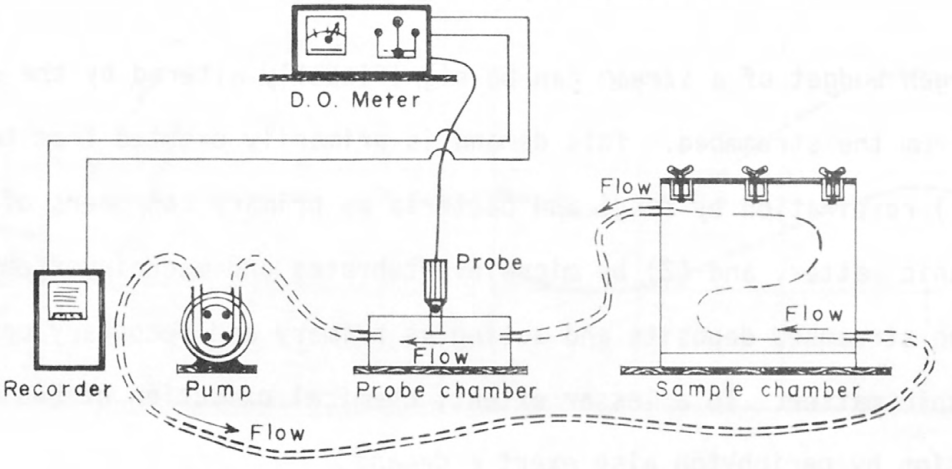


Figure 16.—Respirometer used for measuring streambed-oxygen demand.

run where oxygen consumption versus time is constant is used in calculation of the rate. The part of the curve falling below 2 mg/L was not used. A run is also made with no streambed material present and the appropriate blank correction is made in the final calculation. The streambed-oxygen demand is calculated using the following equation:

$$SOD\ gO_2 \cdot m^2 \cdot day^{-1} = \frac{[(O_i - O_f) - (B_i - B_f)]\ V}{(SA)(t)},$$

where

SOD=Streambed-oxygen demand,

O_i=DO initial mg/L,

O_f=DO final mg/L,

B_i=Blank DO initial mg/L,

B_f=Blank DO final mg/L,

V=Volume confined water (m^3),

SA=Sample area (m^2), and

t=Time in days.

Four replicate samples were run when possible and the mean value obtained was used as the streambed-oxygen demand (SOD). Four samples were run to increase the statistical validity of results because of variables involved in working with a biological system. SOD values determined using the respirometer (table 18) tend to be high for winter conditions and low for summer conditions, but should provide realistic estimates of mean-annual streambed-oxygen demand. These mean-annual SOD estimates are probably somewhat high because of streambed disturbance when collecting the samples and disturbance of the samples when filling the respirometer with water.

Streambed-oxygen-demand values differ considerably between streams. Butts and Evans (1978) found that for several streams in Illinois, values ranged from

0.27 $gO_2 \cdot m^{-2} \cdot day^{-1}$ (grams of oxygen per meter squared per day) for a relatively clean stream to 9.3 $gO_2 \cdot m^{-2} \cdot day^{-1}$ for a very polluted stream. A station on the Fox River in Illinois with a similar substrate to the L'Anguille River had an SOD of 3.33 $gO_2 \cdot m^{-2} \cdot day^{-1}$.

Biological Assessment

According to surveys of the L'Anguille River done in 1965 and 1968 by the Arkansas Pollution Control Commission, the entire river showed the effects of organic enrichment (elevated BOD, nitrogen and phosphorus values, and depleted dissolved-oxygen values). Organic enrichment was evident immediately downstream from some of the sewage outfalls (point sources) and the effects of nonpoint sources were evident throughout the river reach. In addition to the organic enrichment, the fluvial-sediment concentration was high enough to be detrimental to the stream biota. The high sediment concentration was evidenced by high turbidity measurements in the 1965, 1968 report and by data from the L'Anguille River near Colt (fig. 11). These values showed some improvement near the lower end of the river where ground-water discharge reduced the sediment concentration, especially at low flows. Data collected during this study showed the same conditions existed in 1978. The problems caused by organic enrichment and high sediment concentration are evident in two members of the stream community: The phytoplankton and the macroinvertebrates (Hynes, 1970). In the phytoplankton community, the 1965, 1968 report showed that although phytoplankton cell counts increased below point-source outfalls, they were lower than 1,000 cells/ml for the entire stream reach. These low counts can be attributed to the following factors:

1. High fluvial-sediment concentrations, especially of fine material (less than 0.062 mm), greatly reduce available light needed for photosynthesis.

2. A protective canopy of trees along the narrow river channel reduces available light for photosynthesis.

In the invertebrate community, the 1965, 1968 report showed that most of the organisms found throughout the stream reach were either pollution tolerant or facultative; that is, able to adapt to a less than ideal environment. The 1978 data confirmed these findings, as evidenced by the dominant organisms being hemiptera, coleoptera, and diptera, shown in tables 19-21. The only exception was the decapoda discussed later in this report. The reasons for this type of community are as follows:

1. High concentrations of allochthonous organic matter and organic solids loading from point sources are deposited on the streambed and can best be used as a food source by pollution-tolerant or facultative organisms.

2. Fluvial sediments deposited on the streambed cause a substrate suitable for primarily burrowing-type invertebrates, with other invertebrates present being active swimmers above the substrate or on the surface of the stream. The river does, however, have some steep, clay banks with exposed roots and fallen trees that seem to be ideal habitats for the freshwater (glass) shrimp *Palaemonetes*. Several species of this genus are associated with brackish water and the freshwater types seem to do well in an enriched environment with low dissolved oxygen, as evidenced by this being the dominant organism found in the collections of the Geological Survey during 1978(tables 19-21).

3. Because of the low dissolved-oxygen concentration, especially at night, most of the invertebrates present have the ability to obtain oxygen from the atmosphere, or are tolerant of low dissolved-oxygen concentration for extended periods of time.

WATER-QUALITY MODELING

Previous 303 Modeling

Water-quality has been modeled previously (1974) on the L'Anguille River as a part of the Arkansas waste-load allocation studies called for under section 303 of Public Law 92-500. The digital model used in these studies was a steady-state, segmented, dissolved-oxygen model (Bauer and Jennings, 1975).

Data collected on the L'Anguille River for the 303 study indicated definite sags in the dissolved-oxygen profile. Efforts to calibrate the model, using measured carbonaceous-oxygen demands in tributaries and waste effluents as the only stresses, failed to reproduce the observed sags in the computed dissolved-oxygen profile. To obtain a reasonable fit between the observed and computed profiles, carbonaceous- and nitrogenous-oxygen demands, CBOD and NBOD, respectively, were attributed to linear runoff in the subreaches where computed dissolved-oxygen concentrations were substantially higher than observed concentrations (Bryant and others, 1974). This process was successful in lowering the computed dissolved-oxygen profile and an adequate calibration was achieved. However, attributing such CBOD and NBOD concentrations to the linear runoff was only a guess at the source and form of the unknown oxygen demands.

The 303 study on the L'Anguille River, although adequate at the time, was considered preliminary and, indeed, stressed the need for a followup study including a more concentrated and thorough data-collection effort to develop a more accurate and reliable model.

Modeling for 208 Study

The digital model used in this study is a revised version of the steady-state, segmented, dissolved-oxygen model described by Bauer and Jennings (1975). A report containing a complete description of the revised model has been prepared at the

U.S. Geological Survey Gulf Coast Hydroscience Center, Bay St. Louis, Miss. (Bauer, Jennings, and Miller, 1979). Included in the report are an explanation of methodology, equation development, and data-input requirements.

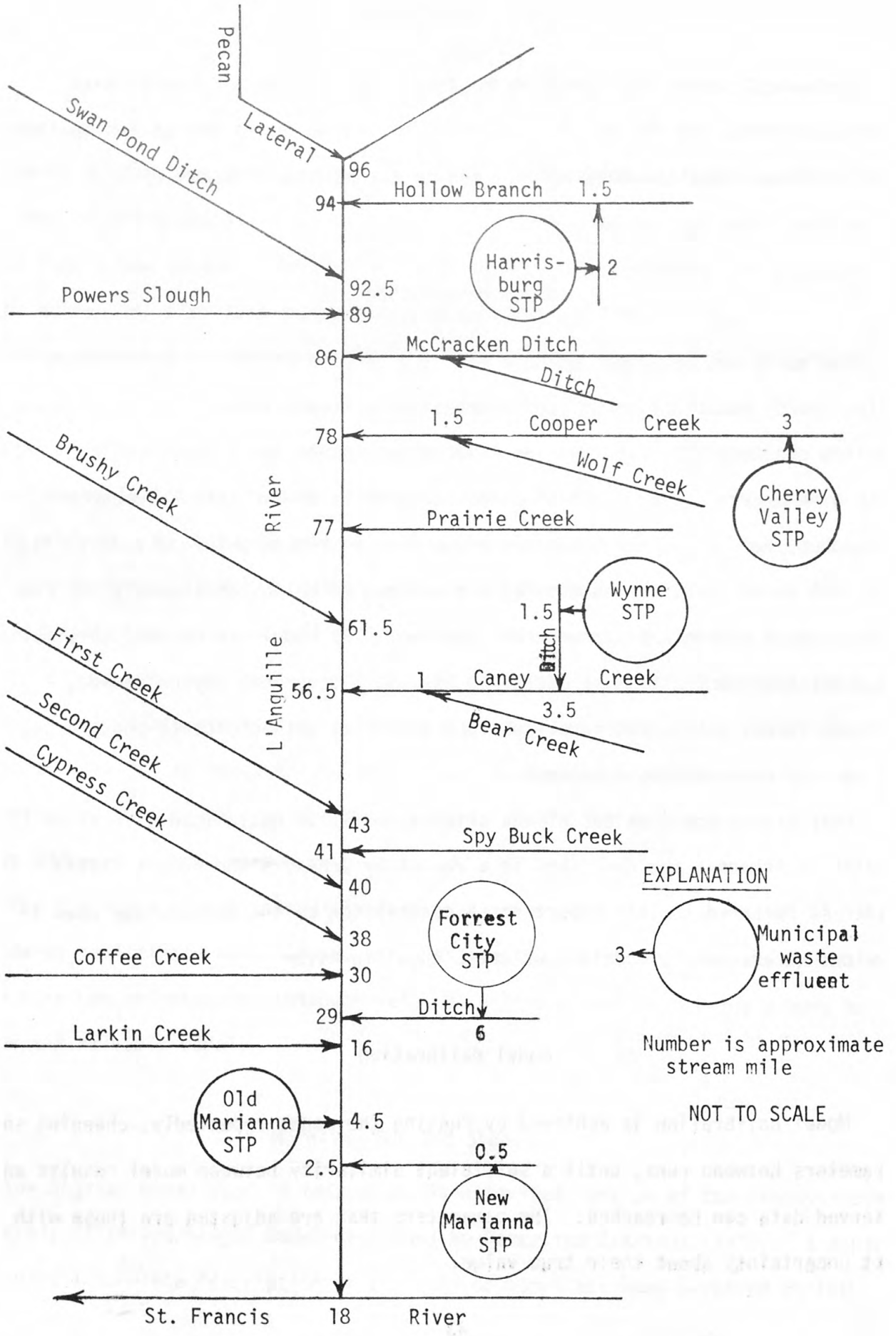
Model description

The model was developed using a modified version of the basic Streeter-Phelps (1925) equation; it is a one-dimensional, steady-state formulation that requires constant-flow rates and associated parameters for tributaries and waste dischargers. Each reach of stream modeled is divided into a number of subreaches, defined by the locations of waste- or tributary-inflow points (fig. 25). All constituents being modeled are assumed to be instantaneously and completely mixed within any stream cross section. The model can be used to simulate and predict concentrations of dissolved oxygen, biochemical-oxygen demand, nitrogen forms, total- and fecal-coliform bacteria, orthophosphate-phosphorus, and various conservative substances.

Preliminary applications of the original model to waste-load allocation (303) studies in Arkansas are described in a report by Jennings and Bryant (1974). The reader is referred to this report for a description of the methodology used in previous water-quality modeling of the L'Anguille River.

Model calibration

Model calibration is achieved by running the model repeatedly, changing some parameters between runs, until a sufficient similarity between model results and observed data can be reached. The parameters that are adjusted are those with the most uncertainty about their true value.



EXPLANATION

Figure 17.—L'Anguille River basin

The data collected in August 1978 (table 12) were used in calibrating the model for the L'Anguille River (attachments A-2 through A-20). Data collected during November (table 12) were to be used to verify the calibrated model. However, lack of flow in the tributary streams, zero flow in some reaches of the main stem, and reaches where ground-water discharge accounted for the major part of the flow made this data set unusable for modeling purposes. Constituents included in the L'Anguille model as predictable variables are dissolved oxygen, carbonaceous biochemical oxygen demand, nitrogen forms (organic, ammonia, nitrite, nitrate), total and fecal-coliform bacteria, orthophosphate-phosphorus, and total suspended solids. Stresses on the system included utilization of oxygen by carbonaceous and nitrogenous substances and benthic deposits, the uptake of phosphate by streambed materials, and the die-off of total- and fecal-coliform bacteria. Except for the upper part of the stream, photosynthesis and respiration were not considered significant sources and sinks of dissolved oxygen. Dissolved-oxygen production by photosynthesis in the upper part of the stream was reflected in the high initial dissolved-oxygen-concentration input to the model. The following parameters were modified during calibration:

AKR=Average CBOD decay rate for a subreach, 1/day. (KR on printout.)

AKD=Average CBOD deoxygenation rate for a subreach 1/day. Expressed as a bottle-time decay-rate measure. For this study AKD=AKR. (KD on printout.)

AKORGN=Average organic-nitrogen forward reaction coefficient for subreach,1/day. Expressed as an average subreach instream decay rate. (KORG on printout.)

AKMØN=Average ammonia-nitrogen forward reaction coefficient for a subreach, 1/day. Expressed as average instream decay rate. (KNH3 on printout.)

AKNØ2=Average nitrite-nitrogen forward reaction coefficient for a subreach, 1/day. Expressed as an average subreach instream decay rate. (KNØ2 on printout.)

AKNØ3=Average nitrate-nitrogen decay rate for a subreach, 1/day. Expressed as an average subreach instream decay rate. (KNØ3 on printout.)

SKØRGN=Average organic-nitrogen decay rate for a subreach, 1/day. Expressed as an instream decay rate. (SKØRG on printout.)

SKAMØN=Average ammonia-nitrogen decay rate for a subreach, 1/day. Expressed as an instream decay rate. (SKNH3 on printout.)

SKNØ2=Average nitrite-nitrogen decay rate for a subreach, 1/day. Expressed as an instream decay rate.

KPØ41=Coefficient for stream bottom deposit uptake rate in orthophosphate-phosphorus equation, 1/day.

TØDIE=Average total-coliform bacteria die-off rate for a subreach, 1/day. (KCØLT on printout.)

CØLDIE=Average fecal-coliform bacteria die-off rate for a subreach, 1/day. (KCØLF on printout.)

Initial values for these parameters were estimated from observed data when possible. Others were based on accepted values from the literature (Miller and Jennings, 1978). Adjustments to these parameters were made so that the resulting values remained within plausible limits. Attachment A-8 shows the final values of these parameters resulting from calibration.

The removal and deoxygenation rates for CBOD were assumed equal in every subreach. Settling of organic matter evidently occurs almost immediately upon entry to the river. Movement downstream is minimal and occurs only when velocities are

sufficient to move the material slowly along the river bottom. No attempt was made, therefore, to define a difference between the removal and deoxygenation rates.

Some explanation of the dual decay rates for organic-, ammonia-, and nitrite-nitrogen is necessary. The nitrogen-cycle transformation is a coupled sequential reaction involving the decay of organic-nitrogen to ammonia through nitrite to nitrate. The forward reaction of each nitrogen form with the next sequential nitrogen form and the associated concentration coupling is determined by the forward reaction coefficient. These forward reactions--the transformation of one nitrogen form to another--are generally the most significant reactions. However, there are other possible reactions. These include plant utilization of ammonia, reduction of nitrate and nitrite to ammonia, and the escape as gas of nonionized ammonia and molecular nitrogen (N_2). The rates at which these reactions occur are included in the decay-rate coefficients.

The decay rates describe the total rate of decay of the nitrogen forms; whereas, the forward reaction coefficients describe the rate at which one form of nitrogen decays sequentially forward to the next form. Therefore, the decay rates should always be greater than, or equal to, the forward reaction coefficients. This relationship was adhered to during calibration of the L'Anguille River model (attachment A-8). The rate at which nitrate is utilized is described by the nitrate decay rate which includes reduction of nitrate to ammonia and, primarily, plant utilization of nitrate.

Reaeration rates for the L'Anguille River were computed by the model based upon channel geometry and velocity. The equation used is one developed by Bennett and Rathburn (1972). The basic formulation of the equation as it is applied in the model is described in Bauer, Jennings, and Miller (1979). Velocities in the L'Anguille River for the flows measured in August 1978 averaged about 0.25 ft/s. Consequently reaeration rates, KA, were small (attachment A-8).

The "goodness of fit" reached for the predicted variables during calibration is illustrated by graph plots of computed and observed data versus stream distance (attachment A-11). These plots were output by the model and reflect its ability to reproduce observed concentrations of the predicted variables.

During calibration, the benthic (or streambed) demands upon oxygen in the stream were much more significant than either the carbonaceous or nitrogeneous demands. SOD values determined using the respirometer (table 18) were input to the model as average benthic-oxygen demand for each subreach (attachment A-7). Oxygen deficits created by the benthic demands were far higher in every subreach than deficits created by the carbonaceous or nitrogeneous demands. Table 22 shows the average deficits created by each oxygen user in every subreach.

Model projections

During the August sampling when discharges ranged from 29 ft^3/s at river-mile 94.5 to 576 ft^3/s at river-mile 0, concentrations of dissolved oxygen in several subreaches of the L'Anguille River fell below Arkansas' recommended minimum limit of 5.0 mg/L (attachment A-19). Projections were made for these flow conditions to determine at what reduced level of oxygen utilization the dissolved-oxygen profile would remain at or above 5.0 mg/L for the entire reach modeled. All other variables in the model remained unchanged from calibration.

At present (1979), more than 70 percent of the oxygen deficit created in each subreach is caused by the benthic demands (attachment A-23). For this reason, only reductions in benthic-oxygen demands were considered in the projections. Five projection runs were made; one each at a reduction in benthic demand of 20, 30, 40, 50, and 60 percent. The resulting dissolved-oxygen profiles are illustrated in figures 18 through 22. Observed dissolved-oxygen data were left in

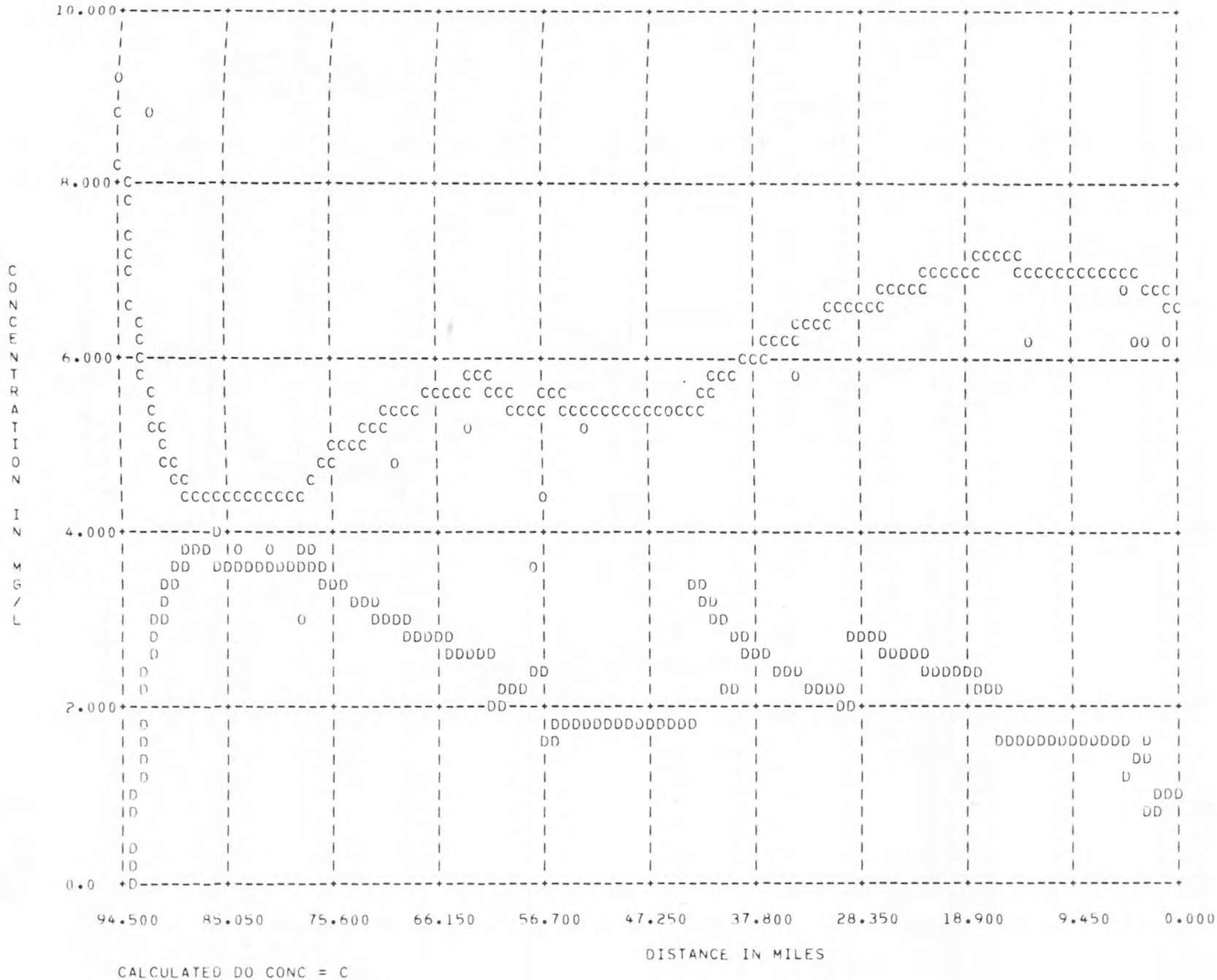


Figure 18.—Projected dissolved-oxygen profile, benthic demand reduced 20 percent

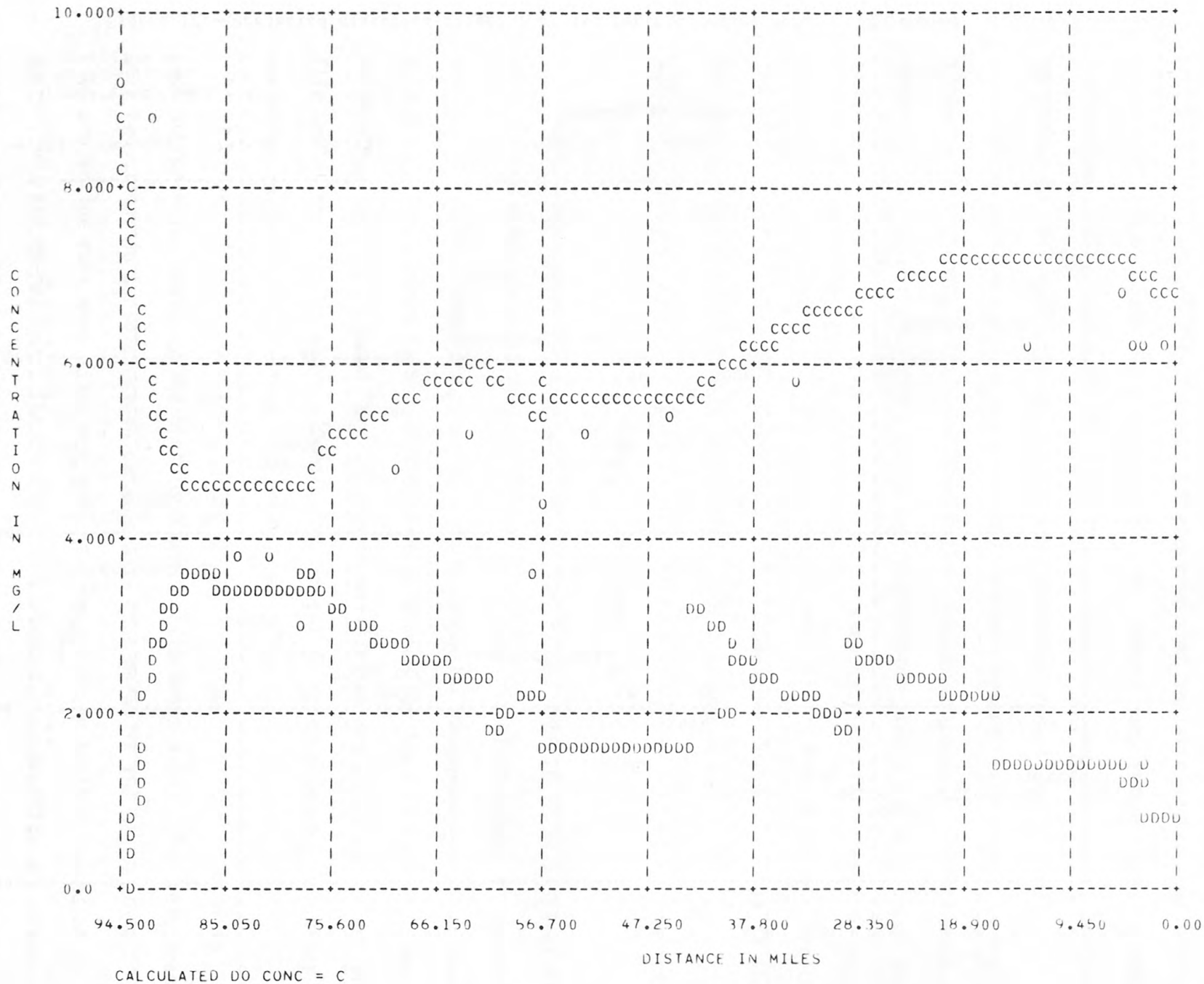


Figure 19.—Projected dissolved-oxygen profile, benthic demand reduced 30 percent

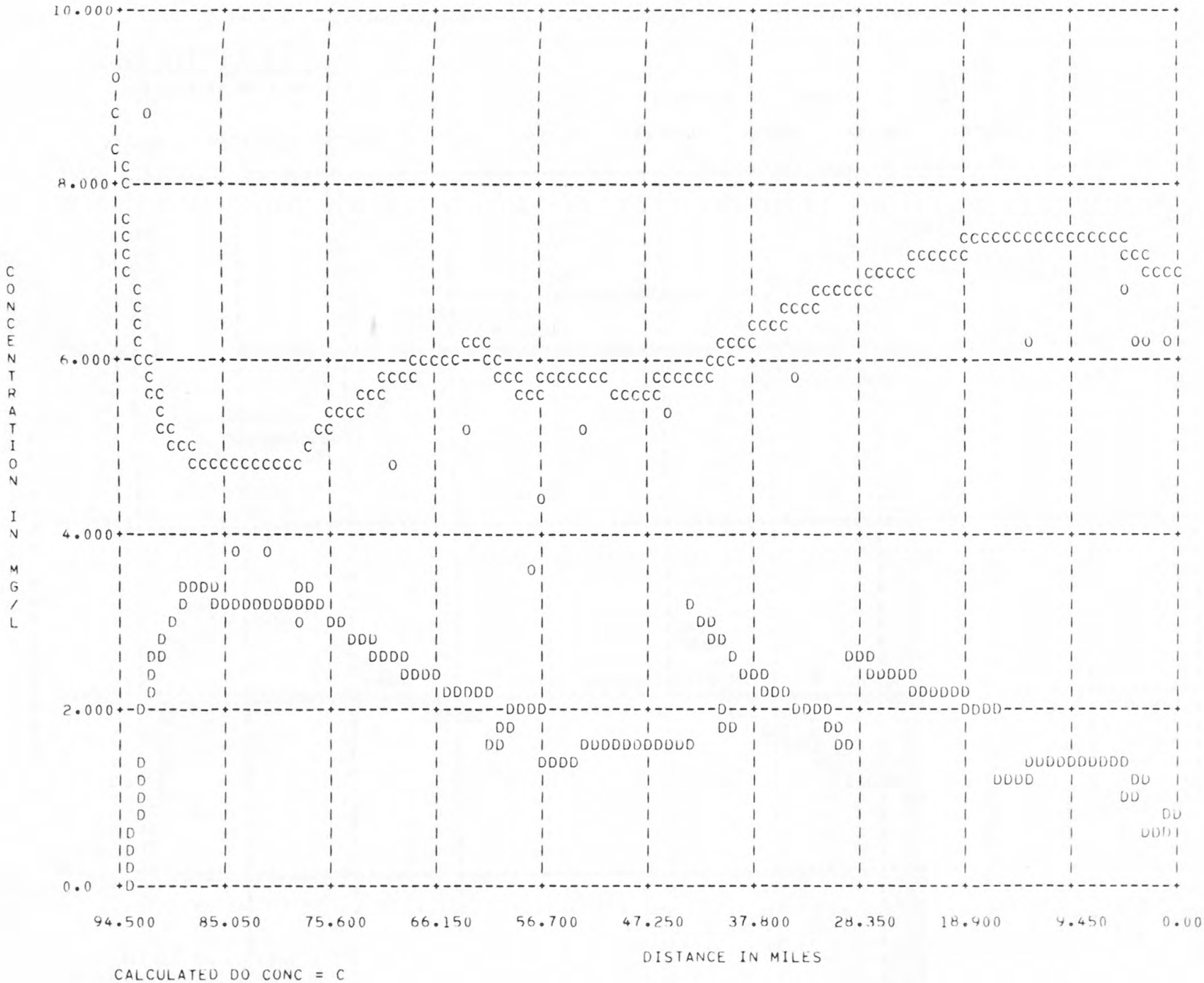


Figure 20.—Projected dissolved-oxygen profile, benthic demand reduced 40 percent

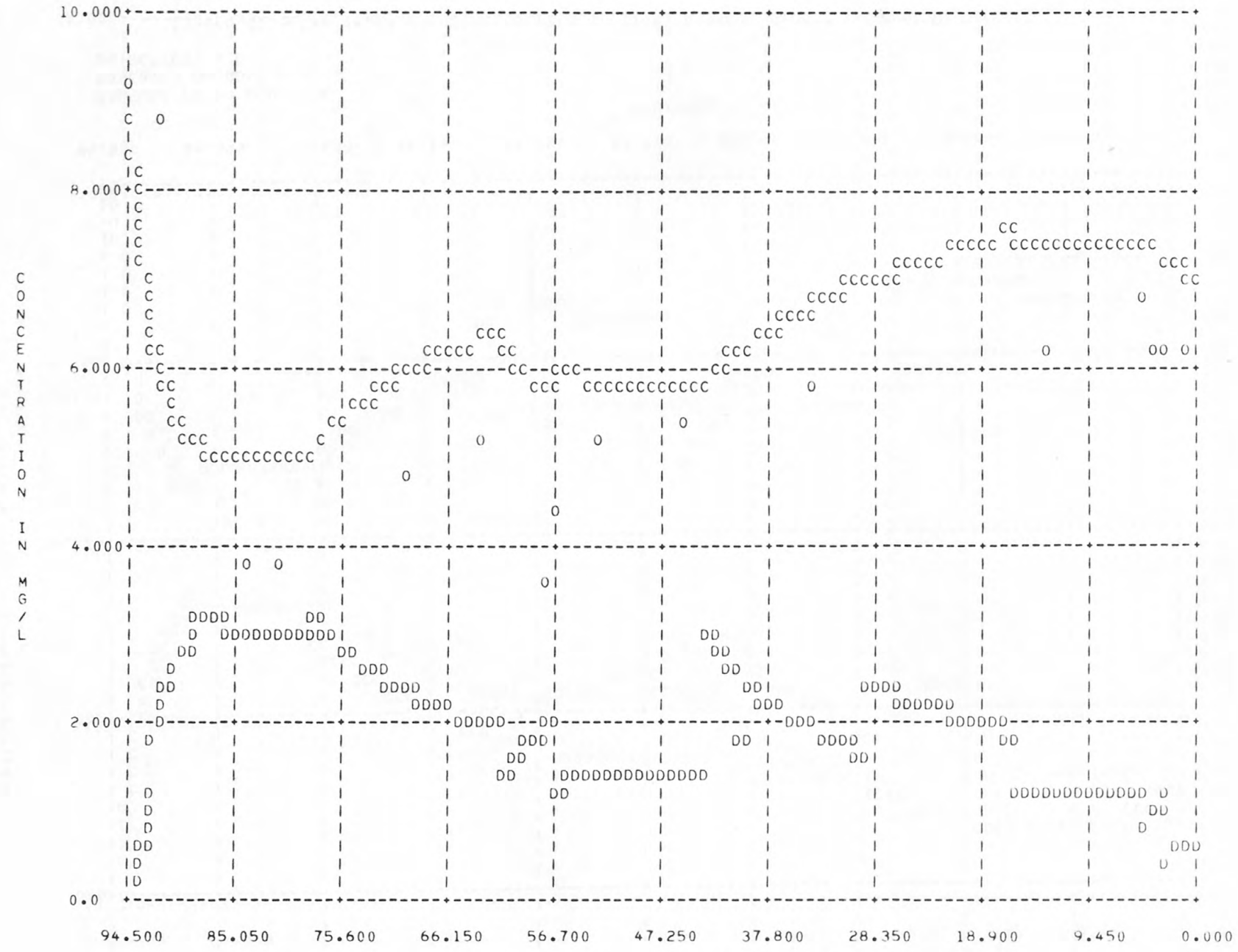


Figure 21.—Projected dissolved-oxygen profile, benthic demand reduced 50 percent

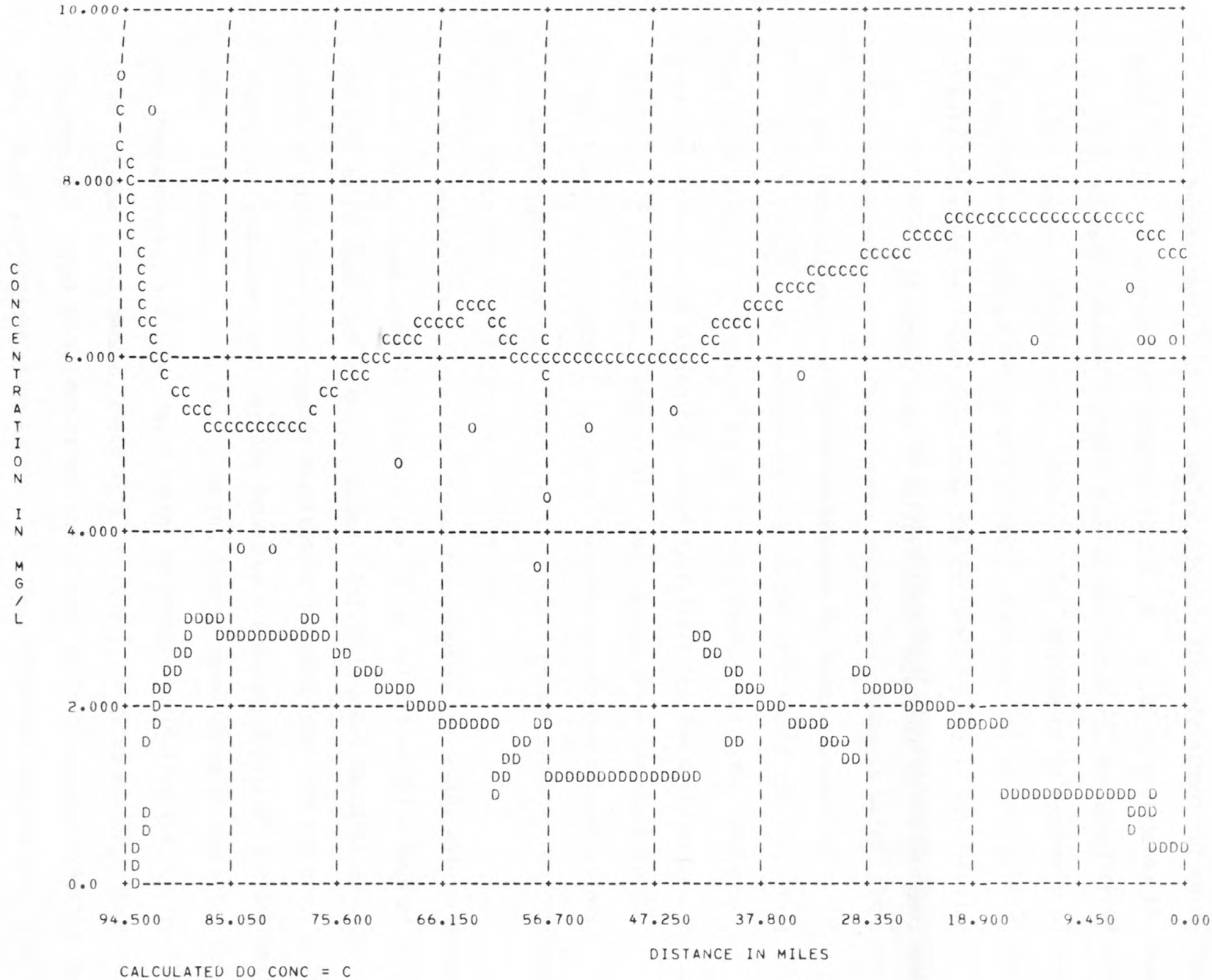


Figure 22.—Projected dissolved-oxygen profile, benthic demand reduced 60 percent

these figures for comparison with computed values resulting from reduced benthic demand. At reductions of 20, 30, 40, and 50 percent, the computed dissolved-oxygen profile still contained concentrations below 5.0 mg/L. However, when benthic demands were reduced by 60 percent, the dissolved-oxygen profile remained above 5.0 mg/L throughout the modeled reach. Table 23 shows the average benthic demand in each subreach for existing conditions and each projection, and the associated minimum computed dissolved-oxygen concentration in each subreach.

CONCLUSIONS

Pesticides were found throughout the study area of the L'Anguille River. The insecticides 2,4-D and 2,4,5-T were found in several tributaries and in the L'Anguille River. High concentrations of DDD, DDE, toxaphene, and PCBs were found in both the streambed and in the bottom-feeding fish.

Trace metals are common in the river with highest concentrations reported in the streambed material and fish. Lesser amounts were found in water, although iron and manganese exceeded limits recommended for human consumption.

Dissolved-oxygen concentrations at a number of sites on the river fall below the State standard of 5.0 mg/L during spring, summer, and fall. The types of organisms found in the biological community reflect the low dissolved-oxygen concentration of the stream. Most of the invertebrate organisms found in the L'Anguille River can adapt to periodic low dissolved-oxygen concentrations.

Current point-source effluents do not contain enough BOD and nutrient loading to reduce dissolved oxygen to such low levels.

More sediment is entering the stream than reaches the mouth, with principal sources being sheet and rill erosion. Low stream velocities allow much of this sediment to be deposited on the streambed. These streambed deposits consist mainly of silt, clay, and organic detritus, along with some sand and gravel. The organic detritus exert considerable demand on the oxygen supply of the overlying water. This demand is principally in the form of respiration by bacteria, fungi, and invertebrates, and to a lesser extent by chemical oxidation and respiration by periphyton. This demand, along with low reaeration rates and high summer water temperatures, causes dissolved-oxygen concentrations to be below acceptable standards. Model projections using August 1978 flow conditions indicate that a 60-percent reduction of streambed-oxygen demand would result in oxygen concentrations that meet State standards.

To determine the origins of nonpoint sources causing the current oxygen deficits will require a more detailed study. The study would require determination of erosion rates and of sediment transport. It would also require determining the mode of transporting of fertilizers, pesticides, and trace metals into the streams. Determining erosion rates and transport mechanisms would involve a detailed study of current tillage practices and would involve monitoring to determine stream response to variation in tillage practices.

DATA TABLES

Table 1.—*Fertilizer application rates for crops in the L'Anguille River basin during 1978*

[Table compiled from records provided by the U.S. Department of Agriculture Soil Conservation Service]

Crop	Total acres	Average application (lbs/acre)		
		Nitrogen as N	Phosphorus as P_2O_5	Potassium as K_2O
Soybeans	255,543	0	20	49
Rice	125,485	100	6	62
Wheat[1]	36,179	28	25	29
Cotton	19,690	50	12	34
Grain Sorghum	12,306	36	15	28
Grassland	6,311	42	12	24
Corn	300	150	26	50

[1]Wheat is a winter crop usually rotated with soybeans.

Table 2.—*Chemical analyses of water from irrigation wells tapping Quaternary aquifers in the study area*

[Aquifer: Qt, Quaternary terrace; Qal, Quaternary alluvium]

Well location		Aquifer	Date of collection	Depth (ft)	Temperature (°C)	pH (units)	Specific Conductance (micromhos per centimeter at 25°C)	Silica (mg/L as SiO_2)	Calcium (mg/L as Ca)	Magnesium (mg/L as Mg)	Sodium (mg/L as Na)	Potassium (mg/L as K)	Sulfate (mg/L as SO_4)	Chloride (mg/L as Cl)	Nitrate (mg/L as NO_3)	Iron (µg/L)		Manganese (µg/L as Mn)	Dissolved solids (mg/L)
latitude	longitude															Total	dissolved		
Poinsett County																			
352946	904401	Qt	08-09-67	165	17.0	7.4	600	37	88	29	17	1.3	95	9.5	0.00	------	20	470	435
353954	904552	Qt	08-09-67	---	----	7.8	580	34	92	24	18	1.2	34	12	0.10	------	2,700	360	411
352812	905840	Qt	08-09-67	120	17.0	7.6	600	32	88	23	32	3.0	15	20	0.10	------	4,000	550	422
353349	905035	Qt	08-09-67	---	18.0	8.0	550	36	90	7.8	27	1.2	36	6.5	0.10	------	2,200	340	370
353353	904434	Qt	07-21-65	160	18.0	7.6	618	30	84	29	14	.8	14	2.3	0.00	------	2,100	100	390
352817	905235	Qt	06-25-74	---	16.1	7.5	726	36	92	27	28	1.3	8.8	14	0.00	------	2,000	370	412
Cross County																			
351509	905358	Qt	07-22-65	140	17.2	7.4	688	34	93	27	24	0.8	3	32	0.10	------	2,400	20	408
352411	904731	Qt	07-22-65	160	17.2	7.4	749	30	96	36	21	.8	14	13	0.00	------	170	10	446
351121	904704	Qt	06-29-61	140	17.2	6.7	239	23	26	8.6	11	.9	3.2	7.5	2.50	------	0	---	170
350942	905352	Qt	07-20-61	159	26.7	7.9	589	---	73	30	18	4.1	18	12	.60	------	690	160	373
351300	905014	Qt	07-22-65	140	17.2	7.4	753	32	103	33	19	.6	28	17	.40	------	170	10	452
352157	905856	Qt	07-22-65	145	17.2	7.3	619	34	94	17	21	.8	.6	20	0.00	------	1,200	280	372
352128	905139	Qt	07-22-65	145	17.2	7.4	711	34	98	30	25	.8	2.2	7.3	.10	------	1,600	200	429
351456	904232	Qt	08-18-55	196	18.0	8.4	498	---	65	18	18	---	24	31	.30	8,300	710	---	321
351504	905354	Qal	06-25-74	150	16.6	7.5	686	35	93	27	18	1.5	14	13	0.00	------	320	750	417
351708	905804	Qt	06-25-74	100	16.5	7.4	916	35	110	31	36	1.3	13	80	.04	------	2,000	510	525
352002	904625	Qt	06-25-74	---	16.8	7.3	694	37	85	29	22	1.7	71	23	.01	------	1,800	620	411
352203	910002	Qt	06-25-74	---	16.4	7.5	581	37	71	19	20	1.0	5.7	24	.12	------	730	1 100	328
352243	905452	Qt	06-25-74	---	16.7	7.6	767	36	100	30	25	1.1	39	12	0.00	------	2,000	370	443
352229	904619	Qt	06-25-74	---	16.8	7.6	646	35	87	27	13	1.3	49	6.8	.01	------	90	900	368
St. Francis County																			
350558	905942	Qal	05-24-61	140	16.5	7.8	---	17	112	29	30	2.4	9.4	28	0.70	------	2,000	-----	481
355741	905422	Qt	07-18-74	---	16.5	7.1	694	35	78	32	22	1.3	4.9	27	.27	------	670	410	384
Lee County																			
344400	904553	Qt	05-19-50	145	----	7.5	629	25	65	36	15	5.3	47	6	1.40	7,700	500	-----	392
345218	910105	Qt	07-20-61	138	17.0	8.0	632	---	93	29	22	1.9	26	18	.60	------	510	430	395
345412	905430	Qt	05-24-61	125	18.0	8.0	476	--	59	26	17	2.3	4.8	12	.70	------	1,000	0	307
345000	905201	Qal	06-29-61	---	18.0	7.2	550	17	75	26	19	1.3	9.6	10	.60	------	3,200	-----	406
344647	904129	Qal	08-18-55	---	18.0	7.0	703	--	105	30	10	---	7.4	3	1.30	11,000	140	-----	431
345015	905429	Qt	07-23-74	---	16.5	7.3	661	39	79	33	14	.9	8.2	12	.35	------	3,000	290	369
344954	904906	Qal	08-07-74	---	17.0	7.0	693	37	86	36	14	1.1	26	6.5	.22	------	2,200	300	405

Table 3.—*Statistical summary of common constituents, L'Anguille River near Colt, 1971-78 water years*

Constituent	Number of samples analyzed	Mean	Standard deviation	Minimum value	Maximum value	Standard error of mean
Specific conductance (micromhos).	105	227.1	146.50	62	545	14.30
pH (units)----------	104	7.3	.41	6.2	8.4	.04
Oxygen demand, chemical low level (mg/L).	63	30.8	12.99	0	75	1.64
Hardness (mg/L as $CaCO_3$)--	16	100.9	72.96	23	250	18.24
Hardness, noncarbonate (mg/L as $CaCO_3$).	16	4.1	5.38	0	18	1.35
Calcium, dissolved (mg/L as Ca).	16	25.1	17.69	6.0	59	4.42
Magnesium, dissolved (mg/L as Mg).	16	9.2	6.92	2.0	24	1.73
Sodium, dissolved (mg/L as Na).	16	10.7	7.09	3.0	25	1.77
Potassium, dissolved (mg/L as K).	16	4.8	2.26	2.5	9.6	.56
Bicarbonate (mg/L as HCO_3).	50	108.0	84.53	20	302	11.95
Carbonate (mg/L as CO_3)---	50	0.0	.00	0	0	.00
Alkalinity (mg/L as $CaCO_3$).	51	91.0	70.77	16	248	9.91
Sulfate, dissolved (mg/L as SO_4).	16	11.7	4.82	5.2	21	1.21
Chloride, dissolved (mg/L as Cl).	16	12.6	10.62	3.0	47	2.66
Fluoride, dissolved (mg/L as F).	16	.2	.10	.0	.3	.02
Silica, dissolved (mg/L as SiO_2).	16	11.5	6.65	3.9	24	1.66
Solids, residue at 180°C, dissolved.	15	147.5	89.12	46	332	23.01
Carbon, organic total (mg/L as C).	14	12.4	4.40	7.3	24	1.18

Table 4.—*Statistical summary of common constituents, L'Anguille River at Marianna, 1974-78 water years*

Constituent	Number of samples analyzed	Mean	Standard deviation	Minimum value	Maximum value	Standard error of mean
Specific conductance (micromhos).	49	245.8	142.04	59	595	20.29
pH (units)----------	51	7.4	.38	6.6	8.0	.05
Hardness (mg/L as $CaCO_3$)---	17	108.1	70.80	25	310	17.17
Hardness, noncarbonate (mg/L as $CaCO_3$).	12	18.7	24.81	0	80	7.17
Calcium, dissolved (mg/L as Ca).	9	31.78	17.96	8.0	67	5.99
Magnesium, dissolved (mg/L as Mg).	10	13.6	8.88	3.0	34	2.81
Bicarbonate (mg/L as HCO_3).	12	128.9	76.28	37	280	22.02
Carbonate (mg/L as CO_3)----	11	0.0	.00	0	0	.00
Alkalinity (mg/L as $CaCO_3$).	17	105.8	66.62	28	230	14.94
Sulfate, dissolved (mg/L as SO_4).	42	15.4	15.38	2.0	100	2.37
Chloride, dissolved (mg/L as Cl).	41	14.7	6.38	4.0	36	1.00
Silica, dissolved (mg/L as SiO_2).	12	176.2	44.5	127	286	12.85

Table 5.—*Statistical summary of trace metals, L'Anguille River near Colt, 1971-78 water years*

[Results in micrograms per liter]

Trace metal	Number of samples analyzed	Mean	Standard deviation	Minimum value	Maximum value	Standard error of mean
Arsenic, total	4	4.2	1.26	3	6	0.63
Cadmium, dissolved	15	.7	.82	0	2	.21
Cadmium, total recoverable.	4	5.0	5.77	0	10	2.89
Chromium, dissolved	10	6.8	7.90	0	20	2.50
Chromium, total recoverable.	4	7.5	9.57	0	20	4.79
Cobalt, dissolved	15	1.1	1.79	0	5	.46
Cobalt, total recoverable.	3	50.0	.00	50	50	.00
Copper, dissolved	15	8.8	6.80	2	30	1.76
Copper, total recoverable.	4	11.8	3.50	10	17	1.75
Iron, dissolved	15	147.3	169.01	0	610	43.64
Iron, total recoverable	4	2,100.0	1,278.02	1,300	4,000	639.01
Lead, dissolved	15	2.6	3.00	0	9	.77
Lead, total recoverable	4	75.0	50.00	0	100	25.00
Manganese, dissolved	15	221.3	217.68	30	750	56.20
Manganese, total recoverable.	4	607.5	206.14	440	900	103.07
Mercury, dissolved	11	.3	.28	.0	.8	.08
Mercury, total recoverable.	6	1.8	4.03	.0	10	1.65
Selenium, dissolved	6	.8	1.33	0	3	.54
Selenium, total	4	.5	1.00	0	2	1.50
Zinc, dissolved	15	24.1	11.17	0	40	2.88
Zinc, total recoverable	4	40.0	14.14	20	50	7.07

Table 6.—*Statistical summary of trace metals, L'Anguille River at Marianna, 1974-78 water years*

[Concentrations in micrograms per liter]

Trace metal	Number of samples analyzed	Mean	Standard deviation	Minimum value	Maximum value	Standard error of mean
Arsenic, total----------	22	3.7	1.61	3	10	0.34
Cadmium, total recoverable.	33	6.2	4.76	0	10	.83
Chromium, total recoverable.	24	3.6	4.94	0	20	1.01
Copper, total recoverable.	44	15.9	14.86	0	90	2.24
Iron, total recoverable---	44	5,700.1	4,038.51	560	20,000	608.83
Lead, total recoverable---	26	13.2	15.69	0	66	3.08
Manganese, total recoverable.	46	428.7	346.75	71	1,700	51.12
Mercury, total recoverable.	3	.6	.36	.3	1.0	.21
Zinc, total recoverable---	46	29.3	33.58	0	180	4.95

Table 7.—*Suspended sediment from L'Anguille River near Colt*

[t/d: Tons per day]

Date of collection	Discharge (ft^3/s)	Suspended sediment (mg/L)	Suspended sediment discharge (t/d)	Suspended sediment discharge (t/acre-ft)	Suspended sediment sieve diameter percent finer than 0.062 mm
Apr. 10, 1974	147	705	280	0.96	---
Oct. 1, 1975	597	64	103	.09	90
Dec. 3, 1975	482	252	328	.34	98
Nov. 29, 1978	391	588	621	.80	97

Table 8.—*Nutrients in bottom-material samples from L'Anguille River*

Date of collection	Total nitrite plus nitrate (mg/kg as N)	Total organic plus ammonia nitrogen (mg/kg as N)	Total ammonia (mg/kg as N)	Total phosphorus (mg/kg as P)
L'Anguille River near Colt				
July 3, 1974	0.0	840	---	520
Oct. 2, 1974	.4	500	---	73
Sept. 3, 1975	.0	1,050	---	150
Nov. 1, 1978	1.6	920	26	260
L'Anguille River near Cherry Valley				
Nov. 2, 1978	0.0	20	3.7	270
L'Anguille River near Harrisburg				
Nov. 1, 1978	0.0	290	13	1,200

Table 9.—*Concentrations of pesticides in whole-water samples from L'Anguille River near Colt*

[Results in micrograms per liter]

Date of collection	Dieldrin	DDD	DDE	DDT	Para-thion	Methyl para-thion	2,4-D	2,4,5-T	Silvex
June 23, 1971	0.02	0.02	0.02	0.03	0.00	0.00	0.05	0.14	0.01
Feb. 8, 1972	.02	.00	.00	.00	----	----	.00	.03	.00
Sept. 8, 1972	.01	.00	.00	.00	.00	.00	.19	.18	.04
Oct. 11, 1972	.01	.00	.00	.00	.00	.00	.03	.04	.00
May 16, 1973	.02	.00	.00	.00	.00	.00	.07	.03	.00
May 7, 1974	.02	.00	.00	.02	.00	.00	.00	.00	.00
July 3, 1974	.02	.00	.00	.00	----	----	.35	.35	.00
Oct. 2, 1974	----	.00	.00	----	----	----	.00	.00	.00
June 5, 1975	----	----	----	----	.00	.00	.16	.11	.00
Oct. 7, 1976	.01	.00	.00	.00	.00	.00	.00	.02	.00
Mar. 8, 1977	.01	.00	.00	.00	.00	.00	.04	.06	.01
Mar. 30, 1977	.01	.00	.00	.00	.00	.00	.32	.07	.00
June 28, 1977	.02	.01	.00	.01	.01	.00	.01	.28	.00
Oct. 12, 1978	.00	.00	.00	.00	.00	.00	.04	.03	.00
Jan. 5, 1978	.01	.00	.00	.00	.00	.00	.00	.02	.00
Apr. 6, 1978	.01	.00	.00	.00	.00	.00	.04	.01	.00
July 11, 1978	.01	.00	.00	.00	.00	.25	.00	.51	.01
Aug. 8, 1978	.01	.00	.00	.00	.00	.04	.47	1.0	.03

Table 10.—*Concentrations of pesticides in bed-material samples from L'Anguille River near Colt*

[Results in micrograms per kilogram]

Date of collection	Aldrin	DDD	DDE	DDT	Dieldrin	Endrin	Toxaphene	PCB
June 23, 1971	<0.2	39	21	<0.2	<0.2	<0.2	---	---
Feb. 8, 1972	<.2	40	21	6.4	<.2	<.2	---	---
Sept. 8, 1972	<.2	40	24	17	<.2	<.2	---	---
Oct. 11, 1972	.0	4.0	7.2	25	.0	.0	---	0
May 16, 1973	.0	38	30	7.5	.0	.0	---	0
May 7, 1974	.9	17	10	4.5	1.5	.0	0	0
July 3, 1974	2.0	55	33	.0	7.7	.0	0	0
Oct. 2, 1974	----	5.8	3.2	1.0	.3	.0	0	1
June 5, 1975	.3	30	19	22	5.7	.6	0	0
Oct. 7, 1976	.0	4.9	5.1	3.6	2.0	.0	0	0
Oct. 12, 1977	2.1	.0	39	9.6	4.1	1.0	0	0
Jan. 5, 1978	2.0	35	33	110	2.5	.4	0	1
Apr. 6, 1978	.7	9.6	6.8	3.3	3.4	.3	44	1
July 11, 1978	1.4	33	36	5.3	7.7	.6	45	3
Aug. 22, 1978	.7	18	15	5.8	4.1	.0	0	1

<Less than

Table 11.—*Fish sample lengths and weights*

Fish	Number of fish composited	Mean length (cm)	Total weight in field (kg)	Total weight in lab (kg)	Total weight of edible portion (kg)	Total weight of carcass (kg)	Percent fat of edible portion	Percent fat of carcass
Carp-------	7	46	18.1	16.2	3.7	12.5	2.2	5.4
Smallmouth buffalo.	5	40	9.9	8.9	3.0	5.9	6.6	14.4

Table 12.—*Chemical, physical, and bacteriological analyses, L'Anguille River, tributary streams, and waste effluents*

NUMBER ON MAP	DATE	TIME	STREAM WIDTH (FT) (00004)	STREAM DEPTH, MEAN (FT) (00064)	STREAM-FLOW, INSTANTANEOUS (CFS) (00061)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	OXYGEN DEMAND, BIOCHEMICAL, 5 DAY (MG/L) (00310)	OXYGEN DEMAND, BIOCHEM ULT. CARBONACEOUS (MG/L) (00320)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)
1	353535090465000 - L'ANGUILLE R DOWNSTREAM FROM CLAYPOOL RESERVOIR (LAT 35 35 35 LONG 090 46 50)												
	AUG , 1978												
	21...	1630	51	2.2	----	458	8.2	33.0	9.3	127	4.3	8.7	--
	NOV												
	01...	0730	11	.19	.10	318	7.9	14.5	6.9	70	3.5	13	--
2	353415090442500 - HARRISBURG OXIDATION POND (LAT 35 34 15 LONG 090 44 25)												
	AUG , 1978												
	21-22	--	3.5	.10	.16 [1]	550	8.1	--	--	--	90	166	--
	NOV												
	01...	1415	--	--	--	--	--	16.5	4.8	51	--	--	--
	01...	2200	--	--	--	--	--	17.0	5.0	--	--	--	--
	01-02	--	5.0	.10	.23	643	8.2	----	--	--	85	193	--
	02...	0630	--	--	--	--	--	16.0	3.1	32	--	--	--
3	353515090463200 - HOLLOW BRANCH NEAR HARRISBURG,AR (LAT 35 35 15 LONG 090 46 32)												
	AUG , 1978												
	21-22	--	19	.56	1.8	480	7.4	--	>20.0	--	4.6	7.6	--
	NOV												
	01...	0700	--	--	--	--	--	13.5	4.8	48	--	--	--
	01...	1500	--	--	--	--	--	22.5	----	---	--	--	--
	01...	2210	--	--	--	--	--	17.0	15.8	168	--	--	--
	01-02	--	4.0	.10	.23	623	9.0	--	--	--	6.8	30	--
4	353430090480500 - SWAN POND DITCH NEAR HARRISBURG,AR (LAT 35 34 30 LONG 090 48 05)												
	AUG , 1978												
	21...	1800	.9	21	10	544	8.2	30.5	9.2	123	15	22	--

Table 12.—*Chemical, physical, and bacteriological analyses, L'Anguille River, tributary streams, and waste effluents*—Continued

NUMBER ON MAP	DATE	CARBON, ORGANIC DISSOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUSPENDED TOTAL (MG/L AS C) (00689)	ALKALINITY (MG/L AS CACO3) (00410)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML) (31501)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	NITROGEN, TOTAL (MG/L AS NO3) (71887)	NITROGEN, TOTAL (MG/L AS N) (00600)
1	353535090465000 - L'ANGUILLE R DOWNSTREAM FROM CLAYPOOL RESERVOIR (LAT 35 35 35 LONG 090 46 50)												
	AUG , 1978												
	21...	--	--	190	18	29	.2	24	K200	K47	55	4.2	.94
	NOV												
	01...	--	--	110	22	19	.2	2.7	900	420	88	4.3	.96
2	353415090442500 - HARRISBURG OXIDATION POND (LAT 35 34 15 LONG 090 44 25)												
	AUG , 1978												
	21-22	--	--	220	39	41	.0	46	<8000	K4600	910	94	21
	NOV												
	01...	--	--	--	--	--	--	--	--	--	--	--	--
	01...	--	--	--	--	--	--	--	--	--	--	--	--
	01-02	--	--	230	32	35	.1	44	K50000	K23000	580	65	15
	02...	--	--	--	--	--	--	--	--	--	--	--	--
3	353515090463200 - HOLLOW BRANCH NEAR HARRISBURG,AR (LAT 35 35 15 LONG 090 46 32)												
	AUG , 1978												
	21-22	--	--	220	13	15	.3	28	--	K2200	K6900	5.1	1.2
	NOV												
	01...	--	--	--	--	--	--	--	--	--	--	--	--
	01...	--	--	--	--	--	--	--	--	--	--	--	--
	01...	--	--	--	--	--	--	--	--	--	--	--	--
	01-02	--	--	250	36	31	.1	30	<1100	230	<10000	18	4.2
4	353430090480500 - SWAN POND DITCH NEAR HARRISBURG,AR (LAT 35 34 30 LONG 090 48 05)												
	AUG , 1978												
	21...	--	--	250	15	19	.2	25	550	K140	K80	5.3	1.2

K is nonideal colony count.

Table 12.—*Chemical, physical, and bacteriological analyses, L'Anguille River, tributary streams, and waste effluents*—Continued

NUMBER ON MAP	DATE	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, NITRITE TOTAL (MG/L AS N) (00615)	NITROGEN, NITRATE TOTAL (MG/L AS N) (00620)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	PHOSPHORUS, ORTHO, TOTAL (MG/L AS P) (70507)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT DISCHARGE, SUSPENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
1	353535090465000 - L'ANGUILLE R DOWNSTREAM FROM CLAYPOOL RESERVOIR (LAT 35 35 35 LONG 090 46 50)											
	AUG , 1978											
	21...	.90	.03	.00	.01	.93	.01	.08	.13	--	--	--
	NOV											
	01...	.90	.06	.01	.00	.96	.00	.02	.12	--	--	--
2	353415090442500 - HARRISBURG OXIDATION POND (LAT 35 34 15 LONG 090 44 25)											
	AUG , 1978											
	21-22	19	2.1	.00	.15	21	.15	1.4	2.9	--	--	--
	NOV											
	01...	--	--	--	--	--	--	--	--	--	--	--
	01...	--	--	--	--	--	--	--	--	--	--	--
	01-02	13	.49	1.0	.70	13	1.7	3.8	9.0	77	.05	--
	02...	--	--	--	--	--	--	--	--	--	--	--
3	353515090463200 - HOLLOW BRANCH NEAR HARRISBURG,AR (LAT 35 35 15 LONG 090 46 32)											
	AUG , 1978											
	21-22	1.0	.10	.04	.02	1.1	.06	.17	.19	46	.22	--
	NOV											
	01...	--	--	--	--	--	--	--	--	--	--	--
	01...	--	--	--	--	--	--	--	--	--	--	--
	01...	--	--	--	--	--	--	--	--	--	--	--
	01-02	3.1	.45	.16	.50	3.5	.66	3.2	4.2	49	.03	--
4	353430090480500 - SWAN POND DITCH NEAR HARRISBURG,AR (LAT 35 34 30 LONG 090 48 05)											
	AUG , 1978											
	21...	1.2	.03	.00	.00	1.2	.00	.06	.11	150	4.0	81

Table 12.—*Chemical, physical, and bacteriological analyses, L'Anguille River, tributary streams, and waste effluents*—Continued

NUMBER ON MAP	DATE	TIME	STREAM WIDTH (FT) (00004)	STREAM DEPTH, MEAN (FT) (00064)	STREAMFLOW, INSTANTANEOUS (CFS) (00061)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	OXYGEN DEMAND, BIOCHEMICAL, 5 DAY (MG/L) (00310)	OXYGEN DEMAND, BIOCHEM ULT. CARBONACEOUS (MG/L) (00320)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)
5	353350090473500 - L'ANGUILLE RIVER NEAR HARRISBURG,AR (LAT 35 33 50 LONG 090 47 35)												
	AUG , 1978												
	22...	0830	60	2.6	40	521	7.8	25.5	4.7	57	4.1	8.3	--
	NOV												
	01...	0830	60	.2[E]	.00	318	8.0	14.5	7.5	76	7.4	11	--
6	353132090484500 - POWERS SLOUGH NR HARRISBURG, AR (LAT 35 31 32 LONG 090 48 45)												
	AUG , 1978												
	22...	0945	14	.98	5.2	517	7.5	23.5	5.0	60	3.1	5.1	--
7	353040090464000 - MCCRACKEN DITCH NEAR HARRISBURG,AR (LAT 35 30 40 LONG 090 46 40)												
	AUG , 1978												
	22...	1030	--	--	4.3	458	8.1	25.5	5.3	66	3.3	6.0	--
	NOV												
	16...	1430	42	2.0	39	--	--	10.5	--	--	--	--	--
	17...	0830	--	--	348	--	--	--	--	--	--	--	--
	17...	1230	--	--	--	--	--	--	--	--	--	--	--
8	352825090472500 - L'ANGUILLE R NR WHITEHALL, AR (LAT 35 28 25 LONG 090 47 25)												
	AUG , 1978												
	22...	1130	78	2.4	85	445	7.7	27.0	3.9	49	4.9	7.3	--
	NOV												
	16...	1530	--	--	33	--	--	--	--	--	--	--	--
	17...	0845	--	--	631	--	--	--	--	--	--	--	--
	17...	1315	--	--	--	--	--	--	--	--	--	--	--

E is estimated.

Table 12.—*Chemical, physical, and bacteriological analyses, L'Anguille River, tributary streams, and waste effluents*—Continued

NUMBER ON MAP	DATE	CARBON, ORGANIC DISSOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUSPENDED TOTAL (MG/L AS C) (00689)	ALKALINITY (MG/L AS CACO3) (00410)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML) (31501)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	NITROGEN, TOTAL (MG/L AS NO3) (71887)	NITROGEN, TOTAL (MG/L AS N) (00600)
5	353350090473500 - L'ANGUILLE RIVER NEAR HARRISBURG,AR (LAT 35 33 50 LONG 090 47 35)												
	AUG , 1978 22...	--	--	--	--	--	--	--	530	210	370	--	--
	NOV 01...	12	4.9	120	13	12	.1	4.4	<1000	<300	590	9.3	2.1
6	353132090484500 - POWERS SLOUGH NR HARRISBURG, AR (LAT 35 31 32 LONG 090 48 45)												
	AUG , 1978 22...	--	--	--	--	--	--	--	770	420	2600	--	--
7	353040090464000 - MCCRACKEN DITCH NEAR HARRISBURG,AR (LAT 35 30 40 LONG 090 46 40)												
	AUG , 1978 22...	--	--	--	--	--	--	--	680	440	K190	--	--
	NOV 16...	--	--	--	--	--	--	--	--	--	--	17	3.8
	17...	--	--	--	--	--	--	--	--	--	--	--	--
	17...	--	--	--	--	--	--	--	--	--	--	--	--
8	352825090472500 - L'ANGUILLE R NR WHITEHALL, AR (LAT 35 28 25 LONG 090 47 25)												
	AUG , 1978 22...	--	--	--	--	--	--	--	K240	K67	K180	--	--
	NOV 16...	--	--	--	--	--	--	--	--	--	--	--	--
	17...	--	--	--	--	--	--	--	--	--	--	--	--
	17...	--	--	--	--	--	--	--	--	--	--	--	--

Table 12.—*Chemical, physical, and bacteriological analyses, L'Anguille River, tributary streams and waste effluents*—Continued

NUMBER ON MAP	DATE	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, NITRITE TOTAL (MG/L AS N) (00615)	NITROGEN, NITRATE TOTAL (MG/L AS N) (00620)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	PHOSPHORUS, ORTHO. TOTAL (MG/L AS P) (70507)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT DISCHARGE, SUSPENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
5	353350090473500 - L'ANGUILLE RIVER NEAR HARRISBURG,AR (LAT 35 33 50 LONG 090 47 35)											
	AUG , 1978											
	22...	--	--	--	--	--	--	--	--	143	16	97
	NOV											
	01...	2.1	.02	.01	.00	2.1	.00	.05	.19	--	--	--
6	353132090484500 - POWERS SLOUGH NR HARRISBURG, AR (LAT 35 31 32 LONG 090 48 45)											
	AUG , 1978											
	22...	--	--	--	--	--	--	--	--	--	--	--
7	353040090464000 - MCCRACKEN DITCH NEAR HARRISBURG,AR (LAT 35 30 40 LONG 090 46 40)											
	AUG , 1978											
	22...	--	--	--	--	--	--	--	--	--	--	--
	NOV											
	16...	1.9	.74	.11	1.1	2.6	1.2	.72	.94	897	95	99
	17...	--	--	--	--	--	--	--	--	162	152	70
	17...	--	--	--	--	--	--	--	--	182	--	96
8	352825090472500 - L'ANGUILLE R NR WHITEHALL, AR (LAT 35 28 25 LONG 090 47 25)											
	AUG , 1978											
	22...	--	--	--	--	--	--	--	--	--	--	--
	NOV											
	16...	--	--	--	--	--	--	--	--	291	26	97
	17...	--	--	--	--	--	--	--	--	334	569	92
	17...	--	--	--	--	--	--	--	--	942	--	87

Table 12.—*Chemical, physical, and bacteriological analyses, L'Anguille River, tributary streams, and waste effluents*—Continued

NUMBER ON MAP	DATE	TIME	STREAM WIDTH (FT) (00004)	STREAM DEPTH, MEAN (FT) (00064)	STREAM-FLOW, INSTANTANEOUS (CFS) (00061)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	OXYGEN DEMAND, BIOCHEMICAL, 5 DAY (MG/L) (00310)	OXYGEN DEMAND, BIOCHEM ULT. CARBONACEOUS (MG/L) (00320)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)
9	352557090483500 - L'ANGUILLE R NW OF CHERRY VALLEY, AR (LAT 35 25 57 LONG 090 48 35)												
	AUG , 1978												
	23...	1050	91	3.4	110	430	7.6	26.0	3.9	47	4.3	6.4	--
	NOV												
	02...	1030	72	2.1	.00	240	7.2	15.0	2.4	24	9.5	23	--
10	352410090494000 - L'ANGUILLE RIVER NEAR CHERRY VALLEY,AR (LAT 35 24 10 LONG 090 49 40)												
	AUG , 1978												
	23...	1000	60	2.0	136	428	7.7	26.0	3.0	36	6.0	9.0	--
	NOV												
	02...	1000	10	.23	1.5	200	7.6	16.0	12.6	131	12	28	--
	12...	1000	--	--	--	--	--	--	--	--	--	--	--
	16...	1600	--	--	--	--	--	--	--	--	--	--	--
	17...	0950	--	--	--	--	--	--	--	--	--	--	--
	17...	1630	--	--	166	--	--	--	--	--	--	--	--
11	352405090485500 - WOLF CREEK NR CHERRY VALLEY, AR (LAT 35 24 05 LONG 090 48 55)												
	AUG , 1978												
	23...	1215	5.5	.28	.58	490	8.0	26.5	10.8	137	2.3	3.3	--
12	352305090485500 - PRAIRIE CREEK NEAR CHERRY VALLEY,AR (LAT 35 23 05 LONG 090 48 55)												
	AUG , 1978												
	23...	1315	1.8	.14	.19	609	8.0	28.0	8.0	102	2.4	4.7	--
	NOV												
	17...	1400	--	--	51	--	--	--	--	--	--	--	--

Table 12.—*Chemical, physical, and bacteriological analyses, L'Anguille River, tributary streams, and waste effluents*—Continued

NUMBER ON MAP	DATE	CARBON, ORGANIC DISSOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUSPENDED TOTAL (MG/L AS C) (00689)	ALKALINITY (MG/L AS CACO3) (00410)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML) (31501)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	NITROGEN, TOTAL (MG/L AS NO3) (71887)	NITROGEN, TOTAL (MG/L AS N) (00600)
9		352557090483500 - L'ANGUILLE R NW OF CHERRY VALLEY, AR (LAT 35 25 57 LONG 090 48 35)											
	AUG , 1978												
	23...	--	--	--	--	--	--	--	K300	K140	K160	--	--
	NOV												
	02...	--	--	--	--	--	--	--	K300	K53	80	--	--
10		352410090494000 - L'ANGUILLE RIVER NEAR CHERRY VALLEY,AR (LAT 35 24 10 LONG 090 49 40)											
	AUG , 1978												
	23...	--	--	--	--	--	--	--	K200	K33	230	--	--
	NOV												
	02...	8.2	5.9	78	10	13	.1	7.5	<10000	K300	150	7.7	1.7
	12...	--	--	--	--	--	--	--	>2000	250	240	--	--
	16...	--	--	--	--	--	--	--	--	--	--	--	--
	17...	--	--	--	--	--	--	--	--	--	--	--	--
	17...	--	--	--	--	--	--	--	--	--	--	--	--
11		352405090485500 - WOLF CREEK NR CHERRY VALLEY, AR (LAT 35 24 05 LONG 090 48 55)											
	AUG , 1978												
	23...	--	--	190	10	13	.2	31	>1000	950	890	2.3	.52
12		352305090485500 - PRAIRIE CREEK NEAR CHERRY VALLEY,AR (LAT 35 23 05 LONG 090 48 55)											
	AUG , 1978												
	23...	--	--	--	--	--	--	--	>2000	3500	180	--	--
	NOV												
	17...	--	--	--	--	--	--	--	--	--	--	8.7	2.0

Table 12.—*Chemical, physical, and bacteriological analyses, L'Anguille River, tributary streams, and waste effluents*—Continued

NUMBER ON MAP	DATE	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, NITRITE TOTAL (MG/L AS N) (00615)	NITROGEN, NITRATE TOTAL (MG/L AS N) (00620)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	PHOSPHORUS, ORTHO, TOTAL (MG/L AS P) (70507)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT DISCHARGE, SUSPENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
9	352557090483500 - L'ANGUILLE R NW OF CHERRY VALLEY, AR (LAT 35 25 57 LONG 090 48 35)											
	AUG , 1978											
	23...	--	--	--	--	--	--	--	--	253	75	96
	NOV											
	02...	--	--	--	--	--	--	--	--	--	--	--
10	352410090494000 - L'ANGUILLE RIVER NEAR CHERRY VALLEY,AR (LAT 35 24 10 LONG 090 49 40)											
	AUG , 1978											
	23...	--	--	--	--	--	--	--	--	--	--	--
	NOV											
	02...	1.7	.04	.01	.03	1.7	.04	.04	.20	--	--	--
	12...	--	--	--	--	--	--	--	--	--	--	--
	16...	--	--	--	--	--	--	--	--	109	--	94
	17...	--	--	--	--	--	--	--	--	448	--	96
	17...	--	--	--	--	--	--	--	--	278	125	82
11	352405090485500 - WOLF CREEK NR CHERRY VALLEY, AR (LAT 35 24 05 LONG 090 48 55)											
	AUG , 1978											
	23...	.40	.04	.01	.07	.44	.06	.06	.08	50	.08	37
12	352305090485500 - PRAIRIE CREEK NEAR CHERRY VALLEY,AR (LAT 35 23 05 LONG 090 48 55)											
	AUG , 1978											
	23...	--	--	--	--	--	--	--	--	--	--	--
	NOV											
	17...	1.4	.13	.05	.42	1.5	.47	.50	.82	--	--	--

Table 12.—*Chemical, physical, and bacteriological analyses, L'Anguille River, tributary streams, and waste effluents*—Continued

NUMBER ON MAP	DATE	TIME	STREAM WIDTH (FT) (00004)	STREAM DEPTH, MEAN (FT) (00064)	STREAM-FLOW, INSTANTANEOUS (CFS) (00061)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	OXYGEN DEMAND, BIOCHEMICAL, 5 DAY (MG/L) (00310)	OXYGEN DEMAND, BIOCHEM ULT. CARBONACEOUS (MG/L) (00320)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)
13			351930090513500 - L'ANGUILLE R NR VANNDALE, AR (LAT 35 19 30 LONG 090 51 35)										
	AUG , 1978												
	23...	1400	46	3.4	143	455	7.7	27.0	4.8	61	3.2	7.2	--
	NOV												
	02...	0930	--	--	.00	223	7.4	14.0	2.0	20	--	--	--
14			351505090541200 - L'ANGUILLE RIVER NR WYNNE,AR (LAT 35 15 05 LONG 090 54 12)										
	AUG , 1978												
	23...	1515	60	3.4	127	452	7.7	28.5	5.2	68	3.2	6.0	--
	NOV												
	02...	0900	50	2.7	.00	188	--	15.0	2.1	22	9.5	20	--
15			351505090553000 - BRUSHY CREEK NEAR WYNNE,AR (LAT 35 15 05 LONG 090 55 30)										
	AUG , 1978												
	23...	1545	86	2.5	65	497	7.8	28.5	5.6	73	2.7	5.8	--
	NOV												
	17...	1015	100	4.8	933	--	--	--	--	--	--	--	--
16			351202090532500 - L'ANGUILLE R AT HWY 284, NR WYNNE, AR (LAT 35 12 02 LONG 090 53 25)										
	AUG , 1978												
	24...	0930	352	2.3	231	432	7.7	26.5	3.6	46	3.4	6.0	--
	NOV												
	02...	0830	39	2.0	.00	212	7.4	13.0	2.4	24	6.9	19	--

Table 12.—*Chemical, physical, and bacteriological analyses, L'Anguille River, tributary streams, and waste effluents*—Continued

NUMBER ON MAP	DATE	CARBON, ORGANIC DISSOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUSPENDED TOTAL (MG/L AS C) (00689)	ALKALINITY (MG/L AS CACO3) (00410)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML) (31501)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	NITROGEN, TOTAL (MG/L AS NO3) (71887)	NITROGEN, TOTAL (MG/L AS N) (00600)
13	351930090513500 - L'ANGUILLE R NR VANNDALE, AR (LAT 35 19 30 LONG 090 51 35)												
	AUG, 1978												
	23...	--	--	--	--	--	--	--	K500	320	630	--	--
	NOV												
	02...	--	--	--	--	--	--	--	660	200	430	--	--
14	351505090541200 - L'ANGUILLE RIVER NR WYNNE,AR (LAT 35 15 05 LONG 090 54 12)												
	AUG, 1978												
	23...	--	--	200	38	37	.2	25	550	K100	150	4.9	1.1
	NOV												
	02...	--	--	--	--	--	--	--	K800	230	1100	--	--
15	351505090553000 - BRUSHY CREEK NEAR WYNNE,AR (LAT 35 15 05 LONG 090 55 30)												
	AUG, 1978												
	23...	--	--	230	--	--	.2	30	K3400	670	1600	4.8	1.1
	NOV												
	17...	--	--	--	--	--	--	--	--	--	--	13	3.0
16	351202090532500 - L'ANGUILLE R AT HWY 284, NR WYNNE, AR (LAT 35 12 02 LONG 090 53 25)												
	AUG, 1978												
	24...	--	--	--	--	--	--	--	K280	K89	1100	--	--
	NOV												
	02...	--	--	--	--	--	--	--	>4000	K2400	440	--	--

Table 12.—*Chemical, physical, and bacteriological analyses, L'Anguille River, tributary streams, and waste effluents*—Continued

NUMBER ON MAP	DATE	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, NITRITE TOTAL (MG/L AS N) (00615)	NITROGEN, NITRATE TOTAL (MG/L AS N) (00620)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	PHOSPHORUS, ORTHO, TOTAL (MG/L AS P) (70507)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT DISCHARGE, SUSPENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
13	351930090513500 - L'ANGUILLE R NR VANNDALE, AR (LAT 35 19 30 LONG 090 51 35)											
	AUG , 1978											
	23...	--	--	--	--	--	--	--	--	--	--	--
	NOV											
	02...	--	--	--	--	--	--	--	--	--	--	--
14	351505090541200 - L'ANGUILLE RIVER NR WYNNE,AR (LAT 35 15 05 LONG 090 54 12)											
	AUG , 1978											
	23...	.86	.07	.02	.18	.93	.13	.09	.18	--	--	--
	NOV											
	02...	--	--	--	--	--	--	--	--	--	--	--
15	351505090553000 - BRUSHY CREEK NEAR WYNNE,AR (LAT 35 15 05 LONG 090 55 30)											
	AUG , 1978											
	23...	.92	.04	.01	.11	.96	.12	.08	.15	71	12	90
	NOV											
	17...	1.5	.26	.07	1.1	1.8	1.2	.31	.41	651	1640	86
16	351202090532500 - L'ANGUILLE R AT HWY 284, NR WYNNE, AR (LAT 35 12 02 LONG 090 53 25)											
	AUG , 1978											
	24...	--	--	--	--	--	--	--	--	--	--	--
	NOV											
	02...	--	--	--	--	--	--	--	--	--	--	--

Table 12—*Chemical, physical, and bacteriological analyses, L'Anguille River, tributary streams, and waste effluents*—Continued

NUMBER ON MAP	DATE	TIME	STREAM WIDTH (FT) (00004)	STREAM DEPTH, MEAN (FT) (00064)	STREAMFLOW, INSTANTANEOUS (CFS) (00061)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	OXYGEN DEMAND, BIOCHEMICAL, 5 DAY (MG/L) (00310)	OXYGEN DEMAND, BIOCHEM ULT. CARBONACEOUS (MG/L) (00320)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)
18			351230090482800 - WYNNE OXIDATION POND (LAT 35 12 30 LONG 090 48 28)										
	AUG , 1978												
	22-23	--	3.7	.34	.98[1]	561	9.2	29.5	--	--	52	79	--
	NOV												
	01-02	--	5.5	.34	.84[1]	--	--	--	--	--	94	192	--
	02...	0630	--	--	--	--	--	17.0	.3	3	--	--	--
19			351130090520500 - CANEY CREEK NR WYNNE,AR (LAT 35 11 30 LONG 090 52 05)										
	AUG , 1978												
	22...	0630	50	7.3	23	574	8.4	30.0	--	--	7.8	9.8	--
	NOV												
	01...	1345	--	--	--	590	8.1	16.0	6.1	58	7.6	20	--
17			351110090525500 - L'ANGUILLE R SW OF WYNNE, AR (LAT 35 11 10 LONG 090 52 55)										
	AUG , 1978												
	24...	1015	53	7.4	273	450	7.7	27.0	4.4	56	3.0	6.8	--
	NOV												
	01...	1330	12	1.2	3.3	489	7.7	18.0	5.6	61	5.9	20	--

[1]Mean discharge.

Table 12.—*Chemical, physical, and bacteriological analyses, L'Anguille River, tributary streams, and waste effluents*—Continued

NUMBER ON MAP	DATE	CARBON, ORGANIC DISSOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUSPENDED TOTAL (MG/L AS C) (00689)	ALKALINITY (MG/L AS CACO3) (00410)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML) (31501)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	NITROGEN, TOTAL (MG/L AS NO3) (71887)	NITROGEN, TOTAL (MG/L AS N) (00600)
18			351230090482800 - WYNNE OXIDATION POND (LAT 35 12 30 LONG 090 48 28)										
	AUG , 1978												
	22-23	--	--	210	41	32	.7	52	660000	180000	K4500	100	23
	NOV												
	01-02	--	--	180	50	32	.7	53	--	--	--	58	13
	02...	--	--	--	--	--	--	--	--	--	--	--	--
19			351130090520500 - CANEY CREEK NR WYNNE,AR (LAT 35 11 30 LONG 090 52 05)										
	AUG , 1978												
	22...	--	--	250	23	21	.3	33	1100	K150	250	6.5	1.5
	NOV												
	01...	5.6	4.3	240	28	21	.3	32	<1000	<1000	<10	13	3.0
17			351110090525500 - L'ANGUILLE R SW OF WYNNE, AR (LAT 35 11 10 LONG 090 52 55)										
	AUG , 1978												
	24...	--	--	--	--	--	--	--	K450	K67	410	--	--
	NOV												
	01...	--	--	--	--	--	--	--	<10000	K300	150	--	--

Table 12.—*Chemical, physical, and bacteriological analyses, L'Anguille River, tributary streams, and waste effluents*—Continued

NUMBER ON MAP	DATE	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, NITRITE TOTAL (MG/L AS N) (00615)	NITROGEN, NITRATE TOTAL (MG/L AS N) (00620)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	PHOSPHORUS, ORTHO, TOTAL (MG/L AS P) (70507)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT DISCHARGE, SUSPENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
18	351230090482800 - WYNNE OXIDATION POND (LAT 35 12 30 LONG 090 48 28)											
	AUG , 1978											
	22-23	12	11	.00	.17	23	.17	2.6	4.3	136	.36	--
	NOV											
	01-02	12	.34	1.1	.10	12	1.2	7.1	12	--	--	--
	02...	--	--	--	--	--	--	--	--	--	--	--
19	351130090520500 - CANEY CREEK NR WYNNE,AR (LAT 35 11 30 LONG 090 52 05)											
	AUG , 1978											
	22...	1.1	.20	.02	.15	1.3	.17	.20	.29	99	6.3	86
	NOV											
	01...	2.1	.26	.05	.50	2.4	.55	.72	.94	40	--	--
17	351110090525500 - L'ANGUILLE R SW OF WYNNE, AR (LAT 35 11 10 LONG 090 52 55)											
	AUG , 1978											
	24...	--	--	--	--	--	--	--	--	--	--	--
	NOV											
	01...	--	--	--	--	--	--	--	--	--	--	--

Table 12.—*Chemical, physical, and bacteriological analyses, L'Anguille River, tributary streams, and waste effluents*—Continued

NUMBER ON MAP	DATE	TIME	STREAM WIDTH (FT) (00004)	STREAM DEPTH, MEAN (FT) (00064)	STREAM-FLOW, INSTANTANEOUS (CFS) (00061)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	OXYGEN DEMAND, BIOCHEMICAL, 5 DAY (MG/L) (00310)	OXYGEN DEMAND, BIOCHEM ULT. CARBONACEOUS (MG/L) (00320)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)
20			07047942 - L'ANGUILLE RIVER NR COLT, ARK. (LAT 35 05 40 LONG 090 52 42)										
	AUG , 1978												
	08...	1000	--	--	--	491	5.9	24.5	5.5	67	--	--	--
	21...	2300	--	--	--	--	--	24.0	5.7	70	--	--	--
	22...	0605	--	--	--	--	--	22.0	5.3	62	--	--	--
	22...	1300	--	--	--	--	--	24.0	5.2	63	--	--	--
	22...	1800	--	--	296	490	7.3	23.5	5.2	63	4.0	6.5	--
	OCT												
	04...	0900	--	--	--	172	7.4	18.5	3.9	43	--	--	7.6
	NOV												
	01...	0830	--	--	--	529	7.7	15.0	4.5	46	--	--	7.3
	01...	1505	--	--	4.0	547	7.8	17.0	5.7	61	4.0	10	--
	29...	0845	--	--	--	195	7.2	9.0	6.2	55	--	--	--
21			350400090522500 - L'ANGUILLE RIVER NEAR CALDWELL,AR (LAT 35 04 00 LONG 090 52 25)										
	AUG , 1978												
	21...	1815	73	5.6	411	465	7.5	25.0	5.4	67	2.9	6.6	--
	NOV												
	01...	1445	--	--	4.0	274	7.5	17.0	7.8	83	4.0	9.8	--
22			350335090533500 - FIRST CREEK @ HORTON,AR (LAT 35 03 35 LONG 090 53 35)										
	AUG , 1978												
	22...	0945	41	2.2	56	462	7.6	21.0	5.7	66	3.8	7.8	--
24			350220090544000 - SECOND CREEK NEAR HORTON,AR (LAT 35 02 20 LONG 090 54 40)										
	AUG , 1978												
	22...	1045	52	1.4	47	410	7.8	22.0	5.7	67	4.4	9.0	--

Table 12.—*Chemical, physical, and bacteriological analyses, L'Anguille River, tributary streams, and waste effluents*—Continued

NUMBER ON MAP	DATE	CARBON, ORGANIC DISSOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUSPENDED TOTAL (MG/L AS C) (00689)	ALKALINITY (MG/L AS CACO3) (00410)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML) (31501)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	NITROGEN, TOTAL (MG/L AS NO3) (71887)	NITROGEN, TOTAL (MG/L AS N) (00600)
20					07047942 - L'ANGUILLE RIVER NR COLT, ARK. (LAT 35 08 40 LONG 090 52 42)								
	AUG , 1978												
	08...	--	--	--	--	--	--	--	--	--	--	5.8	1.3
	21...	--	--	--	--	--	--	--	--	--	--	--	--
	22...	--	--	--	--	--	--	--	--	--	--	--	--
	22...	--	--	--	--	--	--	--	--	--	--	--	--
	22...	--	--	210	17	18	.2	23	K900	K100	550	6.3	1.4
	OCT												
	04...	--	--	75	6.5	4.4	.1	9.9	--	--	--	4.5	1.0
	NOV												
	01...	--	--	210	30	29	.2	21	--	--	--	6.9	1.5
	01...	--	--	210	23	28	.2	21	1000	47	92	7.1	1.6
	29...	--	--	--	--	--	--	--	--	--	--	5.8	1.3
21					350400090522500 - L'ANGUILLE RIVER NEAR CALDWELL,AR (LAT 35 04 00 LONG 090 52 25)								
	AUG , 1978												
	21...	--	--	--	--	--	--	--	K300	K50	410	--	--
	NOV												
	01...	--	--	--	--	--	--	--	200	K47	K76	--	--
22					350335090533500 - FIRST CREEK @ HORTON,AR (LAT 35 03 35 LONG 090 53 35)								
	AUG , 1978												
	22...	--	--	160	35	8.1	.4	20	1900	180	950	6.6	1.5
24					350220090544000 - SECOND CREEK NEAR HORTON,AR (LAT 35 02 20 LONG 090 54 40)								
	AUG , 1978												
	22...	--	--	160	28	5.6	.2	16	580	K160	840	11	2.5

Table 12.—*Chemical, physical, and bacteriological analyses, L'Anguille River, tributary streams, and waste effluents*—Continued

NUMBER ON MAP	DATE	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, NITRITE TOTAL (MG/L AS N) (00615)	NITROGEN, NITRATE TOTAL (MG/L AS N) (00620)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	PHOSPHORUS, ORTHO, TOTAL (MG/L AS P) (70507)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT DISCHARGE, SUSPENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
20					07047942 - L'ANGUILLE RIVER NR COLT, ARK. (LAT 35 06 40 LONG 090 52 42)							
	AUG , 1978											
	08...	--	--	--	--	.91	.40	--	.18	--	--	--
	21...	--	--	--	--	--	--	--	--	--	--	--
	22...	--	--	--	--	--	--	--	--	--	--	--
	22...	--	--	--	--	--	--	--	--	--	--	--
	22...	1.3	.05	.01	.11	1.3	.12	.11	.22	--	--	--
	OCT											
	04...	--	--	--	--	.94	.08	--	.17	--	--	--
	NOV											
	01...	--	--	--	--	1.2	.35	--	.18	--	--	--
	01...	1.1	.01	.03	.47	1.1	.50	.06	.20	--	--	--
	29...	--	--	--	--	1.1	.21	--	.26	588	--	97
21					350400090522500 - L'ANGUILLE RIVER NEAR CALDWELL,AR (LAT 35 04 00 LONG 090 52 25)							
	AUG , 1978											
	21...	--	--	--	--	--	--	--	--	80	89	96
	NOV											
	01...	--	--	--	--	--	--	--	--	--	--	--
22					350335090533500 - FIRST CREEK @ HORTON,AR (LAT 35 03 35 LONG 090 53 35)							
	AUG , 1978											
	22...	1.2	.05	.02	.26	1.2	.28	.12	.20	206	31	98
24					350220090544000 - SECOND CREEK NEAR HORTON,AR (LAT 35 02 20 LONG 090 54 40)							
	AUG , 1978											
	22...	2.2	.09	.02	.17	2.3	.19	.12	.16	200	25	95

Table 12.—*Chemical, physical, and bacteriological analyses, L'Anguille River, tributary streams, and waste effluents*— Continued

NUMBER ON MAP	DATE	TIME	STREAM WIDTH (FT) (00004)	STREAM DEPTH, MEAN (FT) (00064)	STREAM-FLOW, INSTANTANEOUS (CFS) (00061)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	OXYGEN DEMAND, BIOCHEMICAL, 5 DAY (MG/L) (00310)	OXYGEN DEMAND, BIOCHEM ULT. CARBONACEOUS (MG/L) (00320)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)
23	350120090523000 - SPY BUCK CREEK NR FORREST CITY,AR (LAT 35 01 20 LONG 090 52 30)												
	AUG , 1978 21...	1330	4.6	.20	.21	460	8.6	25.5	12.8	160	3.2	6.6	--
25	350110090545500 - CYPRESS CREEK NR PALESTINE, AR (LAT 35 01 10 LONG 090 54 55)												
	AUG , 1978 22...	1130	44	1.0	19	515	7.7	22.0	5.2	61	3.7	7.0	--
26	07047950 - L'ANGUILLE RIVER AT PALESTINE, ARK. (LAT 34 58 20 LONG 090 53 10)												
	AUG , 1978 23...	1000	75	5.0	483	440	7.4	23.0	5.9	70	3.9	7.9	--
	NOV 01...	1400	30	2.0	8.0	498	7.7	18.5	5.8	64	3.5	9.2	--
27	355655090532500 - COFFEE CREEK NR PALISTINE,AR (LAT 35 56 55 LONG 090 53 25)												
	AUG , 1978 23...	1115	14	.70	9.6	545	7.5	21.5	8.1	93	1.7	4.4	--

Table 12.—*Chemical, physical, and bacteriological analyses, L'Anguille River, tributary streams, and waste effluents*—Continued

NUMBER ON MAP	DATE	CARBON, ORGANIC DISSOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUSPENDED TOTAL (MG/L AS C) (00689)	ALKALINITY (MG/L AS CACO3) (00410)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML) (31501)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	NITROGEN, TOTAL (MG/L AS NO3) (71887)	NITROGEN, TOTAL (MG/L AS N) (00600)
23	350120090523000 - SPY BUCK CREEK NR FORREST CITY,AR (LAT 35 01 20 LONG 090 52 30)												
	AUG , 1978 21...	--	--	--	--	--	--	--	>800	K290	K810	--	--
25	350110090545500 - CYPRESS CREEK NR PALESTINE, AR (LAT 35 01 10 LONG 090 54 55)												
	AUG , 1978 22...	--	--	200	26	5.6	.2	25	1800	250	1800	3.4	.77
26	07047950 - L'ANGUILLE RIVER AT PALESTINE, ARK. (LAT 34 58 20 LONG 090 53 10)												
	AUG , 1978 23...	--	--	210	15	16	.2	24	K350	K50	580	4.9	1.1
	NOV 01...	--	--	98	29	88	.2	17	520	K62	140	3.8	.85
27	355655090532500 - COFFEE CREEK NR PALISTINE,AR (LAT 35 56 55 LONG 090 53 25)												
	AUG , 1978 23...	--	--	--	--	--	--	--	320	K50	--	--	--

Table 12.—*Chemical, physical, and bacteriological analyses, L'Anguille River, tributary streams, and waste effluents*—Continued

NUMBER ON MAP	DATE	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, NITRITE TOTAL (MG/L AS N) (00615)	NITROGEN, NITRATE TOTAL (MG/L AS N) (00620)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	PHOSPHORUS, ORTHO, TOTAL (MG/L AS P) (70507)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT DISCHARGE, SUSPENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
23	350120090523000 - SPY BUCK CREEK NR FORREST CITY,AR (LAT 35 01 20 LONG 090 52 30)											
	AUG , 1978 21...	--	--	--	--	--	--	--	--	43	.02	61
25	350110090545500 - CYPRESS CREEK NR PALESTINE, AR (LAT 35 01 10 LONG 090 54 55)											
	AUG , 1978 22...	.55	.07	.01	.14	.62	.15	.08	.13	36	1.8	90
26	07047950 - L'ANGUILLE RIVER AT PALESTINE, ARK. (LAT 34 58 20 LONG 090 53 10)											
	AUG , 1978 23...	.84	.07	.01	.19	.91	.20	.09	.18	115	150	98
	NOV 01...	.82	.01	.01	.01	.83	.02	.03	--	208	4.5	79
27	355655090532500 - COFFEE CREEK NR PALISTINE,AR (LAT 35 56 55 LONG 090 53 25)											
	AUG , 1978 23...	--	--	--	--	--	--	--	--	56	1.5	77

Table 12.—*Chemical, physical, and bacteriological analyses, L'Anguille River, tributary streams, and waste effluents*— Continued

NUMBER ON MAP	DATE	TIME	STREAM WIDTH (FT) (00004)	STREAM DEPTH, MEAN (FT) (00064)	STREAM-FLOW, INSTANTANEOUS (CFS) (00061)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	OXYGEN DEMAND, BIOCHEMICAL, 5 DAY (MG/L) (00310)	OXYGEN DEMAND, BIOCHEM ULT. CARBONACEOUS (MG/L) (00320)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)
28		350000090501000 - FORREST CITY OXIDATION POND (LAT 35 00 00 LONG 090 50 10)											
	AUG , 1978												
	21...	0645	--	--	--	660	8.7	23.0	3.4	40	--	--	--
	21...	1445	--	--	--	720	8.6	27.0	9.2	117	--	--	--
	21...	2000	--	--	--	640	8.7	25.0	5.6	69	--	--	--
	21-22	--	5.2	1.0	1.5 [1]	594	8.1	--	--	--	34	50	--
	NOV												
	01...	1650	--	--	--	--	--	18.5	8.4	--	--	--	--
	01...	2230	--	--	--	--	--	18.0	6.1	--	--	--	--
	01-02	--	5.9	1.0	1.8 [1]	718	8.3	--	--	--	44	100	--
	02...	0620	--	--	--	--	--	17.0	6.1	--	--	--	--
29		345725090503000 - UNNAMED CREEK NR FORREST CITY,AR (LAT 34 57 25 LONG 090 50 30)											
	AUG , 1978												
	22...	1530	--	--	--	540	--	23.0	7.7	92	--	--	--
	22...	2015	--	--	--	615	--	21.0	2.1	24	--	--	--
	22-23	--	14	.40	2.7	594	--	--	--	--	14	21	--
	23...	0600	--	--	--	610	--	18.5	1.6	18	--	--	--
	NOV												
	01...	0650	--	--	--	--	--	15.0	1.6	16	--	--	--
	01...	1600	--	--	--	--	--	17.0	9.8	104	--	--	--
	01...	2300	--	--	--	--	--	16.5	2.6	27	--	--	--
	01-02	--	--	--	8.6	--	8.0	--	--	--	22	53	--
30		345210090515000 - LARKIN CREEK @ FOUR FORKS,AR (LAT 34 52 10 LONG 090 51 50)											
	AUG , 1978												
	23...	1215	19	.40	10	525	7.4	22.0	5.2	61	4.0	7.5	--

[1]Mean discharge

Table 12.—*Chemical, physical, and bacteriological analyses, L'Anguille River, tributary streams, and waste effluents*—Continued

NUMBER ON MAP	DATE	CARBON, ORGANIC DISSOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUSPENDED TOTAL (MG/L AS C) (00689)	ALKALINITY (MG/L AS CACO3) (00410)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML) (31501)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	NITROGEN, TOTAL (MG/L AS NO3) (71887)	NITROGEN, TOTAL (MG/L AS N) (00600)
28		350000090501000 - FORREST CITY OXIDATION POND (LAT 35 00 00 LONG 090 50 10)											
	AUG , 1978												
	21...	--	--	--	--	--	--	--	--	--	--	--	--
	21...	--	--	--	--	--	--	--	--	--	--	--	--
	21...	--	--	--	--	--	--	--	--	--	--	--	--
	21-22	--	--	210	46	34	.6	45	>4000	>2000	910	89	20
	NOV												
	01...	--	--	--	--	--	--	--	--	--	--	--	--
	01...	--	--	--	--	--	--	--	--	--	--	--	--
	01-02	--	--	270	42	32	.5	47	400000	270000	65000	52	12
	02...	--	--	--	--	--	--	--	--	--	--	--	--
29		345725090503000 - UNNAMED CREEK NR FORREST CITY,AR (LAT 34 57 25 LONG 090 50 30)											
	AUG , 1978												
	22...	--	--	--	--	--	--	--	--	--	--	--	--
	22...	--	--	--	--	--	--	--	--	--	--	--	--
	22-23	--	--	260	31	16	.4	36	<1300	<1100	<500	31	6.9
	23...	--	--	--	--	--	--	--	--	--	--	--	--
	NOV												
	01...	--	--	--	--	--	--	--	--	--	--	--	--
	01...	--	--	--	--	--	--	--	--	--	--	--	--
	01...	--	--	--	--	--	--	--	--	--	--	--	--
	01-02	--	--	--	--	--	--	--	>8000	K52000	K76000	--	--
30		345210090515000 - LARKIN CREEK @ FOUR FORKS,AR (LAT 34 52 10 LONG 090 51 50)											
	AUG , 1978												
	23...	--	--	--	--	--	--	--	K700	K130	510	--	--

Table 12.—*Chemical, physical, and bacteriological analyses, L'Anguille River, tributary streams, and waste effluents*—Continued

NUMBER ON MAP	DATE	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, NITRITE TOTAL (MG/L AS N) (00615)	NITROGEN, NITRATE TOTAL (MG/L AS N) (00620)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	PHOSPHORUS, ORTHO, TOTAL (MG/L AS P) (70507)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT DISCHARGE, SUSPENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
28	350000090501000 - FORREST CITY OXIDATION POND (LAT 35 00 00 LONG 090 50 10)											
	AUG , 1978											
	21...	--	--	--	--	--	--	--	--	--	--	--
	21...	--	--	--	--	--	--	--	--	--	--	--
	21...	--	--	--	--	--	--	--	--	--	--	--
	21-22	6.0	14	.00	.14	20	.14	2.7	3.7	35	.14	--
	NOV											
	01...	--	--	--	--	--	--	--	--	--	--	--
	01...	--	--	--	--	--	--	--	--	--	--	--
	01-02	11	.14	.06	.68	11	.74	3.7	7.3	70	.34	--
	02...	--	--	--	--	--	--	--	--	--	--	--
29	345725090503000 - UNNAMED CREEK NR FORREST CITY,AR (LAT 34 57 25 LONG 090 50 30)											
	AUG , 1978											
	22...	--	--	--	--	--	--	--	--	--	--	--
	22...	--	--	--	--	--	--	--	--	--	--	--
	22-23	6.6	.05	.04	.26	6.6	.30	1.5	1.8	38	.28	--
	23...	--	--	--	--	--	--	--	--	--	--	--
	NOV											
	01...	--	--	--	--	--	--	--	--	--	--	--
	01...	--	--	--	--	--	--	--	--	--	--	--
	01...	--	--	--	--	--	--	--	--	--	--	--
	01-02	--	--	--	--	--	--	--	--	133	3.1	--
30	345210090515000 - LARKIN CREEK @ FOUR FORKS,AR (LAT 34 52 10 LONG 090 51 50)											
	AUG , 1978											
	23...	--	--	--	--	--	--	--	--	113	3.1	97

Table 12.—*Chemical, physical, and bacteriological analyses, L'Anguille River, tributary streams, and waste effluents*—Continued

NUMBER ON MAP	DATE	TIME	STREAM WIDTH (FT) (00004)	STREAM DEPTH, MEAN (FT) (00064)	STREAM-FLOW, INSTANTANEOUS (CFS) (00061)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	OXYGEN DEMAND, BIOCHEMICAL, 5 DAY (MG/L) (00310)	OXYGEN DEMAND, BIOCHEM ULT. CARBONACEOUS (MG/L) (00320)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)
31	345020090474500 - L'ANGUILLE RIVER @ HWY 1 (LAT 34 50 20 LONG 090 47 45)												
	AUG , 1978												
	24...	1200	83	5.2	512	460	7.4	23.0	6.2	74	3.1	7.1	--
	NOV												
	01...	1145	52	1.5	17	529	8.0	18.0	6.0	65	2.2	5.6	--
32	344740090455000 - L'ANGUILLE RIVER UPSTREAM FROM HWY 79 (LAT 34 47 40 LONG 090 45 50)												
	AUG , 1978												
	23...	1745	--	--	544	462	7.3	24.5	6.8	83	2.7	5.8	--
33	344720090454500 - MARIANNA SEWAGE EFFLUENT (OLD) (LAT 34 47 20 LONG 090 45 45)												
	AUG , 1978												
	23...	2350	--	--	--	--	--	20.3	6.7	76	--	--	--
	23-24	--	--	--	.30[1]	1356	8.9	--	--	--	47	120	--
	24...	0700	--	--	--	--	--	23.0	6.2	74	--	--	--
	24...	1415	--	--	--	--	--	26.5	7.0	88	--	--	--
	NOV												
	02...	0800	--	--	.32[1]	1350	9.0	17.0	3.2	34	--	--	--
34	07047964 - L'ANGUILLE RIVER AT MARIANNA, ARK. (LAT 34 47 12 LONG 090 45 00)												
	AUG , 1978												
	23...	1750	--	--	--	--	--	24.5	6.7	82	--	--	--
	24...	0010	--	--	--	--	--	23.0	6.7	80	--	--	--
	24...	0800	--	--	--	--	--	22.0	6.2	73	--	--	--
	24...	1400	--	--	--	470	7.4	24.0	6.2	76	2.3	5.6	--

[1]Mean discharge

Table 12.—*Chemical, physical, and bacteriological analyses, L'Anguille River, tributary streams, and waste effluents*—Continued

NUMBER ON MAP	DATE	CARBON, ORGANIC DISSOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUSPENDED TOTAL (MG/L AS C) (00689)	ALKALINITY (MG/L AS CACO3) (00410)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML) (31501)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	NITROGEN, TOTAL (MG/L AS NO3) (71887)	NITROGEN, TOTAL (MG/L AS N) (00600)
31		345020090474500 - L'ANGUILLE RIVER @ HWY 1 (LAT 34 50 20 LONG 090 47 45)											
	AUG , 1978												
	24...	--	--	190	15	15	.2	23	K450	K22	250	4.7	1.1
	NOV												
	01...	--	--	240	11	22	.2	22	K200	<33	K40	3.0	.68
32		344740090455000 - L'ANGUILLE RIVER UPSTREAM FROM HWY 79 (LAT 34 47 40 LONG 090 45 50)											
	AUG , 1978												
	23...	--	--	--	--	--	--	--	K180	K50	K125	--	--
33		344720090454500 - MARIANNA SEWAGE EFFLUENT (OLD) (LAT 34 47 20 LONG 090 45 45)											
	AUG , 1978												
	23...	--	--	--	--	--	--	--	--	--	--	--	--
	23-24	--	--	440	200	9.0	.8	25	74000	7000	1600	68	15
	24...	--	--	--	--	--	--	--	--	--	--	--	--
	24...	--	--	--	--	--	--	--	--	--	--	--	--
	NOV												
	02...	21	>16	360	200	13	.8	23	1000000	600000	22000	63	14
34		07047964 - L'ANGUILLE RIVER AT MARIANNA, ARK. (LAT 34 47 12 LONG 090 45 00)											
	AUG , 1978												
	23...	--	--	--	--	--	--	--	--	--	--	--	--
	24...	--	--	--	--	--	--	--	--	--	--	--	--
	24...	--	--	--	--	--	--	--	--	--	--	--	--
	24...	--	--	200	36	18	.3	24	K200	K56	K50	5.5	1.2

Table 12.—*Chemical, physical, and bacteriological analyses, L'Anguille River, tributary streams, and waste effluents*— Continued

NUMBER ON MAP	DATE	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, NITRITE TOTAL (MG/L AS N) (00615)	NITROGEN, NITRATE TOTAL (MG/L AS N) (00620)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	PHOSPHORUS, ORTHO. TOTAL (MG/L AS P) (70507)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT DISCHARGE, SUSPENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
31	345020090474500 - L'ANGUILLE RIVER @ HWY 1 (LAT 34 50 20 LONG 090 47 45)											
	AUG , 1978											
	24...	.77	.05	.01	.23	.82	.24	.11	.23	179	247	97
	NOV											
	01...	.50	.03	.01	.14	.53	.15	.03	.14	--	--	--
32	344740090455000 - L'ANGUILLE RIVER UPSTREAM FROM HWY 79 (LAT 34 47 40 LONG 090 45 50)											
	AUG , 1978											
	23...	--	--	--	--	--	--	--	--	167	245	97
33	344720090454500 - MARIANNA SEWAGE EFFLUENT (OLD) (LAT 34 47 20 LONG 090 45 45)											
	AUG , 1978											
	23...	--	--	--	--	--	--	--	--	--	--	--
	23-24	7.6	7.4	.00	.36	15	.36	2.8	3.9	240	.19	--
	24...	--	--	--	--	--	--	--	--	--	--	--
	24...	--	--	--	--	--	--	--	--	--	--	--
	NOV											
	02...	13	.64	.29	.01	14	.30	3.9	5.6	--	--	--
34	07047964 - L'ANGUILLE RIVER AT MARIANNA, ARK. (LAT 34 47 12 LONG 090 45 00)											
	AUG , 1978											
	23...	--	--	--	--	--	--	--	--	--	--	--
	24...	--	--	--	--	--	--	--	--	--	--	--
	24...	--	--	--	--	--	--	--	--	--	--	--
	24...	.93	.06	.01	.24	.99	.25	.14	.30	163	--	96

Table 12.—*Chemical, physical, and bacteriological analyses, L'Anguille River, tributary streams, and waste effluents*—Continued

NUMBER ON MAP	DATE	TIME	STREAM WIDTH (FT) (00004)	STREAM DEPTH, MEAN (FT) (00064)	STREAM-FLOW, INSTANTANEOUS (CFS) (00061)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)	OXYGEN, DISSOLVED (MG/L) (00300)	OXYGEN, DISSOLVED (PERCENT SATURATION) (00301)	OXYGEN DEMAND, BIOCHEMICAL, 5 DAY (MG/L) (00310)	OXYGEN DEMAND, BIOCHEM ULT. CARBONACEOUS (MG/L) (00320)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)
36		344635090442500 - MARIANNA SEWAGE EFFLUENT (NEW POND) (LAT 34 46 35 LONG 090 44 25)											
	AUG , 1978												
	23...	2015	--	--	--	--	--	22.5	6.3	74	--	--	--
	23-24	--	1.1	.10	.11[1]	1510	7.7	--	--	--	39	115	--
	24...	0730	--	--	--	--	--	19.0	6.5	72	--	--	--
	NOV												
	02...	1130	.6	.50	7.6[1]	1410	9.0	19.5	8.8	99	82	189	--
35		344620090444000 - L'ANGUILLE RIVER DOWNSTREAM FROM HWY 79 (LAT 34 46 20 LONG 090 44 40)											
	AUG , 1978												
	24...	1720	105	4.6	576	470	7.4	25.0	6.2	76	2.2	5.3	--
38		344615090432000 - L'ANGUILLE RIVER NR MOUTH (LAT 34 46 15 LONG 090 43 20)											
	AUG , 1978												
	24...	1700	--	--	576	465	7.4	25.0	6.3	78	--	--	--
	NOV												
	02...	1000	98	1.5	43	632	8.8	18.0	8.7	73	6.3	12	--

[1]Mean discharge.

Table 12.—*Chemical, physical, and bacteriological analyses, L'Anguille River, tributary streams, and waste effluents*—Continued

NUMBER ON MAP	DATE	CARBON, ORGANIC DISSOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUSPENDED TOTAL (MG/L AS C) (00689)	ALKALINITY (MG/L AS CACO3) (00410)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML) (31501)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	NITROGEN, TOTAL (MG/L AS NO3) (71887)	NITROGEN, TOTAL (MG/L AS N) (00600)
36	344635090442500 - MARIANNA SEWAGE EFFLUENT (NEW POND) (LAT 34 46 35 LONG 090 44 25)												
	AUG , 1978												
	23...	--	--	--	--	--	--	--	--	--	--	--	--
	23-24	--	--	460	200	33	.9	29	>160000	K75000	K7600	89	20
	24...	--	--	--	--	--	--	--	--	--	--	--	--
	NOV												
	02...	18	>15	350	210	28	.8	29	350000	200000	9000	63	14
35	344620090444000 - L'ANGUILLE RIVER DOWNSTREAM FROM HWY 79 (LAT 34 46 20 LONG 090 44 40)												
	AUG , 1978												
	24...	--	--	--	--	--	--	--	K180	K78	K50	--	--
37	344615090432000 - L'ANGUILLE RIVER NR MOUTH (LAT 34 46 15 LONG 090 43 20)												
	AUG , 1978												
	24...	--	--	--	--	--	--	--	--	--	--	--	--
	NOV												
	02...	--	--	--	--	--	--	--	--	--	--	--	--

Table 12.—*Chemical, physical, and bacteriological analyses, L'Anguille River, tributary streams, and waste effluents*— Continued

NUMBER ON MAP	DATE	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, NITRITE TOTAL (MG/L AS N) (00615)	NITROGEN, NITRATE TOTAL (MG/L AS N) (00620)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N) (00630)	PHOSPHORUS, ORTHO, TOTAL (MG/L AS P) (70507)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT DISCHARGE, SUSPENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
36	344635090442500 - MARIANNA SEWAGE EFFLUENT (NEW POND) (LAT 34 46 35 LONG 090 44 25)											
	AUG , 1978											
	23...	--	--	--	--	--	--	--	--	--	--	--
	23-24	18	.09	.00	2.2	18	2.2	7.3	8.5	205	.00	--
	24...	--	--	--	--	--	--	--	--	--	--	--
	NOV											
	02...	11	2.1	.71	.49	13	1.2	6.5	11	866	18	--
35	344620090444000 - L'ANGUILLE RIVER DOWNSTREAM FROM HWY 79 (LAT 34 46 20 LONG 090 44 40)											
	AUG , 1978											
	24...	--	--	--	--	--	--	--	--	--	--	--
37	344615090432000 - L'ANGUILLE RIVER NR MOUTH (LAT 34 46 15 LONG 090 43 20)											
	AUG , 1978											
	24...	--	--	--	--	--	--	--	--	--	--	--
	NOV											
	02...	--	--	--	--	--	--	--	--	--	--	--

Table 13.—*Concentrations of metals in whole-water samples, L'Anguille River basin*

NUMBER ON MAP	DATE	TIME	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM TOTAL RECOVERABLE (UG/L AS CD) (01027)	CHROMIUM, TOTAL RECOVERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOVERABLE (UG/L AS CU) (01042)	IRON, TOTAL RECOVERABLE (UG/L AS FE) (01045)	LEAD, TOTAL RECOVERABLE (UG/L AS PB) (01051)	MANGANESE, TOTAL RECOVERABLE (UG/L AS MN) (01055)	MERCURY TOTAL RECOVERABLE (UG/L AS HG) (71900)	SELENIUM, TOTAL (UG/L AS SE) (01147)	ZINC, TOTAL RECOVERABLE (UG/L AS ZN) (01092)
1	353535090465000 - L'ANGUILLE R DOWNSTREAM FROM CLAYPOOL RESERVOIR (LAT 35 35 35 LONG 090 46 50)											
	AUG , 1978											
	21...	1630	5	0	0	0	1800	1	350	.0	0	20
	NOV											
	01...	0730	2	0	0	0	1400	0	360	.0	0	20
2	353415090442500 - HARRISBURG OXIDATION POND (LAT 35 34 15 LONG 090 44 25)											
	AUG , 1978											
	21-22	--	7	0	10	0	130	0	40	.0	1	40
	NOV											
	01-02	--	8	0	0	0	250	0	200	.0	1	30
3	353515090463200 - HOLLOW BRANCH NEAR HARRISBURG,AR (LAT 35 35 15 LONG 090 46 32)											
	AUG , 1978											
	21-22	--	4	0	0	0	870	0	220	.0	0	30
	NOV											
	01-02	--	10	0	0	0	1000	0	470	.0	1	30
4	353430090480500 - SWAN POND DITCH NEAR HARRISBURG,AR (LAT 35 34 30 LONG 090 48 05)											
	AUG , 1978											
	21...	1800	3	0	0	17	1500	1	160	.0	0	20
5	353350090473500 - L'ANGUILLE RIVER NEAR HARRISBURG,AR (LAT 35 33 50 LONG 090 47 35)											
	NOV , 1978											
	01...	0830	2	0	0	0	2100	0	350	.0	0	20

Table 13.—*Concentrations of metals in whole-water samples, L'Anguille River basin*— Con.

NUMBER ON MAP	DATE	TIME	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD) (01027)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)
10	352410090494000 - L'ANGUILLE RIVER NEAR CHERRY VALLEY,AR (LAT 35 24 10 LONG 090 49 40)											
	NOV , 1978 02...	1000	2	0	0	0	2300	0	2000	.0	0	20
11	352405090485500 - WOLF CREEK NR CHERRY VALLEY, AR (LAT 35 24 05 LONG 090 48 55)											
	AUG , 1978 23...	1215	3	0	0	0	320	0	210	.0	1	20
14	351505090541200 - L'ANGUILLE RIVER NR WYNNE,AR (LAT 35 15 05 LONG 090 54 12)											
	AUG , 1978 23...	1515	4	0	0	0	2600	0	510	.1	0	30
15	351505090553000 - BRUSHY CREEK NEAR WYNNE,AR (LAT 35 15 05 LONG 090 55 30)											
	AUG , 1978 23...	1545	3	0	10	0	1100	0	520	.1	0	40
18	351230090482800 - WYNNE OXIDATION POND (LAT 35 12 30 LONG 090 48 28)											
	AUG , 1978 22-23	--	5	0	0	0	200	0	60	.6	1	30
	NOV 01-02	--	3	0	0	0	190	0	120	.0	1	20

Table 13.—*Concentrations of metals in whole-water samples, L'Anguille River basin*—Con.

NUMBER ON MAP	DATE	TIME	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD) (01027)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)
19	351130090520500 - CANEY CREEK NR WYNNE,AR (LAT 35 11 30 LONG 090 52 05)											
	AUG , 1978											
	22...	0630	5	0	20	0	400	0	310	.0	3	20
	NOV											
	01...	1345	4	0	0	20	1100	0	530	.0	6	20
20	07047942 - L'ANGUILLE RIVER NR COLT, ARK. (LAT 35 08 40 LONG 090 52 42)											
	AUG , 1978											
	22...	1800	4	0	10	17	4000	0	900	.0	0	50
	NOV											
	01...	0830	2	0	0	6	1100	8	1200	.0	9	10
	01...	1505	3	0	0	0	1100	0	1200	.0	7	80
22	350335090533500 - FIRST CREEK @ HORTON,AR (LAT 35 03 35 LONG 090 53 35)											
	AUG , 1978											
	22...	0945	3	0	10	0	3400	1	550	.0	0	30
24	350220090544000 - SECOND CREEK NEAR HORTON,AR (LAT 35 02 20 LONG 090 54 40)											
	AUG , 1978											
	22...	1045	3	0	0	33	2600	0	650	.0	0	30
25	350110090545500 - CYPRESS CREEK NR PALESTINE, AR (LAT 35 01 10 LONG 090 54 55)											
	AUG , 1978											
	22...	1130	3	0	10	0	760	0	580	.1	1	30

Table 13.—*Concentrations of metals in whole-water samples, L'Anguille River basin*—Con.

NUMBER ON MAP	DATE	TIME	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD) (01027)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)
26	07047950 - L'ANGUILLE RIVER AT PALESTINE, ARK. (LAT 34 58 20 LONG 090 53 10)											
	AUG . 1978											
	23...	1000	3	0	0	17	2000	0	460	.0	0	20
	NOV											
	01...	1400	2	0	0	0	1100	0	1000	.0	1	30
28	350000090501000 - FORREST CITY OXIDATION POND (LAT 35 00 00 LONG 090 50 10)											
	AUG . 1978											
	21-22	--	5	0	10	0	150	0	30	.1	1	20
	NOV											
	01-02	--	4	0	0	0	160	0	100	.0	1	20
29	345725090503000 - UNNAMED CREEK NR FORREST CITY, AR (LAT 34 57 25 LONG 090 50 30)											
	AUG . 1978											
	22-23	--	6	0	10	0	370	0	300	.0	0	20
31	345020090474500 - L'ANGUILLE RIVER @ HWY 1 (LAT 34 50 20 LONG 090 47 45)											
	AUG . 1978											
	24...	1200	4	0	0	0	2700	0	490	.9	0	40
	NOV											
	01...	1145	2	0	0	0	1300	0	1000	.0	0	10

Table 13.—*Concentrations of metals in whole-water samples, L'Anguille River basin*—Con.

NUMBER ON MAP	DATE	TIME	ARSENIC TOTAL (UG/L AS AS) (01002)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD) (01027)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR) (01034)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU) (01042)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE) (01045)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB) (01051)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN) (01055)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG) (71900)	SELE-NIUM, TOTAL (UG/L AS SE) (01147)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN) (01092)
33		344720090454500 - MARIANNA SEWAGE EFFLUENT (OLD) (LAT 34 47 20 LONG 090 45 45)										
	AUG . 1978 23-24	--	5	0	0	0	4400	0	170	.0	0	40
	NOV 02...	0800	4	0	0	10	450	0	120	.0	0	20
34		07047964 - L'ANGUILLE RIVER AT MARIANNA, ARK. (LAT 34 47 12 LONG 090 45 00)										
	AUG . 1978 24...	1400	4	0	10	0	3900	0	560	.3	0	30
36		344635090442500 - MARIANNA SEWAGE EFFLUENT (NEW POND) (LAT 34 46 35 LONG 090 44 25)										
	AUG . 1978 23-24	--	12	0	10	0	3100	0	310	.0	0	40
	NOV 02...	1130	7	0	0	30	12000	0	400	.0	0	100

Table 14.—*Analyses of trace metals in fish*

[Results in micrograms per kilogram. ND, Not detected]

Constituent	Carp, edible portion	Carp, carcass	Buffalo, edible portion	Buffalo, carcass
Arsenic (As)----	[1]ND	[1]ND	[1]ND	[1]ND
Chromium (Cr)---	140	280	190	320
Copper (Cu)-----	660	1,400	330	1,300
Lead (Pb)-------	[2]ND	340	290	340
Mercury (Ag)----	610	400	180	90

[1]The sensitivity of detection for arsenic was 500 micrograms per kilogram.

[2]The sensitivity of detection for lead was 200 micrograms per kilogram.

Table 15.—*Water-quality data for sewage-treatment plants and receiving streams*

[Results are mean values of from 2 to 4 samples]

Sampling site	Date sampled	Mean discharge (ft^3/s)	Oxygen, dissolved (mg/L)	Oxygen demand, biochemical, 5-day (mg/L)	Temperature (°C)	Total ammonia (mg/L as N)	Total nitrite (mg/L as N)	Total nitrate (mg/L as N)	Total organic nitrogen (mg/L)	Total phosphorus (mg/L as N)	Total suspended solids (mg/L)
Harrisburg sewage-treatment plant effluent	08-21,22-78	0.16	(1)	85	28.0	2.1	0.00	0.15	19	2.9	105
	11-01-78	.23	4.4	90	16.5	.49	1.0	.70	13	9.0	77
Hollow Branch, 3.5 mi downstream from Harrisburg sewage-treatment plant	08-21,22-78	1.81	(2)	4.6	27.5	.10	.04	.02	1.0	.19	49
	11-01-78	.23	4.8	6.8	17.5	.45	.16	.50	3.1	4.2	46
Wynne sewage-treatment plant effluent	08-22,23-78	.98	(3)	52	29.0	11	.00	.17	12	4.3	136
	11-01-78	.84	.3	138	17.0	.34	1.1	.10	12	12	---
Caney Creek, 6.5 mi downstream from Wynne sewage-treatment plant	08-22,23-78	23.4	(4)	7.8	28.5	.20	.02	.15	1.1	.29	27
	11-01-78	1.00	6.1	6.0	16.0	.26	.05	.50	2.1	.94	40
Forrest City sewage-treatment plant effluent	08-22,23-78	1.37	(5)	34	25.0	14	.00	.14	6.0	3.7	35
	11-01-78	1.78	(6)	44	18.0	.14	.06	.68	11	7.3	70
Drainage ditch, 6.0 mi downstream from Forrest City sewage-treatment plant	08-22,23-78	2.71	(7)	14	18.5	.05	.04	.26	6.6	1.8	38
	11-01-78	1.53	(8)	23	16.0	.17	.09	.91	6.3	4.3	133
Old Marianna sewage-treatment plant effluent	08-23,24-78	.30	(9)	47	23.5	7.4	.00	.36	7.6	3.9	240
	11-02-78	.32	3.2	-----	17.0	.64	.29	.01	13	5.6	---
L'Anguille River at Marianna (downstream from Old Marianna sewage-treatment plant)	08-23,24-78	576	(10)	2.3	23.0	.06	.01	.24	.93	.30	163
New Marianna sewage-treatment plant effluent	08-23,24-78	.11	6.4	39	21.0	.09	.00	2.2	18	8.5	205
	11-02-78	7.6	8.8	82	19.5	2.1	.71	.49	11	11	866
L'Anguille River near mouth (downstream from new Marianna sewage-treatment plant)	08-24-78	576	6.3	-----	25.0	-----	----	----	----	-----	---
	11-02-78	43	6.7	6.3	18.0	-----	----	----	----	-----	---

[1] Maximum: 3.6 mg/L, minimum: 1.6 mg/L
[2] Maximum: 5.0 mg/L, minimum: 3.1 mg/L
[3] Maximum: 17.0 mg/L, minimum: 5.6 mg/L
[4] Maximum: 14.6 mg/L, minimum: 5.6 mg/L
[5] Maximum: 9.2 mg/L, minimum: 3.4 mg/L
[6] Maximum: 8.4 mg/L, minimum: 6.1 mg/L
[7] Maximum: 7.7 mg/L, minimum: 1.6 mg/L
[8] Maximum: 9.8 mg/L, minimum: 1.6 mg/L
[9] Maximum: 7.0 mg/L, minimum: 6.2 mg/L
[10] Maximum: 6.7 mg/L, minimum: 6.2 mg/L

Table 16.—*Concentrations of pesticides, L'Anguille River basin*

NUMBER ON MAP	DATE	TIME	ALDRIN, TOTAL (UG/L) (39330)	ALDRIN, DISSOLVED (UG/L) (39331)	ALDRIN, TOTAL IN BOTTOM MATERIAL (UG/KG) (39333)	CHLORDANE, TOTAL (UG/L) (39350)	CHLORDANE, DISSOLVED (UG/L) (39352)	CHLORDANE, TOTAL IN BOTTOM MATERIAL (UG/KG) (39351)	DDD, TOTAL (UG/L) (39360)	DDD, DISSOLVED (UG/L) (39361)	DDD, TOTAL IN BOTTOM MATERIAL (UG/KG) (39363)	DDE, TOTAL (UG/L) (39365)	DDE, DISSOLVED (UG/L) (39366)
1	353535090465000 - L'ANGUILLE R DOWNSTREAM FROM CLAYPOOL RESERVOIR (LAT 35 35 35 LONG 090 46 50)												
	AUG , 1978												
	21...	1630	.00	.00	--	.0	.0	--	.00	.00	--	.00	.00
	NOV												
	01...	0730	.00	.00	--	.0	.0	--	.00	.00	--	.00	.00
3	353515090463200 - HOLLOW BRANCH NEAR HARRISBURG,AR (LAT 35 35 15 LONG 090 46 32)												
	NOV , 1978												
	01...	0700	.00	.00	--	.0	.0	--	.00	.00	--	.00	.00
4	353430090480500 - SWAN POND DITCH NEAR HARRISBURG,AR (LAT 35 34 30 LONG 090 48 05)												
	AUG , 1978												
	21...	1800	.00	.00	--	.0	.0	--	.00	.00	--	.00	.00
5	353350090473500 - L'ANGUILLE RIVER NEAR HARRISBURG,AR (LAT 35 33 50 LONG 090 47 35)												
	NOV , 1978												
	01...	0830	.00	.00	--	.0	.0	--	.00	.00	--	.00	.00
7	353040090464000 - MCCRACKEN DITCH NEAR HARRISBURG,AR (LAT 35 30 40 LONG 090 46 40)												
	NOV , 1978												
	15...	1430	.00	.00	--	.0	.0	--	.00	.00	--	.00	.00

Table 16.—*Concentrations of pesticides, L'Anguille River basin*—Continued

NUMBER ON MAP	DATE	DDE, TOTAL IN BOTTOM MATERIAL (UG/KG) (39368)	DDT, TOTAL (UG/L) (39370)	DDT, DISSOLVED (UG/L) (39371)	DDT, TOTAL IN BOTTOM MATERIAL (UG/KG) (39373)	DIAZINON, TOTAL (UG/L) (39570)	DIELDRIN TOTAL (UG/L) (39380)	DIELDRIN DISSOLVED (UG/L) (39381)	DIELDRIN, TOTAL IN BOTTOM MATERIAL (UG/KG) (39383)	ENDOSULFAN, TOTAL (UG/L) (39388)	ENDRIN, TOTAL (UG/L) (39390)	ENDRIN, DISSOLVED (UG/L) (39391)	ENDRIN, TOTAL IN BOTTOM MATERIAL (UG/KG) (39393)
1	353535090465000 - L'ANGUILLE R DOWNSTREAM FROM CLAYPOOL RESERVOIR (LAT 35 35 35 LONG 090 46 50)												
	AUG , 1978 21...	--	.00	.00	--	--	.01	.01	--	--	.00	.00	--
	NOV 01...	--	.00	.00	--	--	.00	.00	--	.00	.00	.00	--
3	353515090463200 - HOLLOW BRANCH NEAR HARRISBURG,AR (LAT 35 35 15 LONG 090 46 32)												
	NOV , 1978 01...	--	.00	.00	--	--	.00	.00	--	.00	.00	.00	--
4	353430090480500 - SWAN POND DITCH NEAR HARRISBURG,AR (LAT 35 34 30 LONG 090 48 05)												
	AUG , 1978 21...	--	.00	.00	--	--	.01	.01	--	--	.00	.00	--
5	353350090473500 - L'ANGUILLE RIVER NEAR HARRISBURG,AR (LAT 35 33 50 LONG 090 47 35)												
	NOV , 1978 01...	--	.00	.00	--	--	.00	.00	--	.00	.00	.00	--
7	353040090464000 - MCCRACKEN DITCH NEAR HARRISBURG,AR (LAT 35 30 40 LONG 090 46 40)												
	NOV , 1978 16...	--	.00	.00	--	--	.00	.00	--	.00	.00	.00	--

Table 16.—*Concentrations of pesticides, L'Anguille River basin*—Continued

NUMBER ON MAP	DATE	ETHION, TOTAL (UG/L) (39398)	HEPTACHLOR, TOTAL (UG/L) (39410)	HEPTACHLOR, DISSOLVED (UG/L) (39411)	HEPTACHLOR, TOTAL IN BOTTOM MATERIAL (UG/KG) (39413)	HEPTACHLOR EPOXIDE TOTAL (UG/L) (39420)	HEPTACHLOR EPOXIDE DISSOLVED (UG/L) (39421)	HEPTACHLOR EPOXIDE TOT. IN BOTTOM MATL. (UG/KG) (39423)	LINDANE TOTAL (UG/L) (39340)	LINDANE DISSOLVED (UG/L) (39341)	LINDANE TOTAL IN BOTTOM MATERIAL (UG/KG) (39343)	MALATHION, TOTAL (UG/L) (39530)
1	353535090465000 - L'ANGUILLE R DOWNSTREAM FROM CLAYPOOL RESERVOIR (LAT 35 35 35 LONG 090 46 50)											
	AUG , 1978 21...	--	.00	.00	--	.00	.00	--	.00	.00	--	--
	NOV 01...	--	.00	.00	--	.00	.00	--	.00	.00	--	--
3	353515090463200 - HOLLOW BRANCH NEAR HARRISBURG,AR (LAT 35 35 15 LONG 090 46 32)											
	NOV , 1978 01...	--	.00	.00	--	.00	.00	--	.00	.00	--	--
4	353430090480500 - SWAN POND DITCH NEAR HARRISBURG,AR (LAT 35 34 30 LONG 090 48 05)											
	AUG , 1978 21...	--	.00	.00	--	.00	.00	--	.00	.00	--	--
5	353350090473500 - L'ANGUILLE RIVER NEAR HARRISBURG,AR (LAT 35 33 50 LONG 090 47 35)											
	NOV , 1978 01...	--	.00	.00	--	.00	.00	--	.00	.00	--	--
7	353040090464000 - MCCRACKEN DITCH NEAR HARRISBURG,AR (LAT 35 30 40 LONG 090 46 40)											
	NOV , 1978 16...	--	.00	.00	--	.00	.00	--	.00	.00	--	--

Table 16.—*Concentrations of pesticides, L'Anguille River basin*—Continued

NUMBER ON MAP	DATE	METHOXYCHLOR, TOTAL (UG/L) (39480)	METHYL PARATHION, TOTAL (UG/L) (39600)	MIREX, TOTAL (UG/L) (39755)	MIREX, DISSOLVED (UG/L) (39756)	NAPHTHALENES, POLYCHLOR. TOTAL (UG/L) (39250)	METHYL TRITHION, TOTAL (UG/L) (39790)	PCB, TOTAL (UG/L) (39516)	PCB, DISSOLVED (UG/L) (39517)	PCB, TOTAL IN BOTTOM MATERIAL (UG/KG) (39519)	SILVEX, TOTAL (UG/L) (39760)	SILVEX, DISSOLVED (UG/L) (39762)
1	353535090465000 - L'ANGUILLE R DOWNSTREAM FROM CLAYPOOL RESERVOIR (LAT 35 35 35 LONG 090 46 50)											
	AUG , 1978											
	21...	--	--	--	.00	.00	--	.0	.0	--	.00	.00
	NOV											
	01...	--	--	--	.00	.00	--	.0	.0	--	.00	.00
3	353515090463200 - HOLLOW BRANCH NEAR HARRISBURG,AR (LAT 35 35 15 LONG 090 46 32)											
	NOV , 1978											
	01...	--	--	--	.00	.00	--	.0	.0	--	.00	.00
4	353430090480500 - SWAN POND DITCH NEAR HARRISBURG,AR (LAT 35 34 30 LONG 090 48 05)											
	AUG , 1978											
	21...	--	--	--	.00	.00	--	.0	.0	--	.00	.00
5	353350090473500 - L'ANGUILLE RIVER NEAR HARRISBURG,AR (LAT 35 33 50 LONG 090 47 35)											
	NOV , 1978											
	01...	--	--	--	.00	.00	--	.0	.0	--	.00	.00
7	353040090464000 - MCCRACKEN DITCH NEAR HARRISBURG,AR (LAT 35 30 40 LONG 090 46 40)											
	NOV , 1978											
	16...	--	--	--	.00	.00	--	.0	.0	--	.00	.00

Table 16.—*Concentrations of pesticides, L'Anguille River basin*— Continued

NUMBER ON MAP	DATE	SILVEX, TOTAL IN BOTTOM MATERIAL (UG/KG) (39761)	2,4-D, TOTAL (UG/L) (39730)	2,4-D, DISSOLVED (UG/L) (39732)	2,4-D, TOTAL IN BOTTOM MATERIAL (UG/KG) (39731)	2,4,5-T TOTAL (UG/L) (39740)	2,4,5-T DISSOLVED (UG/L) (39742)	2,4,5-T TOTAL IN BOTTOM MATERIAL (UG/KG) (39741)	TOTAL TRITHION (UG/L) (39786)	TOXAPHENE, TOTAL (UG/L) (39400)	TOXAPHENE, DISSOLVED (UG/L) (39401)	TOXAPHENE, TOTAL IN BOTTOM MATERIAL (UG/KG) (39403)
1	353535090465000 - L'ANGUILLE R DOWNSTREAM FROM CLAYPOOL RESERVOIR (LAT 35 35 35 LONG 090 46 50)											
	AUG , 1978											
	21...	--	.33	.33	--	.42	.42	--	--	0	0	--
	NOV											
	01...	--	.02	.02	--	.03	.03	--	--	0	0	--
3	353515090463200 - HOLLOW BRANCH NEAR HARRISBURG,AR (LAT 35 35 15 LONG 090 46 32)											
	NOV , 1978											
	01...	--	.04	.04	--	.04	.04	--	--	0	0	--
4	353430090480500 - SWAN POND DITCH NEAR HARRISBURG,AR (LAT 35 34 30 LONG 090 48 05)											
	AUG , 1978											
	21...	--	.00	.00	--	.00	.00	--	--	0	0	--
5	353350090473500 - L'ANGUILLE RIVER NEAR HARRISBURG,AR (LAT 35 33 50 LONG 090 47 35)											
	NOV , 1978											
	01...	--	.03	.03	--	.02	.02	--	--	0	0	--
7	353040090464000 - MCCRACKEN DITCH NEAR HARRISBURG,AR (LAT 35 30 40 LONG 090 46 40)											
	NOV , 1978											
	16...	--	.23	.23	--	.34	.34	--	--	0	0	--

Table 16.—*Concentrations of pesticides, L'Anguille River basin*—Continued

NUMBER ON MAP	DATE	TIME	ALDRIN, TOTAL (UG/L) (39330)	ALDRIN, DISSOLVED (UG/L) (39331)	ALDRIN, TOTAL IN BOTTOM MATERIAL (UG/KG) (39333)	CHLORDANE, TOTAL (UG/L) (39350)	CHLORDANE, DISSOLVED (UG/L) (39352)	CHLORDANE, TOTAL IN BOTTOM MATERIAL (UG/KG) (39351)	DDD, TOTAL (UG/L) (39360)	DDD, DISSOLVED (UG/L) (39361)	DDD, TOTAL IN BOTTOM MATERIAL (UG/KG) (39363)	DDE, TOTAL (UG/L) (39365)	DDE, DISSOLVED (UG/L) (39366)
10	352410090494000 - L'ANGUILLE RIVER NEAR CHERRY VALLEY,AR (LAT 35 24 10 LONG 090 49 40)												
	NOV , 1978 02...	1000	--	--	.0	--	--	0	--	--	.7	--	--
11	352405090485500 - WOLF CREEK NR CHERRY VALLEY, AR (LAT 35 24 05 LONG 090 48 55)												
	AUG , 1978 23...	1215	.00	.00	--	.0	.0	--	.00	.00	--	.00	.00
12	352305090485500 - PRAIRIE CREEK NEAR CHERRY VALLEY,AR (LAT 35 23 05 LONG 090 48 55)												
	NOV , 1978 17...	1400	.00	.00	--	.0	.0	--	.00	.00	--	.01	.00
15	351505090553000 - BRUSHY CREEK NEAR WYNNE,AR (LAT 35 15 05 LONG 090 55 30)												
	NOV , 1978 17...	1015	.00	.00	--	.0	.0	--	.00	.00	--	.00	.00
19	351130090520500 - CANEY CREEK NR WYNNE,AR (LAT 35 11 30 LONG 090 52 05)												
	NOV , 1978 01...	1345	.00	.00	--	.0	.0	--	.00	.00	--	.00	.00

Table 16.—*Concentrations of pesticides, L'Anguille River basin*—Continued

NUMBER ON MAP	DATE	DDE, TOTAL IN BOTTOM MATERIAL (UG/KG) (39368)	DDT, TOTAL (UG/L) (39370)	DDT, DISSOLVED (UG/L) (39371)	DDT, TOTAL IN BOTTOM MATERIAL (UG/KG) (39373)	DIAZINON, TOTAL (UG/L) (39570)	DIELDRIN TOTAL (UG/L) (39380)	DIELDRIN DISSOLVED (UG/L) (39381)	DIELDRIN, TOTAL IN BOTTOM MATERIAL (UG/KG) (39383)	ENDOSULFAN, TOTAL (UG/L) (39388)	ENDRIN, TOTAL (UG/L) (39390)	ENDRIN, DISSOLVED (UG/L) (39391)	ENDRIN, TOTAL IN BOTTOM MATERIAL (UG/KG) (39393)
10	352410090494000 - L'ANGUILLE RIVER NEAR CHERRY VALLEY,AR (LAT 35 24 10 LONG 090 49 40)												
	NOV , 1978 02...	.9	--	--	.6	--	--	--	.2	--	--	--	.0
11	352405090485500 - WOLF CREEK NR CHERRY VALLEY, AR (LAT 35 24 05 LONG 090 48 55)												
	AUG , 1978 23...	--	.00	.00	--	--	.00	.00	--	--	.00	.00	--
12	352305090485500 - PRAIRIE CREEK NEAR CHERRY VALLEY,AR (LAT 35 23 05 LONG 090 48 55)												
	NOV , 1978 17...	--	.02	.00	--	--	.00	.00	--	.00	.00	.00	--
15	351505090553000 - BRUSHY CREEK NEAR WYNNE,AR (LAT 35 15 05 LONG 090 55 30)												
	NOV , 1978 17...	--	.00	.00	--	--	.02	.01	--	.01	.00	.00	--
19	351130090520500 - CANEY CREEK NR WYNNE,AR (LAT 35 11 30 LONG 090 52 05)												
	NOV , 1978 01...	--	.00	.00	--	--	.00	.00	--	.00	.00	.00	--

Table **16.**—*Concentrations of pesticides, L'Anguille River basin*— Continued

NUMBER ON MAP	DATE	ETHION, TOTAL (UG/L) (39398)	HEPTACHLOR, TOTAL (UG/L) (39410)	HEPTACHLOR, DISSOLVED (UG/L) (39411)	HEPTACHLOR, TOTAL IN BOTTOM MATERIAL (UG/KG) (39413)	HEPTACHLOR EPOXIDE TOTAL (UG/L) (39420)	HEPTACHLOR EPOXIDE DISSOLVED (UG/L) (39421)	HEPTACHLOR EPOXIDE TOT. IN BOTTOM MATL. (UG/KG) (39423)	LINDANE TOTAL (UG/L) (39340)	LINDANE DISSOLVED (UG/L) (39341)	LINDANE TOTAL IN BOTTOM MATERIAL (UG/KG) (39343)	MALATHION, TOTAL (UG/L) (39530)
10	352410090494000 - L'ANGUILLE RIVER NEAR CHERRY VALLEY,AR (LAT 35 24 10 LONG 090 49 40)											
	NOV , 1978 02...	--	--	--	.0	--	--	.0	--	--	.0	--
11	352405090485500 - WOLF CREEK NR CHERRY VALLEY, AR (LAT 35 24 05 LONG 090 48 55)											
	AUG , 1978 23...	--	.00	.00	--	.00	.00	--	.00	.00	--	--
12	352305090485500 - PRAIRIE CREEK NEAR CHERRY VALLEY,AR (LAT 35 23 05 LONG 090 48 55)											
	NOV , 1978 17...	--	.00	.00	--	.00	.00	--	.01	.01	--	--
15	351505090553000 - BRUSHY CREEK NEAR WYNNE,AR (LAT 35 15 05 LONG 090 55 30)											
	NOV , 1978 17...	--	.00	.00	--	.00	.00	--	.00	.00	--	--
19	351130090520500 - CANEY CREEK NR WYNNE,AR (LAT 35 11 30 LONG 090 52 05)											
	NOV , 1978 01...	--	.00	.00	--	.00	.00	--	.00	.00	--	--

Table 16.—*Concentrations of pesticides, L'Anguille River basin*—Continued

NUMBER ON MAP	DATE	METHOXYCHLOR, TOTAL (UG/L) (39480)	METHYL PARATHION, TOTAL (UG/L) (39600)	MIREX, TOTAL (UG/L) (39755)	MIREX, DISSOLVED (UG/L) (39756)	NAPHTHALENES, POLYCHLOR. TOTAL (UG/L) (39250)	METHYL TRITHION, TOTAL (UG/L) (39790)	PCB, TOTAL (UG/L) (39516)	PCB, DISSOLVED (UG/L) (39517)	PCB, TOTAL IN BOTTOM MATERIAL (UG/KG) (39519)	SILVEX, TOTAL (UG/L) (39760)	SILVEX, DISSOLVED (UG/L) (39762)
10	352410090494000 - L'ANGUILLE RIVER NEAR CHERRY VALLEY,AR (LAT 35 24 10 LONG 090 49 40)											
	NOV , 1978 02...	--	--	--	--	--	--	--	--	0	--	--
11	352405090485500 - WOLF CREEK NR CHERRY VALLEY, AR (LAT 35 24 05 LONG 090 48 55)											
	AUG , 1978 23...	--	--	--	.00	.00	--	.0	.0	--	.00	.00
12	352305090485500 - PRAIRIE CREEK NEAR CHERRY VALLEY,AR (LAT 35 23 05 LONG 090 48 55)											
	NOV , 1978 17...	--	--	--	.00	.00	--	.0	.0	--	.00	.00
15	351505090553000 - BRUSHY CREEK NEAR WYNNE,AR (LAT 35 15 05 LONG 090 55 30)											
	NOV , 1978 17...	--	--	--	.00	.00	--	.0	.0	--	.00	.00
19	351130090520500 - CANEY CREEK NR WYNNE,AR (LAT 35 11 30 LONG 090 52 05)											
	NOV , 1978 01...	--	--	--	.00	.00	--	.0	.0	--	.00	.00

Table 16.—*Concentrations of pesticides, L'Anguille River basin*— Continued

NUMBER ON MAP	DATE	SILVEX, TOTAL IN BOTTOM MATERIAL (UG/KG) (39761)	2,4-D, TOTAL (UG/L) (39730)	2,4-D, DISSOLVED (UG/L) (39732)	2,4-D, TOTAL IN BOTTOM MATERIAL (UG/KG) (39731)	2,4,5-T TOTAL (UG/L) (39740)	2,4,5-T DISSOLVED (UG/L) (39742)	2,4,5-T TOTAL IN BOTTOM MATERIAL (UG/KG) (39741)	TOTAL TRITHION (UG/L) (39786)	TOXAPHENE, TOTAL (UG/L) (39400)	TOXAPHENE, DISSOLVED (UG/L) (39401)	TOXAPHENE, TOTAL IN BOTTOM MATERIAL (UG/KG) (39403)
10	352410090494000 - L'ANGUILLE RIVER NEAR CHERRY VALLEY,AR (LAT 35 24 10 LONG 090 49 40)											
	NOV , 1978 02...	.0	--	--	0	--	--	0	--	--	--	0
11	352405090485500 - WOLF CREEK NR CHERRY VALLEY, AR (LAT 35 24 05 LONG 090 48 55)											
	AUG , 1978 23...	--	.00	.00	--	.00	.00	--	--	0	0	--
12	352305090485500 - PRAIRIE CREEK NEAR CHERRY VALLEY,AR (LAT 35 23 05 LONG 090 48 55)											
	NOV , 1978 17...	--	.04	.04	--	.00	.00	--	--	0	0	--
15	351505090553000 - BRUSHY CREEK NEAR WYNNE,AR (LAT 35 15 05 LONG 090 55 30)											
	NOV , 1978 17...	--	.08	.08	--	.16	.16	--	--	0	0	--
19	351130090520500 - CANEY CREEK NR WYNNE,AR (LAT 35 11 30 LONG 090 52 05)											
	NOV , 1978 01...	--	.04	.04	--	.01	.01	--	--	0	0	--

Table 16.—*Concentrations of pesticides, L'Anguille River basin*—Continued

NUMBER ON MAP	DATE	TIME	ALDRIN, TOTAL (UG/L) (39330)	ALDRIN, DISSOLVED (UG/L) (39331)	ALDRIN, TOTAL IN BOTTOM MATERIAL (UG/KG) (39333)	CHLORDANE, TOTAL (UG/L) (39350)	CHLORDANE, DISSOLVED (UG/L) (39352)	CHLORDANE, TOTAL IN BOTTOM MATERIAL (UG/KG) (39351)	DDD, TOTAL (UG/L) (39360)	DDD, DISSOLVED (UG/L) (39361)	DDD, TOTAL IN BOTTOM MATERIAL (UG/KG) (39363)	DDE, TOTAL (UG/L) (39365)	DDE, DISSOLVED (UG/L) (39366)
20			07047942 - L'ANGUILLE RIVER NR COLT, ARK. (LAT 35 08 40 LONG 090 52 42)										
	AUG , 1978												
	08...	1000	.00	--	--	.0	--	-	.00	--	--	.00	--
	22...	1800	--	--	.7	--	--	0	--	--	1δ	--	--
	NOV												
	01...	1505	.00	.00	--	.0	.0	--	.00	.00	--	.00	.00
22			350335090533500 - FIRST CREEK @ HORTON,AR (LAT 35 03 35 LONG 090 53 35)										
	AUG , 1978												
	22...	0945	.00	.00	--	.0	.0	--	.00	.00	--	.00	.00
24			350220090544000 - SECOND CREEK NEAR HORTON,AR (LAT 35 02 20 LONG 090 54 40)										
	AUG , 1978												
	22...	1045	.00	.00	--	.0	.0	--	.00	.00	--	.00	.00
25			350110090545500 - CYPRESS CREEK NR PALESTINE, AR (LAT 35 01 10 LONG 090 54 55)										
	AUG , 1978												
	22...	1130	.00	.00	--	.0	.0	--	.00	.00	--	.00	.00
26			07047950 - L'ANGUILLE RIVER AT PALESTINE, ARK. (LAT 34 58 20 LONG 090 53 10)										
	NOV , 1978												
	01...	1400	.00	.00	--	.0	.0	--	.00	.00	--	.00	.00

Table 16.—*Concentrations of pesticides, L'Anguille River basin*—Continued

NUMBER ON MAP	DATE	DDE, TOTAL IN BOTTOM MATERIAL (UG/KG) (39368)	DDT, TOTAL (UG/L) (39370)	DDT, DISSOLVED (UG/L) (39371)	DDT, TOTAL IN BOTTOM MATERIAL (UG/KG) (39373)	DIAZINON, TOTAL (UG/L) (39570)	DIELDRIN TOTAL (UG/L) (39380)	DIELDRIN DISSOLVED (UG/L) (39381)	DIELDRIN, TOTAL IN BOTTOM MATERIAL (UG/KG) (39383)	ENDOSULFAN, TOTAL (UG/L) (39388)	ENDRIN, TOTAL (UG/L) (39390)	ENDRIN, DISSOLVED (UG/L) (39391)	ENDRIN, TOTAL IN BOTTOM MATERIAL (UG/KG) (39393)
20					07047942 - L'ANGUILLE RIVER NR COLT, ARK. (LAT 35 08 40 LONG 090 52 42)								
	AUG , 1978												
	08...	--	.00	--	--	.00	.01	--	--	.00	.00	--	--
	22...	15	--	--	5.8	--	--	--	4.1	--	--	--	.0
	NOV												
	01...	--	.00	.00	--	--	.00	.00	--	.00	.00	.00	--
22					350335090533500 - FIRST CREEK @ HORTON,AR (LAT 35 03 35 LONG 090 53 35)								
	AUG , 1978												
	22...	--	.00	.00	--	--	.01	.01	--	--	.00	.00	--
24					350220090544000 - SECOND CREEK NEAR HORTON,AR (LAT 35 02 20 LONG 090 54 40)								
	AUG , 1978												
	22...	--	.00	.00	--	--	.01	.01	--	--	.00	.00	--
25					350110090545500 - CYPRESS CREEK NR PALESTINE, AR (LAT 35 01 10 LONG 090 54 55)								
	AUG , 1978												
	22...	--	.00	.00	--	--	.00	.00	--	--	.00	.00	--
26					07047950 - L'ANGUILLE RIVER AT PALESTINE, ARK. (LAT 34 58 20 LONG 090 53 10)								
	NOV , 1978												
	01...	--	.00	.00	--	--	.00	.00	--	.00	.00	.00	--

Table 16.—*Concentrations of pesticides, L'Anguille River basin*— Continued

NUMBER ON MAP	DATE	ETHION, TOTAL (UG/L) (39398)	HEPTACHLOR, TOTAL (UG/L) (39410)	HEPTACHLOR, DISSOLVED (UG/L) (39411)	HEPTACHLOR, TOTAL IN BOTTOM MATERIAL (UG/KG) (39413)	HEPTACHLOR EPOXIDE TOTAL (UG/L) (39420)	HEPTACHLOR EPOXIDE DISSOLVED (UG/L) (39421)	HEPTACHLOR EPOXIDE TOT. IN BOTTOM MATL. (UG/KG) (39423)	LINDANE TOTAL (UG/L) (39340)	LINDANE DISSOLVED (UG/L) (39341)	LINDANE TOTAL IN BOTTOM MATERIAL (UG/KG) (39343)	MALATHION, TOTAL (UG/L) (39530)
20	07047942 - L'ANGUILLE RIVER NR COLT, ARK. (LAT 35 08 40 LONG 090 52 42)											
	AUG , 1978											
	08...	.00	.00	--	--	.00	--	--	.00	--	--	.00
	22...	--	--	--	.0	--	--	.0	--	--	.0	--
	NOV											
	01...	--	.00	.00	--	.00	.00	--	.00	.00	--	--
22	350335090533500 - FIRST CREEK @ HORTON,AR (LAT 35 03 35 LONG 090 53 35)											
	AUG , 1978											
	22...	--	.00	.00	--	.00	.00	--	.00	.00	--	--
24	350220090544000 - SECOND CREEK NEAR HORTON,AR (LAT 35 02 20 LONG 090 54 40)											
	AUG , 1978											
	22...	--	.00	.00	--	.00	.00	--	.00	.00	--	--
25	350110090545500 - CYPRESS CREEK NR PALESTINE, AR (LAT 35 01 10 LONG 090 54 55)											
	AUG , 1978											
	22...	--	.00	.00	--	.00	.00	--	.00	.00	--	--
26	07047950 - L'ANGUILLE RIVER AT PALESTINE, ARK. (LAT 34 58 20 LONG 090 53 10)											
	NOV , 1978											
	01...	--	.00	.00	--	.00	.00	--	.00	.00	--	--

Table 16.—*Concentrations of pesticides, L'Anguille River basin*— Continued

NUMBER ON MAP	DATE	METHOXYCHLOR, TOTAL (UG/L) (39480)	METHYL PARATHION, TOTAL (UG/L) (39600)	MIREX, TOTAL (UG/L) (39755)	MIREX, DISSOLVED (UG/L) (39756)	NAPHTHALENES, POLYCHLOR. TOTAL (UG/L) (39250)	METHYL TRITHION, TOTAL (UG/L) (39790)	PCB, TOTAL (UG/L) (39516)	PCB, DISSOLVED (UG/L) (39517)	PCB, TOTAL IN BOTTOM MATERIAL (UG/KG) (39519)	SILVEX, TOTAL (UG/L) (39760)	SILVEX, DISSOLVED (UG/L) (39762)
20	07047942 - L'ANGUILLE RIVER NR COLT, ARK. (LAT 35 08 40 LONG 090 52 42)											
	AUG , 1978											
	08...	.00	.04	.00	--	.00	.00	.0	--	--	.03	--
	22...	--	--	--	--	--	--	--	--	1	--	--
	NOV											
	01...	--	--	--	.00	.00	--	.0	.0	--	.00	.00
22	350335090533500 - FIRST CREEK @ HORTON,AR (LAT 35 03 35 LONG 090 53 35)											
	AUG , 1978											
	22...	--	--	--	.00	.00	--	.0	.0	--	.01	.01
24	350220090544000 - SECOND CREEK NEAR HORTON,AR (LAT 35 02 20 LONG 090 54 40)											
	AUG , 1978											
	22...	--	--	--	.00	.00	--	.0	.0	--	.03	.03
25	350110090545500 - CYPRESS CREEK NR PALESTINE, AR (LAT 35 01 10 LONG 090 54 55)											
	AUG , 1978											
	22...	--	--	--	.00	.00	--	.0	.0	--	.00	.00
26	07047950 - L'ANGUILLE RIVER AT PALESTINE, ARK. (LAT 34 58 20 LONG 090 53 10)											
	NOV , 1978											
	01...	--	--	--	.00	.00	--	.0	.0	--	.00	.00

Table 16.—*Concentrations of pesticides, L'Anguille River basin*—Continued

NUMBER ON MAP	DATE	SILVEX, TOTAL IN BOTTOM MATERIAL (UG/KG) (39761)	2,4-D, TOTAL (UG/L) (39730)	2,4-D, DISSOLVED (UG/L) (39732)	2,4-D, TOTAL IN BOTTOM MATERIAL (UG/KG) (39731)	2,4,5-T TOTAL (UG/L) (39740)	2,4,5-T DISSOLVED (UG/L) (39742)	2,4,5-T TOTAL IN BOTTOM MATERIAL (UG/KG) (39741)	TOTAL THIONAZIN (UG/L) (39786)	TOXAPHENE, TOTAL (UG/L) (39400)	TOXAPHENE, DISSOLVED (UG/L) (39401)	TOXAPHENE, TOTAL IN BOTTOM MATERIAL (UG/KG) (39403)
20	07047942 - L'ANGUILLE RIVER NR COLT, ARK. (LAT 35 08 40 LONG 090 52 42)											
	AUG , 1978											
	08...	--	.47	--	--	1.0	--	--	.00	0	--	--
	22...	.0	--	--	0	--	--	0	--	--	--	0
	NOV											
	01...	--	.02	.02	--	.04	.04	--	--	0	0	--
22	350335090533500 - FIRST CREEK @ HORTON,AR (LAT 35 03 35 LONG 090 53 35)											
	AUG , 1978											
	22...	--	.50	.50	--	.92	.92	--	--	0	0	--
24	350220090544000 - SECOND CREEK NEAR HORTON,AR (LAT 35 02 20 LONG 090 54 40)											
	AUG , 1978											
	22...	--	.00	.00	--	.00	.00	--	--	0	0	--
25	350110090545500 - CYPRESS CREEK NR PALESTINE, AR (LAT 35 01 10 LONG 090 54 55)											
	AUG , 1978											
	22...	--	.00	.00	--	.00	.00	--	--	0	0	--
26	07047950 - L'ANGUILLE RIVER AT PALESTINE, ARK. (LAT 34 58 20 LONG 090 53 10)											
	NOV , 1978											
	01...	--	.02	.02	--	.02	.02	--	--	0	0	--

Table 16.—*Concentrations of pesticides, L'Anguille River basin*—Continued

NUMBER ON MAP	DATE	TIME	ALDRIN, TOTAL (UG/L) (39330)	ALDRIN, DISSOLVED (UG/L) (39331)	ALDRIN, TOTAL IN BOTTOM MATERIAL (UG/KG) (39333)	CHLORDANE, TOTAL (UG/L) (39350)	CHLORDANE, DISSOLVED (UG/L) (39352)	CHLORDANE, TOTAL IN BOTTOM MATERIAL (UG/KG) (39351)	DDD, TOTAL (UG/L) (39360)	DDD, DISSOLVED (UG/L) (39361)	DDD, TOTAL IN BOTTOM MATERIAL (UG/KG) (39363)	DDE, TOTAL (UG/L) (39365)	DDE, DISSOLVED (UG/L) (39366)
29	345725090503000 - UNNAMED CREEK NR FORREST CITY,AR (LAT 34 57 25 LONG 090 50 30)												
	AUG , 1978												
	23...	0600	.00	.00	--	.0	.0	--	.01	.00	--	.01	.00
	NOV												
	01...	0650	.00	.00	--	.0	.0	--	.02	.00	--	.01	.00
33	344720090454500 - MARIANNA SEWAGE EFFLUENT (OLD) (LAT 34 47 20 LONG 090 45 45)												
	NOV , 1978												
	02...	0800	.00	.00	--	.0	.0	--	.00	.00	--	.01	.00
34	07047964 - L'ANGUILLE RIVER AT MARIANNA, ARK. (LAT 34 47 12 LONG 090 45 00)												
	AUG , 1978												
	24...	1400	--	--	.3	--	--	0	--	--	19	--	--
36	344635090442500 - MARIANNA SEWAGE EFFLUENT (NEW POND) (LAT 34 46 35 LONG 090 44 25)												
	NOV , 1978												
	02...	1130	.00	.00	--	.1	.0	--	.02	.00	--	.04	.00
37	344615090432000 - L'ANGUILLE RIVER NR MOUTH (LAT 34 46 15 LONG 090 43 20)												
	NOV , 1978												
	02...	1000	.00	.00	.6	.0	.0	17	.00	.00	37	.00	.00

Table 16.—*Concentrations of pesticides, L'Anguille River basin*—Continued

NUMBER ON MAP	DATE	DDE, TOTAL IN BOTTOM MATERIAL (UG/KG) (39368)	DDT, TOTAL (UG/L) (39370)	DDT, DISSOLVED (UG/L) (39371)	DDT, TOTAL IN BOTTOM MATERIAL (UG/KG) (39373)	DIAZINON, TOTAL (UG/L) (39570)	DIELDRIN TOTAL (UG/L) (39380)	DIELDRIN DISSOLVED (UG/L) (39381)	DIELDRIN, TOTAL IN BOTTOM MATERIAL (UG/KG) (39383)	ENDOSULFAN, TOTAL (UG/L) (39388)	ENDRIN, TOTAL (UG/L) (39390)	ENDRIN, DISSOLVED (UG/L) (39391)	ENDRIN, TOTAL IN BOTTOM MATERIAL (UG/KG) (39393)
29	345725090503000 - UNNAMED CREEK NR FORREST CITY,AR (LAT 34 57 25 LONG 090 50 30)												
	AUG , 1978 23...	--	.00	.00	--	--	.01	.01	--	--	.00	.00	--
	NOV 01...	--	.04	.00	--	--	.01	.01	--	.00	.00	.00	--
33	344720090454500 - MARIANNA SEWAGE EFFLUENT (OLD) (LAT 34 47 20 LONG 090 45 45)												
	NOV , 1978 02...	--	.02	.00	--	--	.00	.00	--	.00	.00	.00	--
34	07047964 - L'ANGUILLE RIVER AT MARIANNA, ARK. (LAT 34 47 12 LONG 090 45 00)												
	AUG , 1978 24...	18	--	--	7.1	--	--	--	.9	--	--	--	.1
36	344635090442500 - MARIANNA SEWAGE EFFLUENT (NEW POND) (LAT 34 46 35 LONG 090 44 25)												
	NOV , 1978 02...	--	.06	.00	--	--	.00	.00	--	.00	.00	.00	--
37	344615090432000 - L'ANGUILLE RIVER NR MOUTH (LAT 34 46 15 LONG 090 43 20)												
	NOV , 1978 02...	27	.00	.00	7.8	--	.00	.00	.9	.00	.00	.00	.1

Table **16.**—*Concentrations of pesticides, L'Anguille River basin*— Continued

NUMBER ON MAP	DATE	ETHION, TOTAL (UG/L) (39398)	HEPTACHLOR, TOTAL (UG/L) (39410)	HEPTACHLOR, DISSOLVED (UG/L) (39411)	HEPTACHLOR, TOTAL IN BOTTOM MATERIAL (UG/KG) (39413)	HEPTACHLOR EPOXIDE TOTAL (UG/L) (39420)	HEPTACHLOR EPOXIDE DISSOLVED (UG/L) (39421)	HEPTACHLOR EPOXIDE TOT. IN BOTTOM MATL. (UG/KG) (39423)	LINDANE TOTAL (UG/L) (39340)	LINDANE DISSOLVED (UG/L) (39341)	LINDANE TOTAL IN BOTTOM MATERIAL (UG/KG) (39343)	MALATHION, TOTAL (UG/L) (39530)
29	345725090503000 - UNNAMED CREEK NR FORREST CITY,AR (LAT 34 57 25 LONG 090 50 30)											
	AUG , 1978 23...	--	.00	.00	--	.00	.00	--	.00	.00	--	--
	NOV 01...	--	.00	.00	--	.00	.00	--	.01	.01	--	--
33	344720090454500 - MARIANNA SEWAGE EFFLUENT (OLD) (LAT 34 47 20 LONG 090 45 45)											
	NOV , 1978 02...	--	.00	.00	--	.00	.00	--	.00	.00	--	--
34	07047964 - L'ANGUILLE RIVER AT MARIANNA, ARK. (LAT 34 47 12 LONG 090 45 00)											
	AUG , 1978 24...	--	--	--	.0	--	--	.0	--	--	.2	--
36	344635090442500 - MARIANNA SEWAGE EFFLUENT (NEW POND) (LAT 34 46 35 LONG 090 44 25)											
	NOV , 1978 02...	--	.00	.00	--	.00	.00	--	.00	.00	--	--
37	344615090432000 - L'ANGUILLE RIVER NR MOUTH (LAT 34 46 15 LONG 090 43 20)											
	NOV , 1978 02...	--	.00	.00	.0	.00	.00	.0	.00	.00	.0	--

Table 16.—*Concentrations of pesticides, L'Anguille River basin*—Continued

NUMBER ON MAP	DATE	METHOXYCHLOR, TOTAL (UG/L) (39480)	METHYL PARATHION, TOTAL (UG/L) (39600)	MIREX, TOTAL (UG/L) (39755)	MIREX, DISSOLVED (UG/L) (39756)	NAPHTHALENES, POLYCHLOR. TOTAL (UG/L) (39250)	METHYL TRITHION, TOTAL (UG/L) (39790)	PCB, TOTAL (UG/L) (39516)	PCB, DISSOLVED (UG/L) (39517)	PCB, TOTAL IN BOTTOM MATERIAL (UG/KG) (39519)	SILVEX, TOTAL (UG/L) (39760)	SILVEX, DISSOLVED (UG/L) (39762)
29	345725090503000 - UNNAMED CREEK NR FORREST CITY,AR (LAT 34 57 25 LONG 090 50 30)											
	AUG , 1978 23...	--	--	--	.00	.00	--	.0	.0	--	.00	.00
	NOV 01...	--	--	--	.00	.00	--	.0	.0	--	.00	.00
33	344720090454500 - MARIANNA SEWAGE EFFLUENT (OLD) (LAT 34 47 20 LONG 090 45 45)											
	NOV , 1978 02...	--	--	--	.00	.00	--	.0	.0	--	.00	.00
34	07047964 - L'ANGUILLE RIVER AT MARIANNA, ARK. (LAT 34 47 12 LONG 090 45 00)											
	AUG , 1978 24...	--	--	--	--	--	--	--	--	4	--	--
36	344635090442500 - MARIANNA SEWAGE EFFLUENT (NEW POND) (LAT 34 46 35 LONG 090 44 25)											
	NOV , 1978 02...	--	--	--	.00	.00	--	.0	.0	--	.00	.00
37	344615090432000 - L'ANGUILLE RIVER NR MOUTH (LAT 34 46 15 LONG 090 43 20)											
	NOV , 1978 02...	--	--	--	.00	.00	--	.0	.0	8	.00	.00

Table 16.—*Concentrations of pesticides, L'Anguille River basin*—Continued

NUMBER ON MAP	DATE	SILVEX, TOTAL IN BOTTOM MATERIAL (UG/KG) (39761)	2,4-D, TOTAL (UG/L) (39730)	2,4-D, DISSOLVED (UG/L) (39732)	2,4-D, TOTAL IN BOTTOM MATERIAL (UG/KG) (39731)	2,4,5-T TOTAL (UG/L) (39740)	2,4,5-T DISSOLVED (UG/L) (29742)	2,4,5-T TOTAL IN BOTTOM MATERIAL (UG/KG) (39741)	TOTAL TRITHION (UG/L) (39786)	TOXAPHENE, TOTAL (UG/L) (39400)	TOXAPHENE, DISSOLVED (UG/L) (39401)	TOXAPHENE, TOTAL IN BOTTOM MATERIAL (UG/KG) (39403)
29	345725090503000 - UNNAMED CREEK NR FORREST CITY,AR (LAT 34 57 25 LONG 090 50 30)											
	AUG , 1978 23...	--	.22	.22	--	.14	.14	--	--	0	0	--
	NOV 01...	--	.08	.08	--	.03	.03	--	--	0	0	--
33	344720090454500 - MARIANNA SEWAGE EFFLUENT (OLD) (LAT 34 47 20 LONG 090 45 45)											
	NOV , 1978 02...	--	.07	.07	--	.02	.02	--	--	0	0	--
34	07047964 - L'ANGUILLE RIVER AT MARIANNA, ARK. (LAT 34 47 12 LONG 090 45 00)											
	AUG , 1978 24...	.0	--	--	0	--	--	0	--	--	--	0
36	344635090442500 - MARIANNA SEWAGE EFFLUENT (NEW POND) (LAT 34 46 35 LONG 090 44 25)											
	NOV , 1978 02...	--	.01	.01	--	.00	.00	--	--	0	0	--
37	344615090432000 - L'ANGUILLE RIVER NR MOUTH (LAT 34 46 15 LONG 090 43 20)											
	NOV , 1978 02...	.0	.00	.00	0	.00	.00	0	--	0	0	0

Table 17.—*Pesticide analyses of fish*

[Results in micrograms per kilogram. ND, Not detected]

Pesticide	Carp, edible portion	Carp, carcass	Buffalo, edible portion	Buffalo, carcass
Aldrin	ND	ND	ND	ND
Dieldrin	ND	ND	ND	ND
O, P'-DDD	ND	ND	ND	ND
P, P'-DDD	320	530	150	280
O, P'-DDE	ND	ND	ND	ND
P, P'-DDE	630	1,600	240	430
O, P'-DDT	ND	ND	ND	ND
P, P'-DDT	ND	ND	ND	ND
Endrin	ND	ND	ND	ND
PCBs	130	400	1,200	2,000
Toxaphene	1,400	3,400	1,900	3,300

Table 18.—Streambed-oxygen demands of the L'Anguille River

Station location	Station number	Date of collection	Run number	Respiration ($gO_2/m^2/day$)	Mean respiration rate	Standard deviation of the mean	95-percent conficence limit of the mean		Streambed description
							Upper	Lower	
Near Cherry Valley	10	12-27-78	1	0.91	1.51	0.31	1.64	0.66	Yellow clay with some sand and small roots.
			2	1.24					
			3	1.55					
			4	.90					
Near Colt	20	11-28-78	1	1.55	1.76	0.39	2.73	0.79	Black silt with some sand and leaves.
			2	2.21					
			3	1.52					
At Marianna	34	10-18-78	1	1.94	1.72	0.41	2.74	0.70	Black silt.
			2	1.24					
			3	1.97					

Table 19.—*Benthic-invertebrate analyses, L'Anguille River near Cherry Valley (station 10)*

[Samples were collected October 16, 1978, at 12:45 p.m. by a hand net for a period of 15 minutes while wading from Highway 42 bridge to confluence of ditch 80 yds downstream]

Organism	Count
Arthropoda	
.Crustacea	
..Decapoda	
...Palaemonidae (freshwater shrimps)	
....*Palaemonetes*	99
...Astacidae (crayfish)	
....*Procambarus*	1
....Unknown genus	1
..Amphipoda (sideswimmers)	
...Gammaridae	
.... Unknown Genus	1
.Insecta	
..Hemiptera	
...Belostomatidae (giant water bugs)	
....*Belostoma*	3
...Nepidae (water scorpions)	
....*Ranatra*	1
...Notonectidae (back swimmers)	
....Notonecta	1
...Corixidae (water boatmen)	
....Unknown genus	14
...Gerridae (water striders)	
....*Gerris*	2
..Coleoptera	
...Hydrophilidae (water scavenger beetles)	
....*Hydrophilus*	54
...Gyrinidae (whirligig beetles)	
....*Gyrinus*	10
...Dytiscidae (predacious diving beetles)	
....*Lacophilus*	4
..Odonata	
...Coenagrionidae (damselflies)	
...*Amphiagrion Saucium*	2
....Unknown genus	1
..Diptera	
...Chironomidae (midges)	
....*Chironomus*	4
....Unknown genus	17
..Trichoptera (caddisflies)	
...Hydropsychidae	
....*Cheumatopsyche*	4

Table 20.—*Benthic-invertebrate analyses, L'Anguille River near Colt (station 20)*

[Samples were collected October 17, 1978, at 8:15 a.m. for a period of 15 minutes from Highway 306 bridge to 80 yds downstream]

Organism	Count
Arthropoda	
.Crustacea	
..Decapoda	
...Palaemonidae (freshwater shrimps)	
....*Palaemonetes*	364
...Astacidae (crayfish)	
....*Procambarus*	1
....Unknown genus	2
.Insecta	
..Hemiptera	
...Gelostomatidae (giant water bugs)	
....*Belostoma*	11
...Nepidae (water scorpions)	
....*Ranatra*	2
...Gerridae (water striders)	
....*Gerris*	2
....*Metrobates*	2
....*Rheumatobates*	1
...Corrixidae (water boatmen)	245
..Coeleoptera	
...Hydrophilidae (water scavenger beetles)	
....*Hydrophilus*	81
...Gyrinidae (whirligig beetles)	
....*Gyrinus*	2
...Dytiscidae (predacious diving beetles)	
....*Thermonectus*	1
..Odonata	
...Coenagrionidae (damselflies)	
....*Amphiagrion Saucium*	4
...Aeschnidae	
....*Nasieaschna*	4
..Trichoptera (caddisflies)	
...Hydropsychidae	
....*Cheumatopsyche*	6
..Ephemeroptera (mayflies)	
...Heptagenidae	
....*Stenonema*	3

Table 20.— *Benthic-invertebrate analyses, L'Anguille River near Colt (station 20)*—Continued

Organism	Count
Arthropoda--Continued	
.Insecta--Continued	
..Megaloptera	
...Corydalidae	
....*Corydalus Cornutus*	1
..Diptera	
...Chironomidae (midges)	
....*Chiromomus*	3
....Unknown genus	4
Mollusca	
.Bivalvia	
..Schizodonta	
...Unionidae (mussels)	
....Unknown genus	8

Table 21.—*Benthic-invertebrate analyses, L'Anguille River at Marianna (station 34)*

[Samples were collected October 17, 1978, at 11:45 a.m. by a hand net for a period of 15 minutes while wading from boat ramp to 80 yds downstream]

Organism	Count
Arthropoda	
.Crustacea	
..Decapoda	
...Palaemonidae (freshwater shrimps)	
....*Palaemonetes*	117
..Amphipoda (sideswimmers)	
...Gammaridae	
....Unknown genus	6
.Insecta	
..Hemiptera	
...Corixidae (water boatmen)	
....Unknown genus	4
..Odonata	
...Gomphidae (dragonflies)	
....*Gomphus*	1
...Coenagrionidae (damselflies)	
....*Amphiagrion Saucium*	10
...Trichoptera (caddisflies)	
...Hydropsychidae	
....*Cheumatopsyche*	1
.Arachnida	
..Hydrocarina (water mites)	
...Unknown family	1
Mollusca	
.Bivalvia	
..Schizodonta	
...Unionidae (mussels)	
....Unknown genus	1
....Unknown genus	1
Annelida	
.Hirudinea (leeches)	
..Unknown order	1

Table 22.—*Average dissolved-oxygen deficits created in each subreach—calibration run*

Subreach number	Beginning mile	Ending mile	CBOD deficit (mg/L)	Benthal deficit (mg/L)	Ammonia deficit (mg/L)	Nitrite deficit (mg/L)
1---------	94.50	94.00	0.018	0.243	0.022	0.002
2---------	94.00	92.50	.026	.213	.037	.006
3---------	92.50	89.00	.018	.119	.022	.004
4---------	89.00	86.00	.009	.077	.015	.003
5---------	86.00	78.00	.010	.059	.013	.002
6---------	78.00	77.00	.0	.040	.006	.001
7---------	77.00	61.50	.0	.040	.004	.001
8---------	61.50	56.50	.002	.035	.004	.001
9---------	56.55	43.00	.0	.043	.003	.001
10---------	43.00	41.00	.0	.017	.001	.0
11---------	41.00	40.00	.0	.031	.002	.001
12---------	40.00	38.00	.0	.024	.002	.0
13---------	38.00	30.00	.0	.018	.002	.0
14---------	30.00	29.00	.0	.015	.002	.0
15---------	29.00	16.00	.0	.014	.002	.0
16---------	16.00	4.50	.0	.018	.002	.0
17---------	4.50	2.50	.0	.017	.002	.0
18---------	2.50	0.00	.0	.019	.002	.0

Table 23.—*Average benthic demand and minimum computed dissolved-oxygen concentrations for each subreach*

[Benthic demand given in grams per square meter per day; dissolved-oxygen concentrations given in milligrams per liter]

Existing conditions		20-percent benthic reduction		30-percent benthic reduction		40-percent benthic reduction		50-percent benthic reduction		60-percent benthic reduction		Subreach number
Benthic demand	Minimum DO	Benthic demand	Minimum DO	Benthic demand	Minimum DO	Benthic demand	Minimum DO	Benthic demand	Minimum DO	Benthic demand	Minimum DO	
1.15	7.76	0.92	7.94	0.81	8.02	0.69	8.12	0.58	8.20	0.46	8.30	1
1.15	5.43	.92	5.89	.81	6.10	.69	6.34	.58	6.56	.46	6.79	2
1.15	3.99	.92	4.48	.81	4.71	.69	4.97	.58	5.20	.46	5.46	3
1.15	3.97	.92	4.41	.81	4.62	.69	4.84	.58	5.05	.46	5.28	4
1.15	3.93	.92	4.35	.81	4.55	.69	4.77	.58	4.97	.46	5.19	5
1.15	4.04	.92	4.44	.81	4.64	.69	4.85	.58	5.04	.46	5.26	6
1.15	4.36	.92	4.74	.81	4.92	.69	5.12	.58	5.31	.46	5.51	7
1.15	5.05	.92	5.32	.81	5.45	.69	5.59	.58	5.72	.46	5.86	8
1.76	5.08	1.41	5.39	1.23	5.54	1.06	5.69	.88	5.85	.70	6.00	9
1.76	5.12	1.41	5.42	1.23	5.57	1.06	5.72	.88	5.87	.70	6.03	10
1.76	5.47	1.41	5.77	1.23	5.91	1.06	6.06	.88	6.21	.70	6.36	11
1.76	5.53	1.41	5.80	1.23	5.94	1.06	6.07	.88	6.21	.70	6.35	12
1.76	5.75	1.41	6.01	1.23	6.14	1.06	6.27	.88	6.41	.70	6.54	13
1.76	6.27	1.41	6.53	1.23	6.67	1.06	6.78	.88	6.91	.70	7.04	14
1.76	6.29	1.41	6.54	1.23	6.74	1.06	7.79	.88	6.92	.70	7.05	15
1.76	6.86	1.41	7.04	1.23	7.19	1.06	7.32	.88	7.47	.70	7.61	16
1.72	6.64	1.38	6.80	1.20	6.93	1.03	7.06	.86	7.19	.69	7.32	17
1.72	6.46	1.38	6.65	1.20	6.78	1.03	6.91	.86	7.05	.69	7.18	18

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ATTACHMENT A

MODEL CALIBRATION PRINTOUT

STEADY STATE SEGMENTED DISSOLVED OXYGEN MODEL

GULF COAST HYDROSCIENCE CENTER

U. S. GEOLOGICAL SURVEY

DATE OF LAST REVISION, FEBRUARY 1978

WATER QUALITY ASSESSMENT , L'ANGUILLE RIVER - CALIBRATION RUN.

NITRIFICATION CYCLE INCLUDED IN MODEL

NUMBER OF SUBREACHES FOR THIS PROBLEM = 18

PRINTING INTERVAL (MILES) = 0.200

STARTING DISTANCE (MILES) = 94.500

INITIAL CBOD CONC (MG/L) AT STARTING DISTANCE = 8.70

INITIAL ORGANIC NITROGEN CONC (MG/L) AT STARTING DISTANCE = 0.900

INITIAL AMMONIUM NITROGEN CONC (MG/L) AT STARTING DISTANCE = 0.030

INITIAL NITRITE NITROGEN CONC (MG/L) AT STARTING DISTANCE = 0.0

INITIAL NITRATE NITROGEN CONC (MG/L) AT STARTING DISTANCE = 0.010

INITIAL DO CONC (MG/L) AT STARTING DISTANCE = 9.300

INITIAL PHOSPHATE CONC (MG/L) AT STARTING DISTANCE = 0.080

INITIAL TOT. COLIF. CONC (MPN/100ML) AT STARTING DISTANCE = 200.

INITIAL FEC. COLIF. CONC (MPN/100ML) AT STARTING DISTANCE = 47.

STREAMFLOW (CFS) AT STARTING DISTANCE = 29.000

TOTAL SUSPENDED SOLIDS = 0.0

WATER QUALITY ASSESSMENT , L'ANGUILLE RIVER - CALIBRATION RUN.

SUBREACH LINEAR RUNOFF DATA

SUBREACH	Q (CFS)	CBOD (MG/L)	ORGANIC (MG/L)	AMMONIA (MG/L)	NITRITE (MG/L)	NITRATE (MG/L)	DO (MG/L)	SUSP SOL (MG/L)	(MG/L)	(MG/L)	PO4 (MG/L)
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.10
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.10
3	15.00	6.60	1.60	0.05	0.01	0.11	5.00	200.00	0.0	0.0	0.10
4	20.00	6.60	1.60	0.05	0.01	0.11	5.00	150.00	0.0	0.0	0.10
5	51.00	6.60	1.60	0.05	0.01	0.11	5.00	150.00	0.0	0.0	0.10
6	5.00	6.60	1.60	0.05	0.01	0.11	5.00	75.00	0.0	0.0	0.10
7	5.00	6.60	1.60	0.05	0.01	0.11	5.00	75.00	0.0	0.0	0.10
8	127.00	6.60	1.60	0.05	0.01	0.11	5.00	75.00	0.0	0.0	0.10
9	115.00	6.60	1.60	0.05	0.01	0.11	5.00	75.00	0.0	0.0	0.10
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.10
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.10
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.10
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.10
14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.10
15	3.00	6.60	1.60	0.05	0.01	0.11	5.00	300.00	0.0	0.0	0.10
16	3.00	6.60	1.60	0.05	0.01	0.11	5.00	300.00	0.0	0.0	0.10
17	64.00	6.60	1.60	0.05	0.01	0.11	5.00	300.00	0.0	0.0	0.10
18	10.00	6.60	1.60	0.05	0.01	0.11	5.00	300.00	0.0	0.0	0.10

REACH DESCRIPTION DATA (MAJOR TRIBUTARIES AND MAIN STEM)

SUBREACH	CODE	NAME	BEGIN (MILE)	END (MILE)
1	H	HEADWATERS	94.50	94.00
2	H	HOLLOW BRANCH	94.00	92.50
3	H	SWAN POND DITCH	92.50	89.00
4	H	POWERS SLOUGH	89.00	86.00
5	H	MCCRACKEN DITCH	86.00	78.00
6	H	WOLF CREEK	78.00	77.00
7	H	PRAIRIE CREEK	77.00	61.50
8	H	BRUSHY CREEK	61.50	56.50
9	H	CANEY CREEK	56.50	43.00
10	H	FIRST CREEK	43.00	41.00
11	H	SPY BUCK CREEK	41.00	40.00
12	H	SECOND CREEK	40.00	38.00
13	H	CYPRESS CREEK	38.00	30.00
14	H	COFFEE CREEK	30.00	29.00
15	H	UNNAMED CREEK	29.00	16.00
16	H	LARKIN CREEK	16.00	4.50
17	H	MARIANNA OLD STP	4.50	2.50
18	H	MARIANNA NEW STP	2.50	0.0

KEY: CODE

A ROCKY BOTTOM-POOL RIFFLE-LIGHT VEGETATION
B ROCKY BOTTOM-POOL RIFFLE-MEDIUM VEGETATION
C ROCKY BOTTOM-POOL RIFFLE-HEAVY VEGETATION
D ROCKY BOTTOM-CHANNEL CONTROL-LIGHT VEGETATION
E ROCKY BOTTOM-CHANNEL CONTROL-MEDIUM VEGETATION
F ROCKY BOTTOM-CHANNEL CONTROL-HEAVY VEGETATION
G MUD BOTTOM-POOL RIFFLE-LIGHT VEGETATION
H MUD BOTTOM-POOL RIFFLE-MEDIUM VEGETATION
I MUD BOTTOM-POOL RIFFLE-HEAVY VEGETATION
J MUD BOTTOM-CHANNEL CONTROL-LIGHT VEGETATION
K MUD BOTTOM-CHANNEL CONTROL-MEDIUM VEGETATION
L MUD BOTTOM-CHANNEL CONTROL-HEAVY VEGETATION

WASTE SOURCE AND MINOR TRIBUTARY DATA

SUBREACH	DATE	CODE	NAME	MILE LOCATION	Q (CFS)	CBOD (MG/L)	NBOD (MG/L)	DO (MG/L)	TEMP (DEG. C)	SUSP SOL (MG/L)	(MG/L)	(MG/L)
1	/	A	HEDWTRS SEE INI COND	94.50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	08/78	A	HOLLOW BRANCH	94.00	1.8	8.6	0.0	5.1	27.5	46.0	0.0	0.0
3	08/78	A	SWAN POND DITCH	92.50	9.9	8.7	0.0	5.8	25.0	150.0	0.0	0.0
4	08/78	A	POWERS SLOUGH	89.00	5.2	5.1	0.0	5.0	23.5	0.0	0.0	0.0
5	08/78	A	MCCRACKEN DITCH	86.00	4.3	6.1	0.0	5.3	25.5	0.0	0.0	0.0
6	08/78	A	WOLF CREEK	78.00	0.6	3.3	0.0	5.6	24.5	50.0	0.0	0.0
7	08/78	A	PRAIRIE CREEK	77.00	0.2	4.7	0.0	5.4	23.5	0.0	0.0	0.0
8	08/78	A	BRUSHY CREEK	61.50	3.0	5.8	0.0	5.6	28.5	71.0	0.0	0.0
9	08/78	A	CANEY CREEK	56.50	23.0	9.8	0.0	9.0	31.0	99.0	0.0	0.0
10	08/78	A	FIRST CREEK	43.00	5.9	7.8	0.0	5.7	21.0	206.0	0.0	0.0
11	08/78	A	SPY BUCK CREEK	41.00	0.2	6.6	0.0	12.8	25.5	43.0	0.0	0.0
12	08/78	A	SECOND CREEK	40.00	46.9	9.0	0.0	5.7	22.0	200.0	0.0	0.0
13	08/78	A	CYPRESS CREEK	38.00	18.6	7.0	0.0	5.2	22.0	36.0	0.0	0.0
14	08/78	A	COFFEE CREEK	30.00	9.6	8.0	0.0	5.0	23.0	56.0	0.0	0.0
15	08/78	A	UNNAMED CREEK	29.00	2.7	26.1	0.0	1.6	18.5	38.0	0.0	0.0
16	08/78	A	LARKIN CREEK	16.00	10.2	7.5	0.0	5.2	22.0	113.0	0.0	0.0
17	08/78	A	MARIANNA OLD STP	4.50	0.3	120.0	0.0	6.6	23.5	0.0	0.0	0.0
18	08/78	A	MARIANNA NEW STP	2.50	0.1	116.0	0.0	4.4	28.5	7600.0	0.0	0.0

KEY: SOURCE CODE

A U S GEOLOGICAL SURVEY

WATER QUALITY ASSESSMENT , L'ANGUILLE RIVER - CALIBRATION RUN.

I N P U T P A R A M E T E R S

CONCENTRATIONS(MG/L) OF --

SUBREACH	CARB BOD	ORG-N	NH3-N	NO2-N	NO3-N	DO DEFICIT	PO4	TOT.COLIF.	FEC.COLIF.
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	8.60	1.00	0.10	0.04	0.02	2.66	0.17	2200.00	2200.00
3	8.70	1.20	0.03	0.0	0.0	2.35	0.06	22.00	13.00
4	5.10	1.00	0.05	0.0	0.01	3.39	0.05	770.00	420.00
5	6.10	1.00	0.05	0.0	0.05	2.77	0.05	680.00	440.00
6	3.30	0.40	0.04	0.01	0.07	2.63	0.06	1080.00	950.00
7	4.70	1.00	0.05	0.01	0.05	2.99	0.05	3500.00	3500.00
8	5.80	0.92	0.04	0.01	0.11	2.01	0.08	3480.00	670.00
9	9.80	1.10	0.20	0.02	0.15	-1.76	0.20	1000.00	1080.00
10	7.80	1.20	0.05	0.02	0.26	3.13	0.12	1900.00	180.00
11	6.60	1.00	0.05	0.02	0.15	-4.73	0.12	800.00	290.00
12	9.00	2.20	0.09	0.02	0.17	2.95	0.12	580.00	160.00
13	7.00	0.60	0.07	0.01	0.14	3.45	0.13	1800.00	250.00
14	8.00	1.00	0.05	0.01	0.15	3.48	0.10	1500.00	500.00
15	26.10	6.60	0.05	0.04	0.26	7.70	1.50	1300.00	1100.00
16	7.50	1.00	0.05	0.01	0.15	3.45	0.10	510.00	130.00
17	120.00	7.60	7.40	0.0	0.36	1.79	2.80	16000.00	7000.00
18	116.00	18.00	0.09	0.0	2.20	3.21	7.30	160000.00	75000.00

DIRECT DISCHARGES(LB/DAY) OF --

SUBREACH	CARBONACEOUS ULT. BOD	ORGANIC NITROGEN	AMMONIA NITROGEN	NITRITE NITROGEN	NITRATE NITROGEN	DO DEFICIT	PHOSPHATE
1	0.0	0.0	0.0	0.0	0.0	0.	0.
2	0.0	0.0	0.0	0.0	0.0	3.	0.
3	0.0	0.0	0.0	0.0	0.0	2.	0.
4	0.0	0.0	0.0	0.0	0.0	3.	0.
5	0.0	0.0	0.0	0.0	0.0	3.	0.
6	0.0	0.0	0.0	0.0	0.0	3.	0.
7	0.0	0.0	0.0	0.0	0.0	3.	0.
8	0.0	0.0	0.0	0.0	0.0	2.	0.
9	0.0	0.0	0.0	0.0	0.0	-2.	0.
10	0.0	0.0	0.0	0.0	0.0	3.	0.
11	0.0	0.0	0.0	0.0	0.0	-5.	0.
12	0.0	0.0	0.0	0.0	0.0	3.	0.
13	0.0	0.0	0.0	0.0	0.0	3.	0.
14	0.0	0.0	0.0	0.0	0.0	3.	0.
15	0.0	0.0	0.0	0.0	0.0	8.	0.
16	0.0	0.0	0.0	0.0	0.0	3.	0.
17	0.0	0.0	0.0	0.0	0.0	2.	0.
18	0.0	0.0	0.0	0.0	0.0	3.	0.

WATER QUALITY ASSESSMENT , L'ANGUILLE RIVER - CALIBRATION RUN.

SUBREACH	NET PHOTOSYNTHETIC DO PRODUCTION (MG/L/DAY)	BENTHIC DO DEMAND (G/SQ M/DAY)
1	0.0	1.150
2	0.0	1.150
3	0.0	1.150
4	0.0	1.150
5	0.0	1.150
6	0.0	1.150
7	0.0	1.150
8	0.0	1.150
9	0.0	1.760
10	0.0	1.760
11	0.0	1.760
12	0.0	1.760
13	0.0	1.760
14	0.0	1.760
15	0.0	1.760
16	0.0	1.760
17	0.0	1.720
18	0.0	1.720

G E O M E T R Y

SUBREACH	FLOW CHANGE (CFS)	AREA (SQFT)	DEPTH (FT)	TEMP (DEG.CENT)	END MI (MI)
1	0.0	450.	4.00	33.00	94.00
2	1.8	700.	7.00	28.00	92.50
3	9.9	800.	8.00	25.00	89.00
4	5.2	800.	8.00	24.00	86.00
5	4.3	800.	8.00	26.00	78.00
6	0.6	600.	5.25	24.00	77.00
7	0.2	700.	7.00	24.00	61.50
8	3.0	800.	8.00	28.00	56.50
9	23.0	600.	5.25	31.00	43.00
10	5.9	600.	5.50	21.00	41.00
11	0.2	850.	5.50	26.00	40.00
12	46.9	850.	5.50	22.00	38.00
13	18.6	650.	6.00	22.00	30.00
14	9.6	650.	6.00	23.00	29.00
15	2.7	800.	7.00	18.00	16.00
16	10.2	800.	7.00	22.00	4.50
17	0.3	800.	7.00	24.00	2.50
18	0.1	800.	7.00	28.00	0.0

WATER QUALITY ASSESSMENT , L'ANGUILLE RIVER - CALIBRATION RUN.

REACTION COEFFICIENTS (/DAY)

SUBREACH	KR	KD	KORG	SKORG	KNH3	SKNH3	KNO2	SKNO2	KNO3	KCOLF	KCOLT	KP041	KP042
1	0.01	0.01	0.10	0.10	0.45	1.20	1.50	2.50	0.05	0.05	0.0	0.10	0.0
2	0.01	0.01	0.10	0.10	0.45	1.20	1.50	2.50	0.05	0.05	0.0	0.10	0.0
3	0.01	0.01	0.10	0.10	0.45	1.20	1.50	2.50	0.05	0.05	0.0	0.10	0.0
4	0.01	0.01	0.10	0.10	0.45	1.20	1.50	2.50	0.05	0.05	0.0	0.10	0.0
5	0.01	0.01	0.10	0.10	0.45	1.20	1.50	2.50	0.05	0.05	0.0	0.10	0.0
6	0.01	0.01	0.10	0.10	0.45	1.20	1.50	2.50	0.05	0.05	0.0	0.10	0.0
7	0.01	0.01	0.05	0.08	0.45	1.20	1.50	2.50	0.05	0.05	0.0	0.10	0.0
8	0.01	0.01	0.05	0.08	0.45	1.20	1.50	2.50	0.05	0.20	0.0	0.10	0.0
9	0.01	0.01	0.05	0.08	0.45	1.20	1.50	2.50	0.05	0.20	0.0	0.10	0.0
10	0.01	0.01	0.10	0.10	0.45	1.20	1.50	2.50	0.05	0.20	0.0	0.10	0.0
11	0.01	0.01	0.10	0.10	0.45	1.20	1.50	2.50	0.05	0.20	0.0	0.10	0.0
12	0.01	0.01	0.10	0.10	0.45	1.20	1.50	2.50	0.05	0.20	0.0	0.10	0.0
13	0.02	0.02	0.10	0.10	0.45	1.20	1.50	2.50	0.05	0.20	0.0	0.10	0.0
14	0.02	0.02	0.10	0.10	0.45	1.20	1.50	2.50	0.05	0.20	0.0	0.10	0.0
15	0.03	0.03	0.10	0.10	0.45	1.20	1.50	2.50	0.05	0.20	0.0	0.10	0.0
16	0.02	0.02	0.05	0.08	0.45	1.20	1.50	2.50	0.05	0.20	0.0	0.10	0.0
17	0.01	0.01	0.05	0.08	0.45	1.20	1.50	2.50	0.05	0.10	0.02	0.10	0.0
18	0.01	0.01	0.05	0.08	0.45	1.20	1.50	2.50	0.05	0.10	0.02	0.10	0.0

TEMPERATURE CORRECTED REACTION COEFFICIENTS (/DAY)

SUBREACH	KR	KD	KORG	SKORG	KNH3	SKNH3	KNO2	SKNO2	KNO3	KA	KP041	KP042
1	0.02	0.02	0.31	0.31	1.38	3.68	4.60	7.66	0.15	0.48	0.31	0.0
2	0.01	0.01	0.20	0.20	0.90	2.39	2.99	4.98	0.10	0.13	0.20	0.0
3	0.01	0.01	0.15	0.15	0.69	1.85	2.31	3.85	0.08	0.12	0.15	0.0
4	0.01	0.01	0.14	0.14	0.64	1.69	2.12	3.53	0.07	0.15	0.14	0.0
5	0.01	0.01	0.17	0.17	0.75	2.01	2.52	4.19	0.08	0.21	0.17	0.0
6	0.01	0.01	0.14	0.14	0.64	1.69	2.12	3.53	0.07	0.55	0.14	0.0
7	0.01	0.01	0.07	0.11	0.64	1.69	2.12	3.53	0.07	0.31	0.14	0.0
8	0.01	0.01	0.10	0.16	0.90	2.39	2.99	4.98	0.10	0.32	0.20	0.0
9	0.02	0.02	0.13	0.21	1.16	3.10	3.87	6.45	0.13	1.13	0.26	0.0
10	0.02	0.01	0.11	0.11	0.49	1.31	1.63	2.72	0.05	0.93	0.11	0.0
11	0.02	0.01	0.17	0.17	0.75	2.01	2.52	4.19	0.08	0.84	0.17	0.0
12	0.02	0.01	0.12	0.12	0.53	1.43	1.78	2.97	0.06	0.82	0.12	0.0
13	0.02	0.02	0.12	0.12	0.53	1.43	1.78	2.97	0.06	0.86	0.12	0.0
14	0.02	0.02	0.13	0.13	0.58	1.55	1.94	3.24	0.06	0.88	0.13	0.0
15	0.03	0.03	0.08	0.08	0.38	1.01	1.26	2.10	0.04	0.54	0.08	0.0
16	0.02	0.02	0.06	0.10	0.53	1.43	1.78	2.97	0.06	0.60	0.12	0.0
17	0.02	0.01	0.07	0.11	0.64	1.69	2.12	3.53	0.07	0.65	0.14	0.0
18	0.01	0.01	0.10	0.16	0.90	2.39	2.99	4.98	0.10	0.74	0.20	0.0

WATER QUALITY ASSESSMENT , L'ANGUILLE RIVER - CALIBRATION RUN.

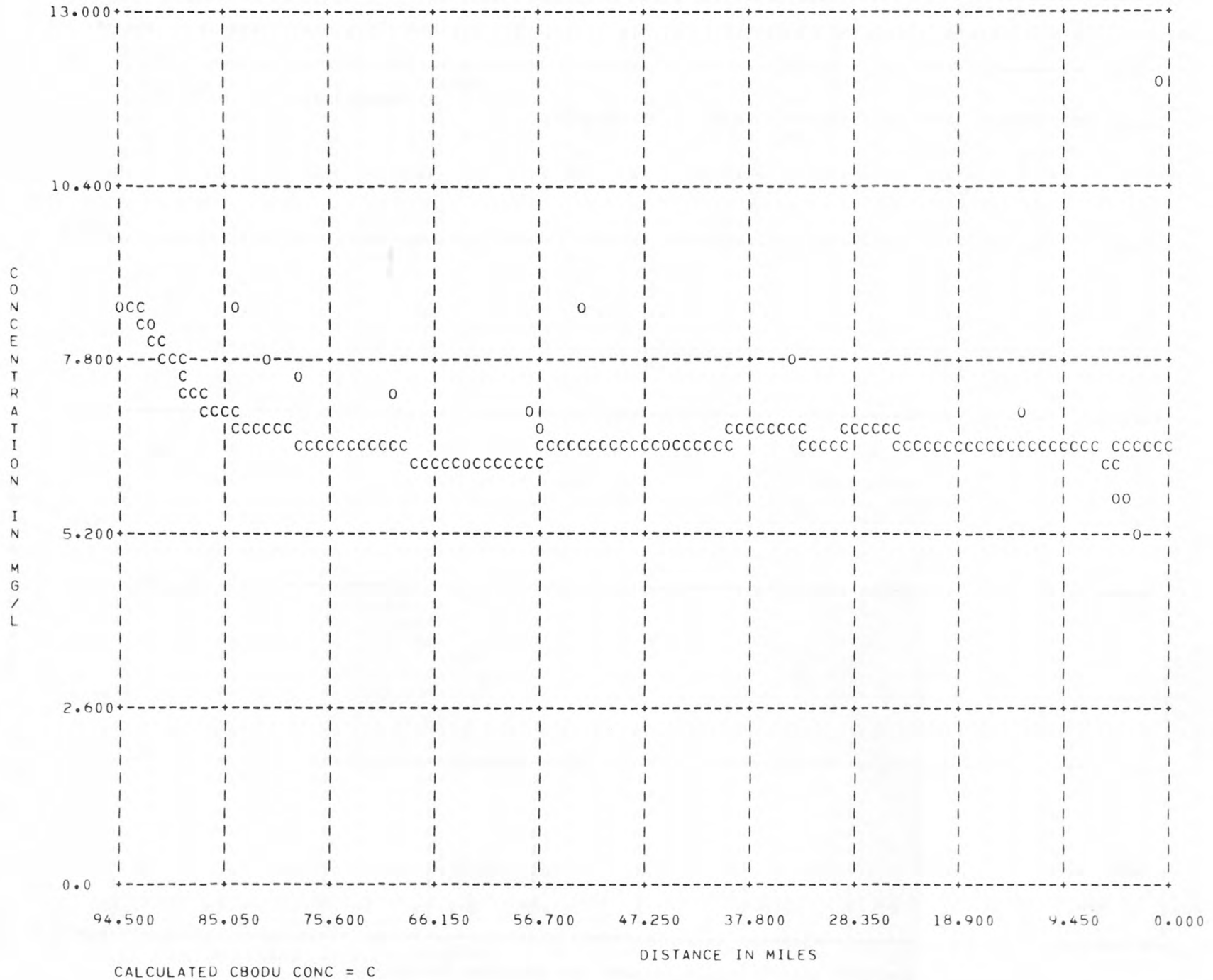
SUBREACH	DO SATURATION (MG/L)
1	6.952
2	7.680
3	8.147
4	8.310
5	7.988
6	8.310
7	8.310
8	7.680
9	7.239
10	8.829
11	7.988
12	8.651
13	8.651
14	8.478
15	9.402
16	8.651
17	8.310
18	7.680

WATER QUALITY ASSESSMENT , L'ANGUILLE RIVER - CALIBRATION RUN.

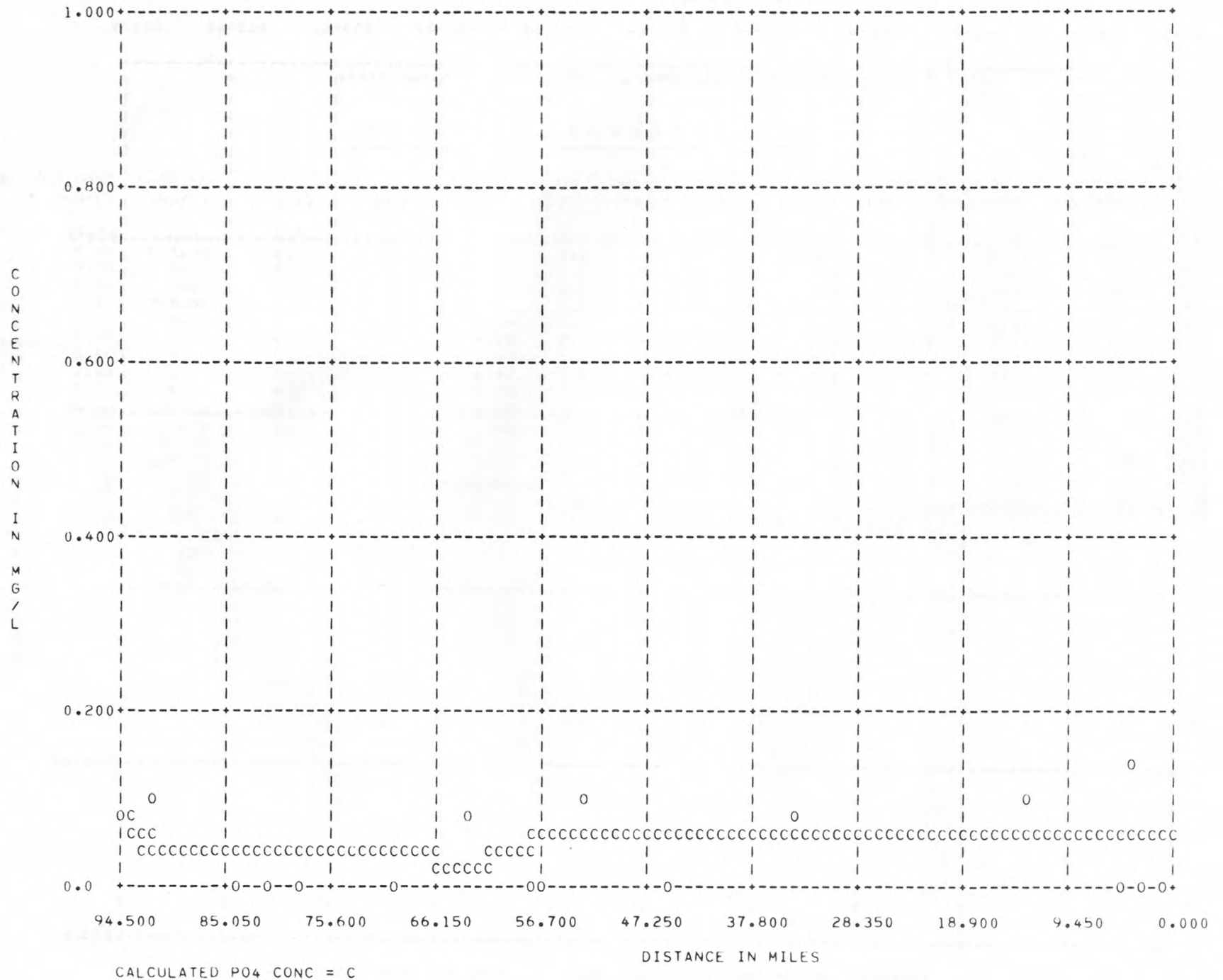
OBSERVED MEASUREMENTS

DISTANCE (MI)	DO CONC (MG/L)	SUSP SOL (MG/L)	(MG/L)	(MG/L)	CBODU (MG/L)	NBODU (MG/L)	ORG-N (MG/L)	NH3-N (MG/L)	NO2-N (MG/L)	NO3-N (MG/L)	TOTAL COLIFORM	FECAL COLIFORM	PO4 (MG/L)
94.50	9.30	0.0	0.0	0.0	8.70	0.0	0.90	0.03	0.0	0.01	200.	47.	0.08
92.00	8.90	143.00	0.0	0.0	8.30	0.0	0.98	0.12	0.02	0.01	530.	210.	0.10
84.50	3.90	0.0	0.0	0.0	8.60	0.0	0.0	0.0	0.0	0.0	240.	67.	0.0
81.00	3.90	0.0	0.0	0.0	7.80	0.0	0.0	0.0	0.0	0.0	300.	140.	0.0
78.20	3.00	253.00	0.0	0.0	7.50	0.0	0.0	0.0	0.0	0.0	200.	33.	0.0
70.00	4.80	0.0	0.0	0.0	7.20	0.0	0.0	0.0	0.0	0.0	500.	320.	0.0
63.00	5.20	0.0	0.0	0.0	6.20	0.0	0.86	0.07	0.02	0.16	550.	100.	0.09
58.00	3.60	0.0	0.0	0.0	7.00	0.0	0.0	0.0	0.0	0.0	280.	89.	0.0
57.00	4.40	0.0	0.0	0.0	6.80	0.0	0.0	0.0	0.0	0.0	450.	67.	0.0
52.80	5.20	0.0	0.0	0.0	8.70	0.0	1.30	0.05	0.01	0.11	900.	100.	0.11
45.20	5.40	80.00	0.0	0.0	6.60	0.0	0.0	0.0	0.0	0.0	300.	50.	0.0
33.60	5.90	115.00	0.0	0.0	7.90	0.0	0.84	0.07	0.01	0.19	350.	50.	0.09
13.00	6.20	179.00	0.0	0.0	7.10	0.0	0.77	0.05	0.01	0.23	450.	22.	0.11
5.00	6.80	167.00	0.0	0.0	5.80	0.0	0.0	0.0	0.0	0.0	180.	50.	0.0
3.80	6.20	163.00	0.0	0.0	5.60	0.0	0.93	0.06	0.01	0.24	200.	56.	0.14
3.00	6.20	0.0	0.0	0.0	5.20	0.0	0.0	0.0	0.0	0.0	180.	78.	0.0
1.00	6.30	0.0	0.0	0.0	12.00	0.0	0.0	0.0	0.0	0.0	0.	0.	0.0

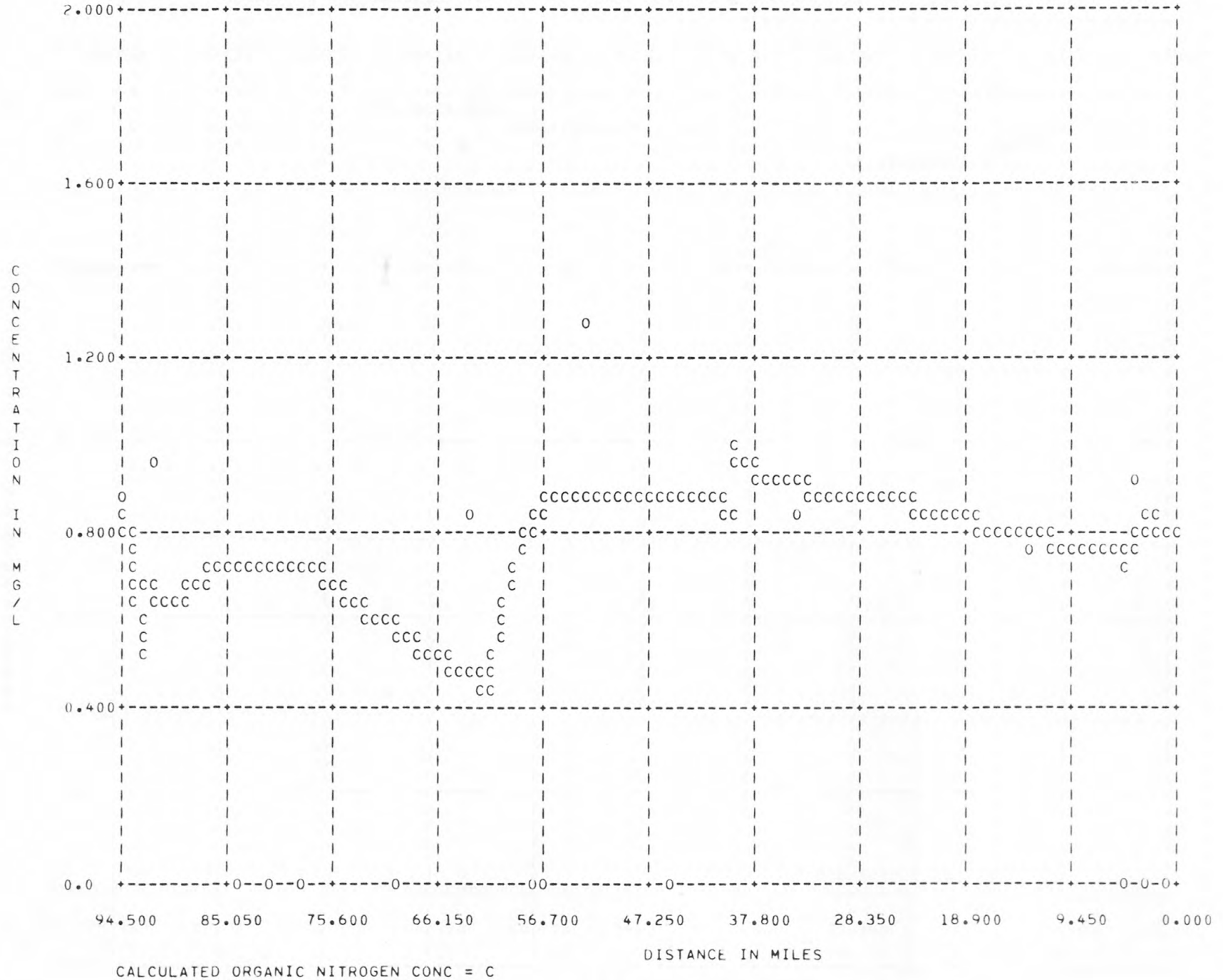
WATER QUALITY ASSESSMENT , L'ANGUILLE RIVER - CALIBRATION RUN.
CALCULATED AND OBSERVED CBOD CONCENTRATIONS VERSUS DISTANCE



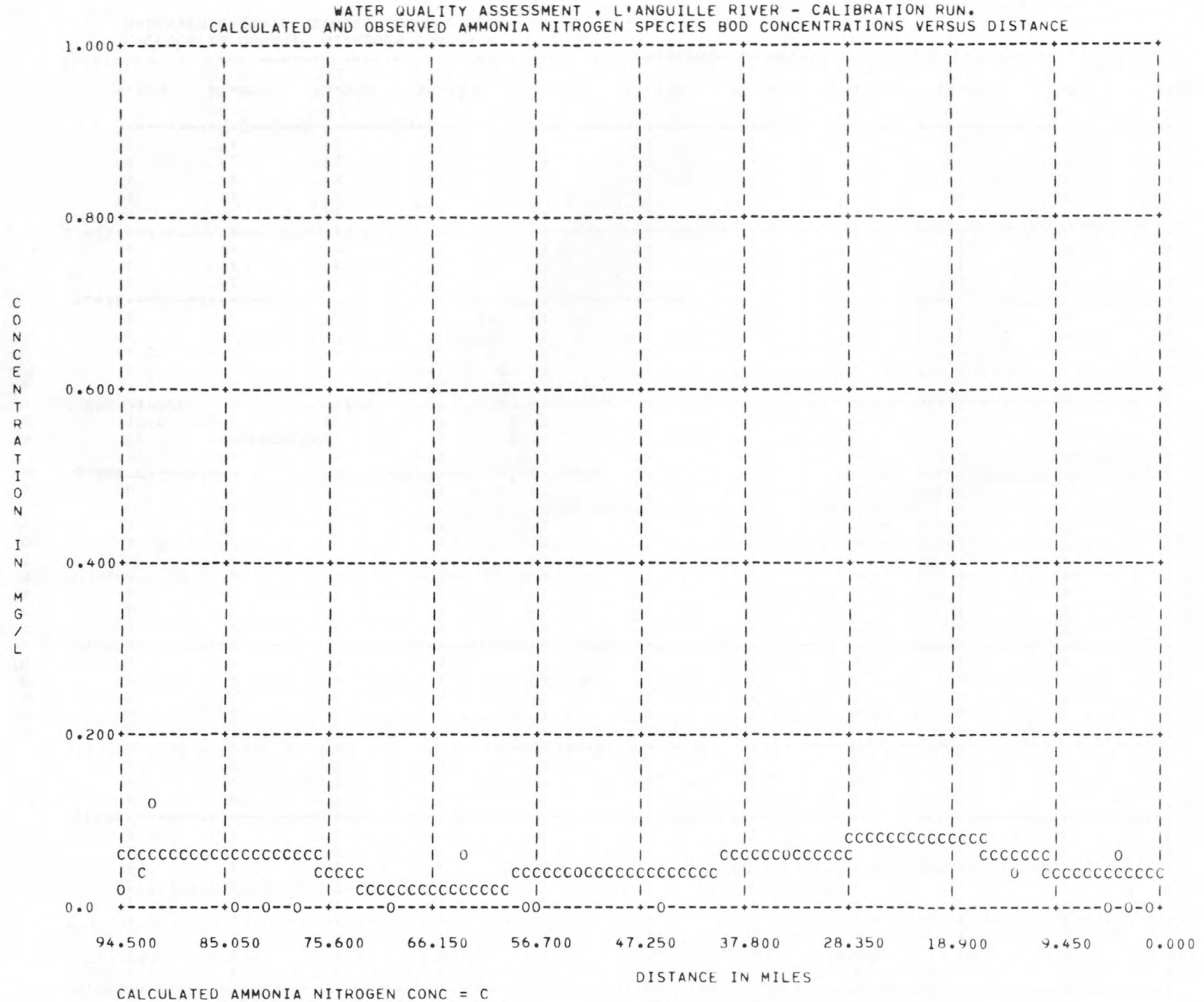
WATER QUALITY ASSESSMENT , L'ANGUILLE RIVER - CALIBRATION RUN.
CALCULATED AND OBSERVED P04 CONCENTRATIONS VERSUS DISTANCE



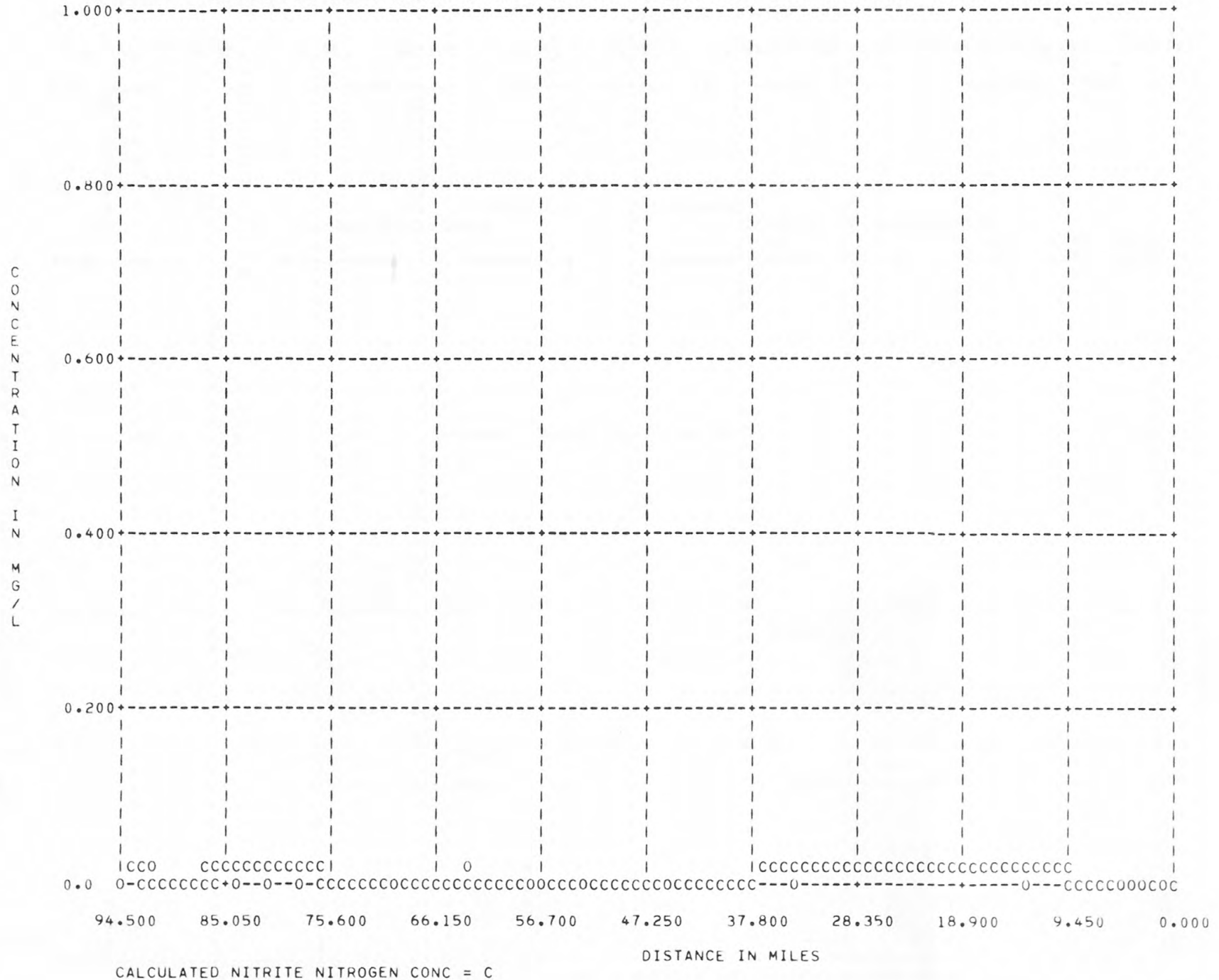
WATER QUALITY ASSESSMENT , L'ANGUILLE RIVER - CALIBRATION RUN.
CALCULATED AND OBSERVED ORGANIC NITROGEN SPECIES BOD CONCENTRATIONS VERSUS DISTANCE



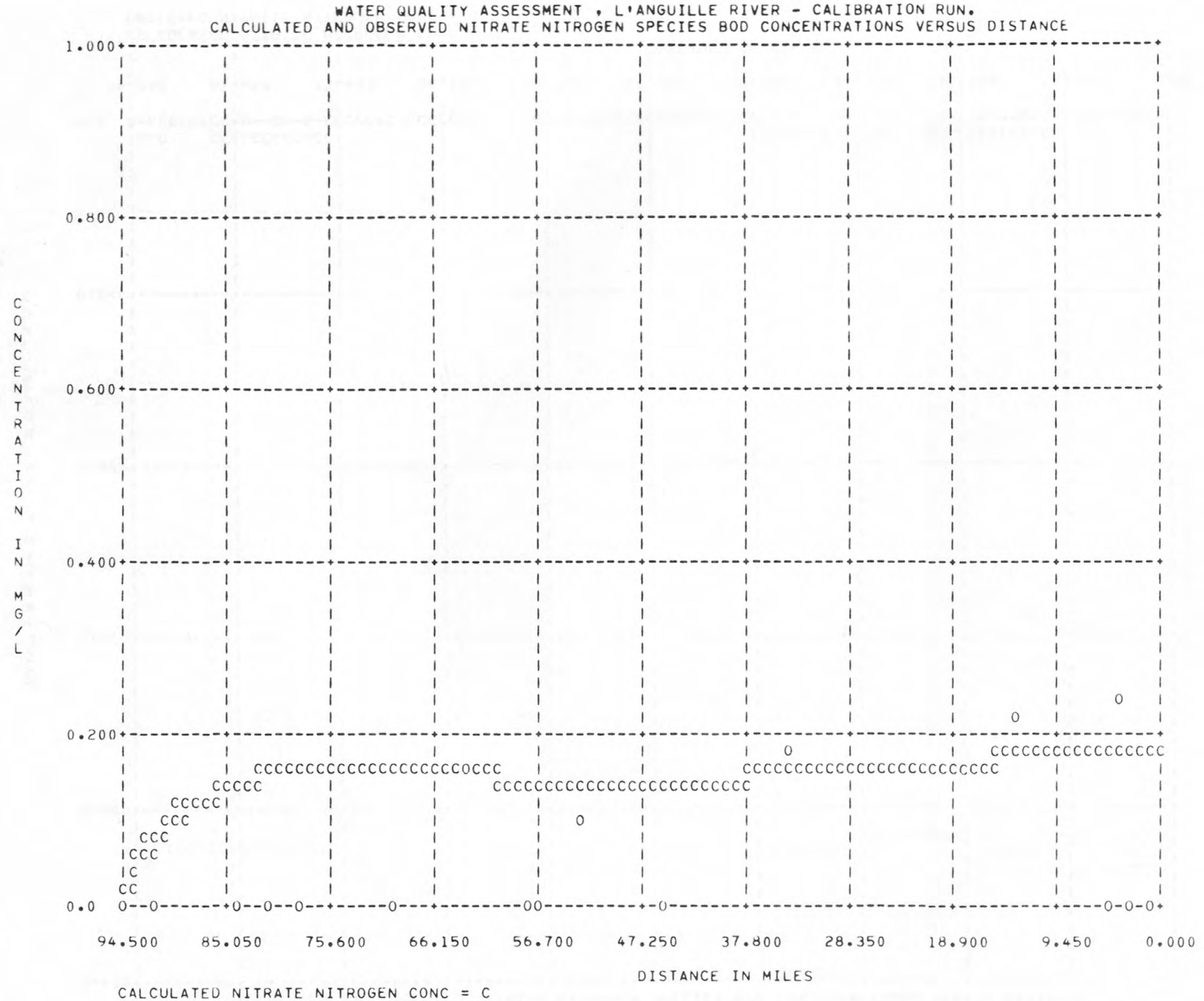
CALCULATED ORGANIC NITROGEN CONC = C
OBSERVED ORGANIC NITROGEN CONC = O


WATER QUALITY ASSESSMENT , L'ANGUILLE RIVER - CALIBRATION RUN.
CALCULATED AND OBSERVED AMMONIA NITROGEN SPECIES BOD CONCENTRATIONS VERSUS DISTANCE
CONCENTRATION IN MG/L
1.000
0.800
0.600
0.400
0.200
0.0
94.500
85.050
75.600
66.150
56.700
47.250
37.800
28.350
18.900
9.450
0.000
DISTANCE IN MILES
CALCULATED AMMONIA NITROGEN CONC = C
OBSERVED AMMONIA NITROGEN CONC = O

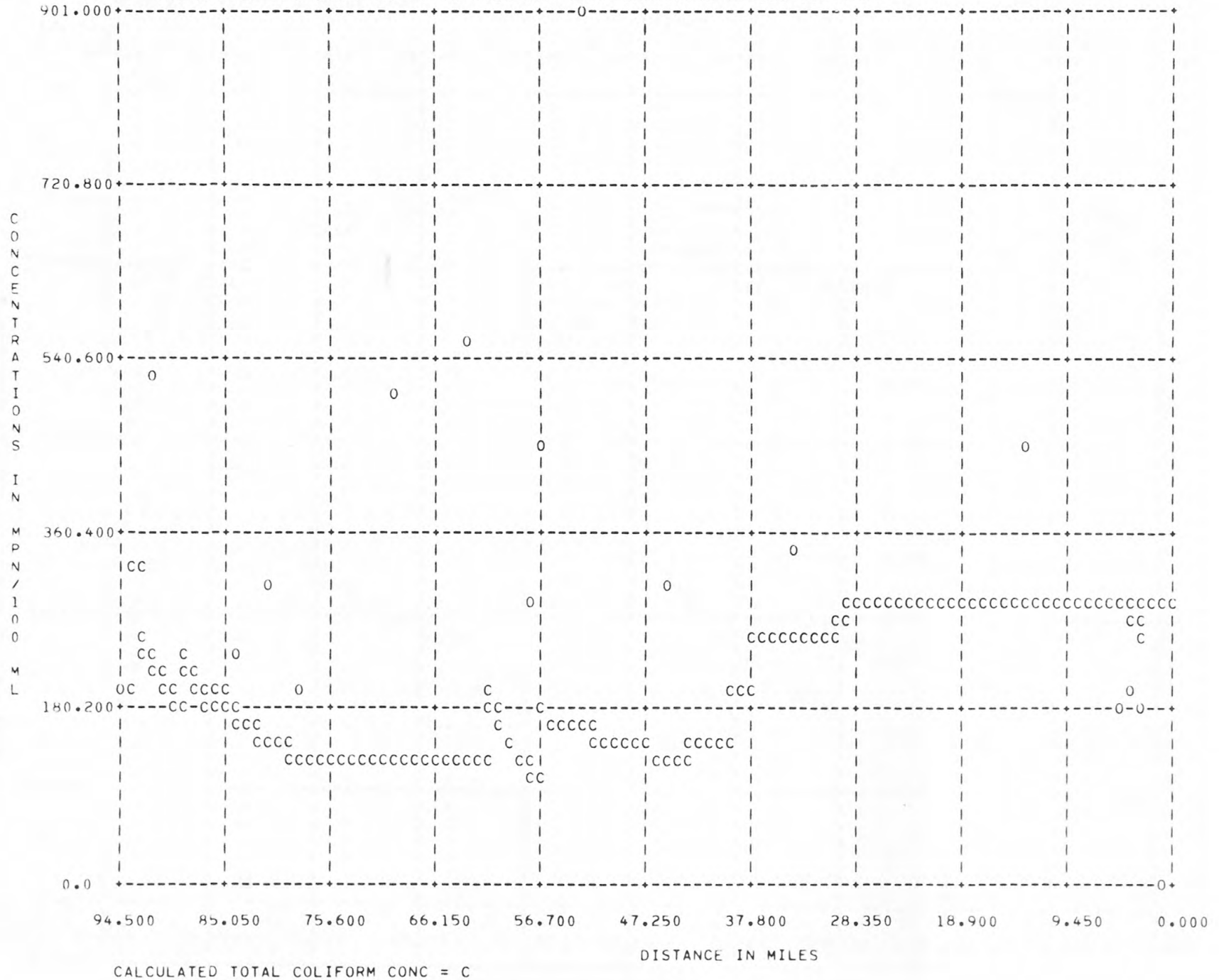
WATER QUALITY ASSESSMENT , L'ANGUILLE RIVER - CALIBRATION RUN.
CALCULATED AND OBSERVED NITRITE NITROGEN SPECIES BOD CONCENTRATIONS VERSUS DISTANCE



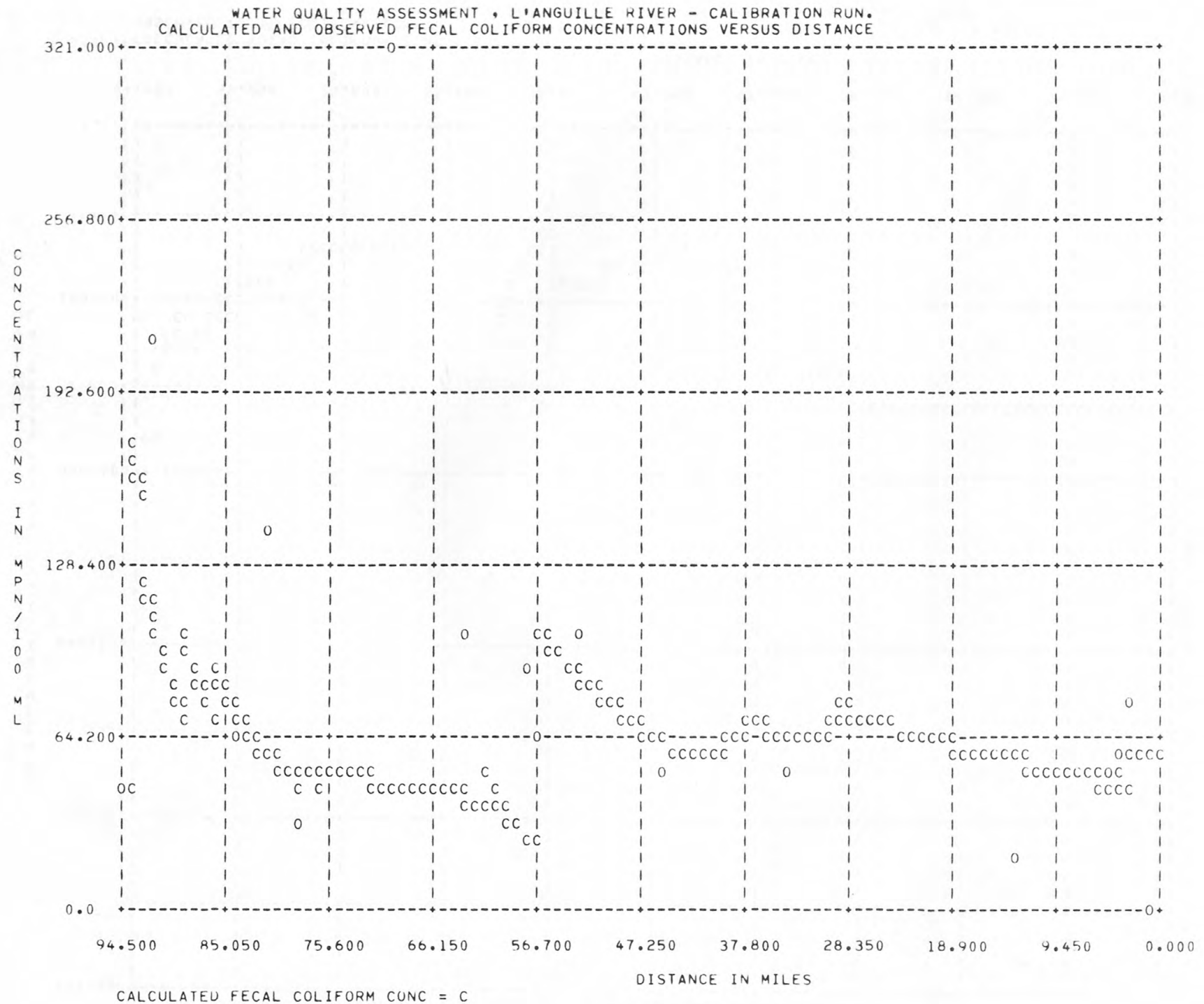
CALCULATED NITRITE NITROGEN CONC = C
OBSERVED NITRITE NITROGEN CONC = O


WATER QUALITY ASSESSMENT , L'ANGUILLE RIVER - CALIBRATION RUN.
CALCULATED AND OBSERVED NITRATE NITROGEN SPECIES BOD CONCENTRATIONS VERSUS DISTANCE
1.000
0.800
0.600
0.400
0.200
0.0
CONCENTRATION IN MG/L
94.500
85.050
75.600
66.150
56.700
47.250
37.800
28.350
18.900
9.450
0.000
DISTANCE IN MILES
CALCULATED NITRATE NITROGEN CONC = C
OBSERVED NITRATE NITROGEN CONC = O

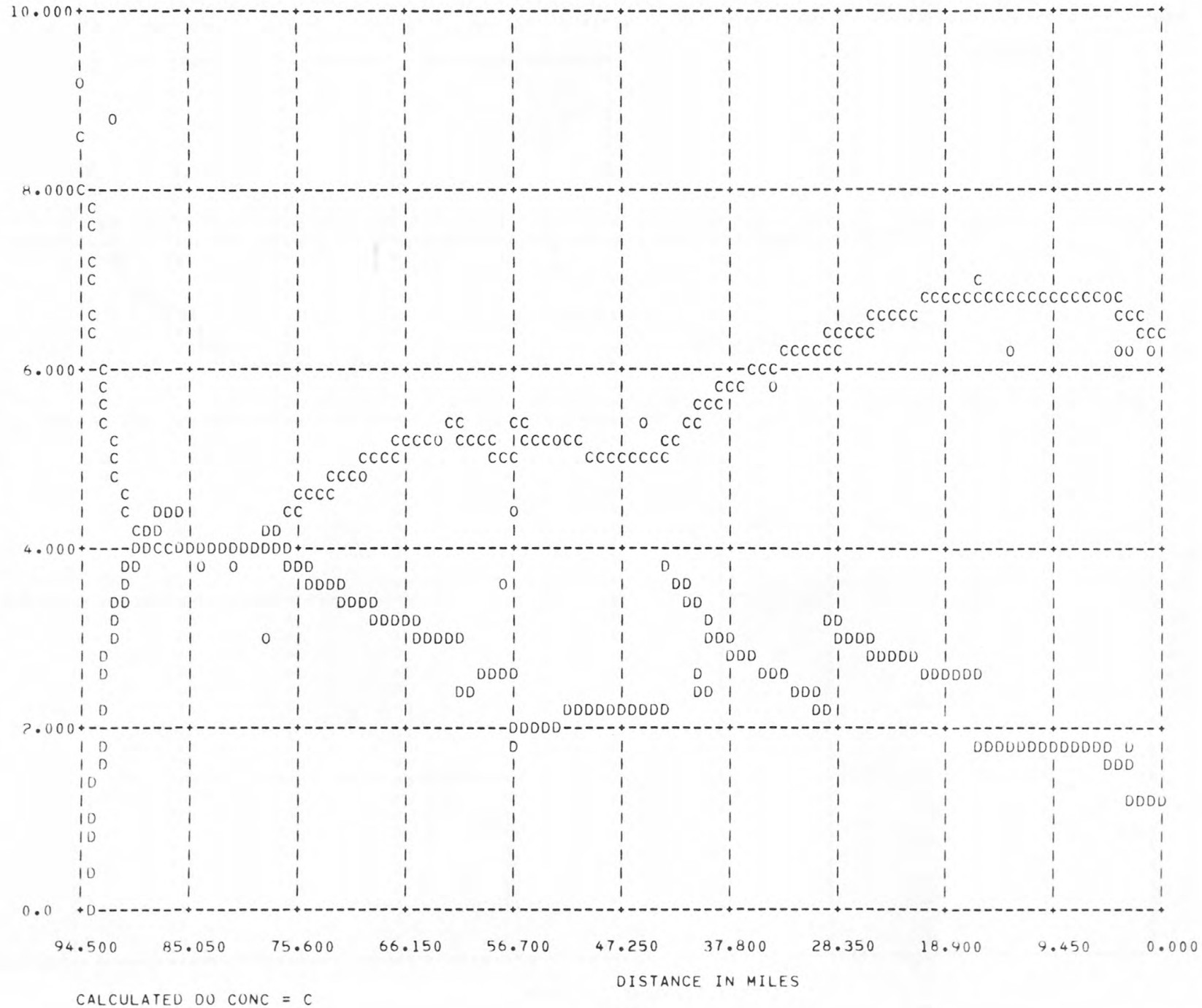
WATER QUALITY ASSESSMENT , L'ANGUILLE RIVER - CALIBRATION RUN.
CALCULATED AND OBSERVED TOTAL COLIFORM CONCENTRATIONS VERSUS DISTANCE



CALCULATED TOTAL COLIFORM CONC = C
OBSERVED TOTAL COLIFORM CONC = O


WATER QUALITY ASSESSMENT . L'ANGUILLE RIVER - CALIBRATION RUN.
CALCULATED AND OBSERVED FECAL COLIFORM CONCENTRATIONS VERSUS DISTANCE
321.000
256.800
192.600
128.400
64.200
0.0
CONCENTRATIONS IN MPN/100 ML
94.500
85.050
75.600
66.150
56.700
47.250
37.800
28.350
18.900
9.450
0.000
DISTANCE IN MILES
CALCULATED FECAL COLIFORM CONC = C
OBSERVED FECAL COLIFORM CONC = O

WATER QUALITY ASSESSMENT , L'ANGUILLE RIVER - CALIBRATION RUN.
CALCULATED AND OBSERVED DO CONCENTRATIONS AND DO DEFICIT VERSUS DISTANCE



WATER QUALITY ASSESSMENT , L'ANGUILLE RIVER - CALIBRATION RUN.
SUSP SOL VERSUS DISTANCE