Progress Report
Job A, District IV-A

Objective: To recommend habitat improvement, fishermen information, fish population manipulation, vegetation control, pollution control, fisherman access and facility development, and fishing regulations for existing and proposed public waters of Texas.

I. Summary:

During 1980, the tributaries of the Neches River in East Texas were surveyed according to the Texas Parks and Wildlife Management Manual. The purpose of this survey was to develop a fisheries management plan for this area. The main river will not be surveyed until 1981. Sixty-six species were collected by all methods. One threatened species, the paddlefish, was allegedly taken by a fisherman from Pine Island during this segment. (A newspaper photograph and story were shown in a local newspaper.) Generally, the smaller tributaries contained populations of minnows, darters, sunfish, small bass and bullhead catfish. The larger tributaries appeared to support good, fishable populations of sunfish, largemouth and spotted bass, crappie, and channel, blue and flathead catfish. Access to the larger tributaries was generally considered good; however, few if any facilities were present. The Big Thicket National Preserve, which consists of many stream corridors, gives the public good access to many of the tributaries of the Neches River as well as the river itself.

Management recommendations are as follows: 1) There should be more information made available to the public on the stream fisheries, access points and location of the Big Thicket National Preserve stream corridors, 2) some of the tributaries should be considered as potential rainbow trout stocking areas. Further recommendations will be made following the completion of the river survey in 1981.

II. Significant Deviations:
The main river was not surveyed during this segment due to a lack of time.

III. Cost: $40,000

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Date: January 31, 1981

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DESCRIPTION OF STUDY AREA

The study area consisted of that segment of the Neches River located from B. A. Steinhagen Dam in Jasper County downstream to Sabine Lake in Orange County and all its tributaries (Figure 1). Most of the river is located in the Piney Woods Vegetational Area except for the southernmost portion which is located in the Coastal Prairies and Marshes Vegetational Area.

The river is characterized by high water levels during much of the year produced by a combination of rainfall releases from Sam Rayburn Dam for electricity production and releases from Steinhagen Dam for industrial and agricultural uses downstream. Daily fluctuations are much less dramatic than found on the lower Sabine River, ranging from only 1 to 5 feet. Both of the above dams are controlled by the U. S. Corps of Engineers. The water in the river is usually turbid, while the tributaries are quite clear. Pollution in the upper portion of the river is minimal; however, near the Port of Beaumont several pollution problems exist.

The Neches River is fairly large in this segment with its channel ranging from 75 yards to more than a quarter of a mile near Sabine Lake. Water depths are quite variable, ranging from 1 foot to about 60 feet. The stream bottom is composed primarily of sand with some shallow areas swept clean to the hard clay substrate. Fish habitat in the river consists mainly of fallen trees and undercut banks.

The topography of the watershed in this segment consists of heavily wooded hills in the upper half and heavily wooded level areas in the lower half. Before entering Sabine Lake, the Neches River flows through the highly urbanized and industrialized Beaumont area. Terrestrial vegetation consists mainly of pine uplands and mixed pine-hardwoods bottomlands. Some cypress swamps are located in the lower portion of the watershed.

Channel, blue and flathead catfish, white bass, crappie and largemouth bass are reportedly the major species in the river fishery. Buffalo and freshwater drum are reportedly the most abundant rough species taken by fishermen. Estuarine species enter the fisheries in the lower portion of the river near Sabine Lake. The tributaries located in the Piney Woods Vegetational Area are clear, cool streams with heavily vegetated banks. The smaller streams support populations of shiners, darters and sunfish while the larger streams produce more bass, crappie and catfish. Coastal streams are wide, sluggish bayous with dark murky water, and these produce some estuarine species in addition to the freshwater fish.

MATERIALS AND METHODS

Water quality analyses were made at 20 stations covering all of the major tributaries in this section of the watershed (Figure 2,3,4,5). Conductivity was measured using a YSI Model 33 instrument; dissolved oxygen and temperature were measured using a Delta 1010 instrument; and pH, total alkalinity, total hardness and turbidity were measured using a Hach Model DR-EL Engineers Laboratory. Water analyses were made at sample stations 4,9,15,24,25,31,34,36,37,39,46,47, 48,57,66,67,68,74,75 and 76.

Fish habitat improvement needs, aquatic vegetation species and distribution, access and facilities, need for fishermen information and need for harvest regulations change were determined by observation and evaluation of data. Common names of aquatic vegetation are those listed in the Texas Parks and Wildlife Management Manual.

Seining was conducted at sample station 1 through 71 on the tributary streams during June and July (Figures 2,3,4,5). Samples were taken using whatever size seine best suited the situation. Straight seines with 1/8-inch mesh were used in the following sizes: 10 feet long by 4 feet deep, 15 feet long by 6 feet deep, and 20 feet long by 6 feet deep. Generally three to six drags of various lengths were made at each station.

Three sampling stations (No. 48,72,73) were sampled with gill nets during June and September in Village Creek and Pine Island Bayou (Figure 4). Village Creek was sampled overnight with six gill nets during June and Pine Island Bayou was sampled twice overnight with five gill nets. Gill nets used were constructed of monofilament and multifilament nylon and measured 200 feet long and 8 feet deep. Mesh sizes increased by ½-inch increments from ½-to 4-inch bar mesh at 25 feet intervals. The ½-inch panel was the only part made of multifilament nylon. Nets were set late in the afternoon and run before noon the following day.

Samples were taken in Village Creek and Pine Island Bayou with the boom-type electrofishing boat during June and September at stations 48,72 and 73. The boat was equipped with a 3,000 watt portable generator capable of producing 120 volts alternating current. Most collections were made using alternating current because the transformer-pulsator part of the unit burned out. Village Creek was sampled at one site in June and Pine Island Bayou at two sites in September. Sample periods consisted of 1.5 hours actual shocking time for Village Creek and 1.0 hours for Pine Island Bayou.

Samples were taken with the back-pack electrofishing unit during September at stations 2,9,44 and 64 (Figures 2,3,4). Big Walnut Run, Big Creek, Big Sandy Creek and Little Pine Island Bayou were each sampled for two 15-minute collection periods. The unit used was a Smith-Root Type VII-A Electrofisher powered by a 12 volt battery. All common and scientific names used in this report are in accordance with Bailey (1970).

RESULTS AND DISCUSSION

Physicochemical Characteristics

Water analyses showed that tributaries located in the Piney Woods Vegetational Area were clear, cool, acid water streams, low in total hardness (less than 30 ppm), total alkalinity (less than 30 ppm) and conductivity (less than 100 umhos). Streams in the Coastal Prairies and Marshes Vegetational Area were more turbid, warmer acid water streams with slightly higher total hardness (over 75 ppm), total alkalinity (over 50 ppm) and conductivity (over 100 umhos). Generally water quality in all tributaries was considered good except for Mill Creek (site 76) which had low dissolved oxygen. This stream receives effluent from a Kirby Lumber debarking plant and from the Silsbee sewage treatment plant. However, water quality, particularly dissolved oxygen, was slightly better than found during a prior survey by Wenger in 1967.

Fish Habitat

Fish habitat in the tributaries was considered adequate. Aquatic vegetation was limited mainly to emergent types, including black willow, bald cypress, buttonbush, narrowleaf and common cattails, sedge, smartwood and sedge. Some water hyacinths were observed on Pine Island Bayou, but no problems were present.

Fish Community

Sixty-six species were collected from the tributary streams (Table 1). One newspaper account was seen reporting a catch by a sport fisherman of two paddlefish from Pine Island Bayou. This was the only threatened or endangered species reported from this section of the watershed during this segment. Generally, the larger streams supported fishable populations of channel, blue and flathead catfish, largemouth bass, spotted bass, crappie and various sunfishes. The smaller streams supported primarily sunfishes, minnows, bullhead catfish and darters.

Some of the cooler streams located in the Big Thicket National Preserve would probably be capable of supporting a year round fishery for rainbow trout. These streams include Sandy Creek, Turkey Creek, Village Creek and Beech Creek.

Public Access and Facilities

Public access is good to the lower sections of Village Creek and Pine Island Bayou. Several boat ramps are available, both improved and unimproved. Access to the remaining streams is poor consisting only of road crossings. The Big Thicket National Preserve should provide good access in the near future to several of the larger streams including Big Sandy Creek and Turkey Creek. This Preserve consists of corridors of public land taking in both sides of several streams in this area. Maps of these areas are available from the National Park Service offices in Beaumont.

Fisherman Information

Fisherman information is virtually non-existent on the fisheries of the Neches River tributaries.

Fish Harvest Regulations

Existing regulations are adequate to protect the fishery resources of the Neches River tributaries.

MANAGEMENT RECOMMENDATIONS

Physicochemical Characteristics

No recommendations are made at this time. Final recommendations will come during the next segment when the entire survey is completed.

Fish Habitat

Existing habitat is adequate to sustain the fishery; therefore, no recommendations are made.

Fish Community

Streams within the Big Thicket National Preserve should be evaluated for possible stocking of rainbow trout.

Public Access and Facilities

The National Park Service should better publicize the areas and facilities of the Big Thicket National Preserve.

Fisherman Information

Information should be publicized concerning the fisheries available to the public as well as information of access and facilities.

Fish Harvest Regulations

Existing regulations are adequate to protect the fisheries of the Neches River tributaries.

A five-year management plan for this entire section of the Neches River watershed will be submitted following completion of the survey during the next segment.

REFERENCES CITED

Wenger, A.G. 1967. Pollution Studies. Texas Parks and Wildlife Department Job Completion Report for Job No. C-1, Dingell-Johnson Project F-12-R-12. 13 pp.

Bailey, R.M., Chairman, 1970. A list of common and scientific names of fishes from the United States and Canada. American Fisheries Society Special Publication No. 6.

Table 1 - Checklist of fishes taken from tributaries of the Neches River, Texas, by all methods, 1980.

Species	Seine	Gill Net	Electrofishing	Rotenone
Chestnut Lamprey		X		
Southern Brook Lamprey	X		X	
Alligator Gar		X		
Spotted Gar	X	X	X	X
Longnose Gar		X		
Bowfin		X		X
Ladyfish		X		
Threadfin Shad		X		
Gizzard Shad		X	X	X
Redfin Pickerel	X		X	X
Carp		X		X
Golden Shiner	X			
Pugnose Minnow	X		X	
Emerald Shiner	X			
Ribbon Shiner	X		X	
Redfin Shiner	X			
Ironcolor Shiner	X		X	
Sabine Shiner	X		X	
Pallid Shiner	X			
Blacktail Shiner	X	X	X	
Red Shiner	X			
Blackspot Shiner	X		X	
Silvery Minnow	X		X	
Bullhead Minnow	X		X	
Bigmouth Buffalo		X		
Smallmouth Buffalo		X	X	
Blacktail Redhorse	X	X	X	X
Spotted Sucker	X	X	X	X
Creek Chubsucker	X			
Channel Catfish	X	X		
Blue Catfish		X		
Black Bullhead	X			X
Yellow Bullhead		X	X	
Flathead Catfish		X		
Tadpole Madtom	X		X	
Freckled Madtom	X		X	
Pirate Perch		X	X	X
Atlantic Needlefish			X	
Rainwater Killifish	X			
Golden Topminnow	X			
Starhead Topminnow	X			
Blackstripe Topminnow	X		X	
Blackspotted Topminnow	X			
Mosquitofish	X		X	
Brook Silverside	X			
White Bass		X	X	
Spotted Bass	X		X	
Largemouth Bass	X		X	X
Warmouth	X	X	X	X
Green Sunfish			X	
Spotted Sunfish	X		X	

Species	Seine	Gill Net	Electrofishing	Rotenone
Redear Sunfish	X		X	X
Bluegill	X	X	X	X
Longear Sunfish	X	X	X	X
Dollar Sunfish	X			
White Crappie	X	X		X
Black Crappie	X	X		X
Flier	X			
Banded Pygmy Sunfish	X		X	
River Darter			X	
Scaly Sand Darter	X			
Bluntnose Darter	X			
Slough Darter	X		X	
Cypress Darter	X			
Freshwater Drum		X		
Striped Mullet			X	
Number of Species taken by each method	46	26	35	16
Total number of Species	66			

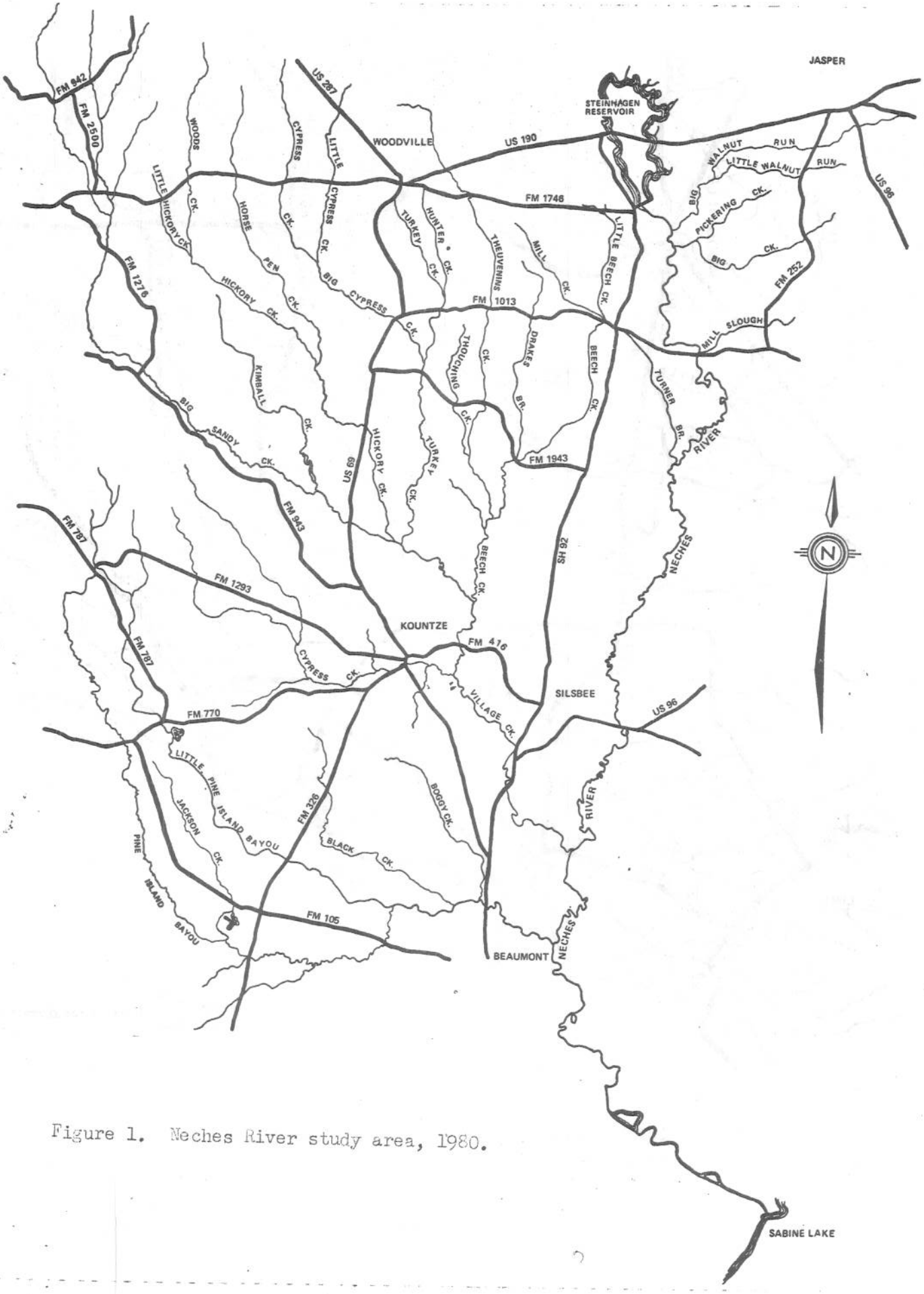

Figure 1. Neches River study area, 1980.

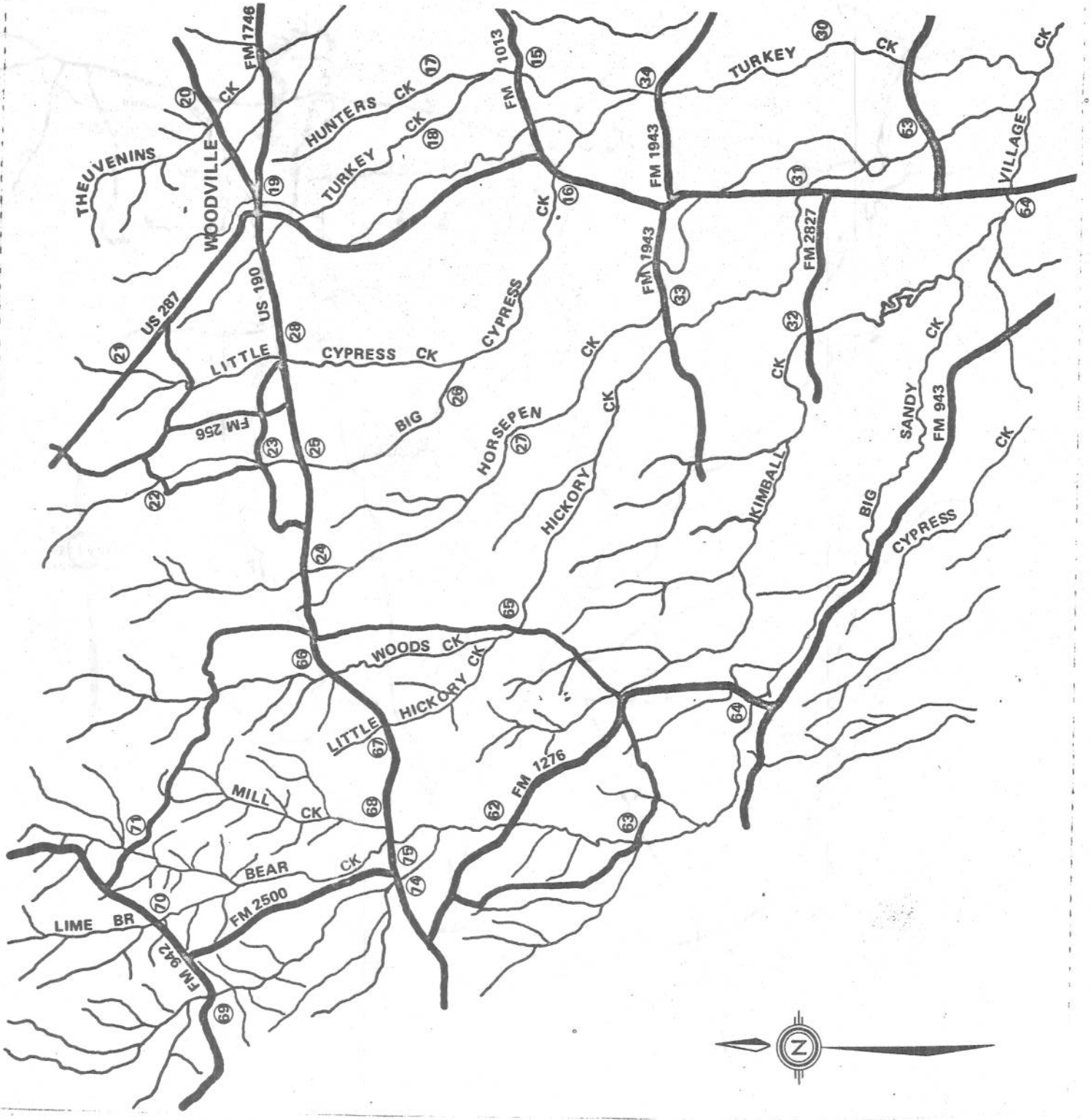

Figure 2. Location of sample sites in the northwest quadrant of the Neches River study area, 1980.

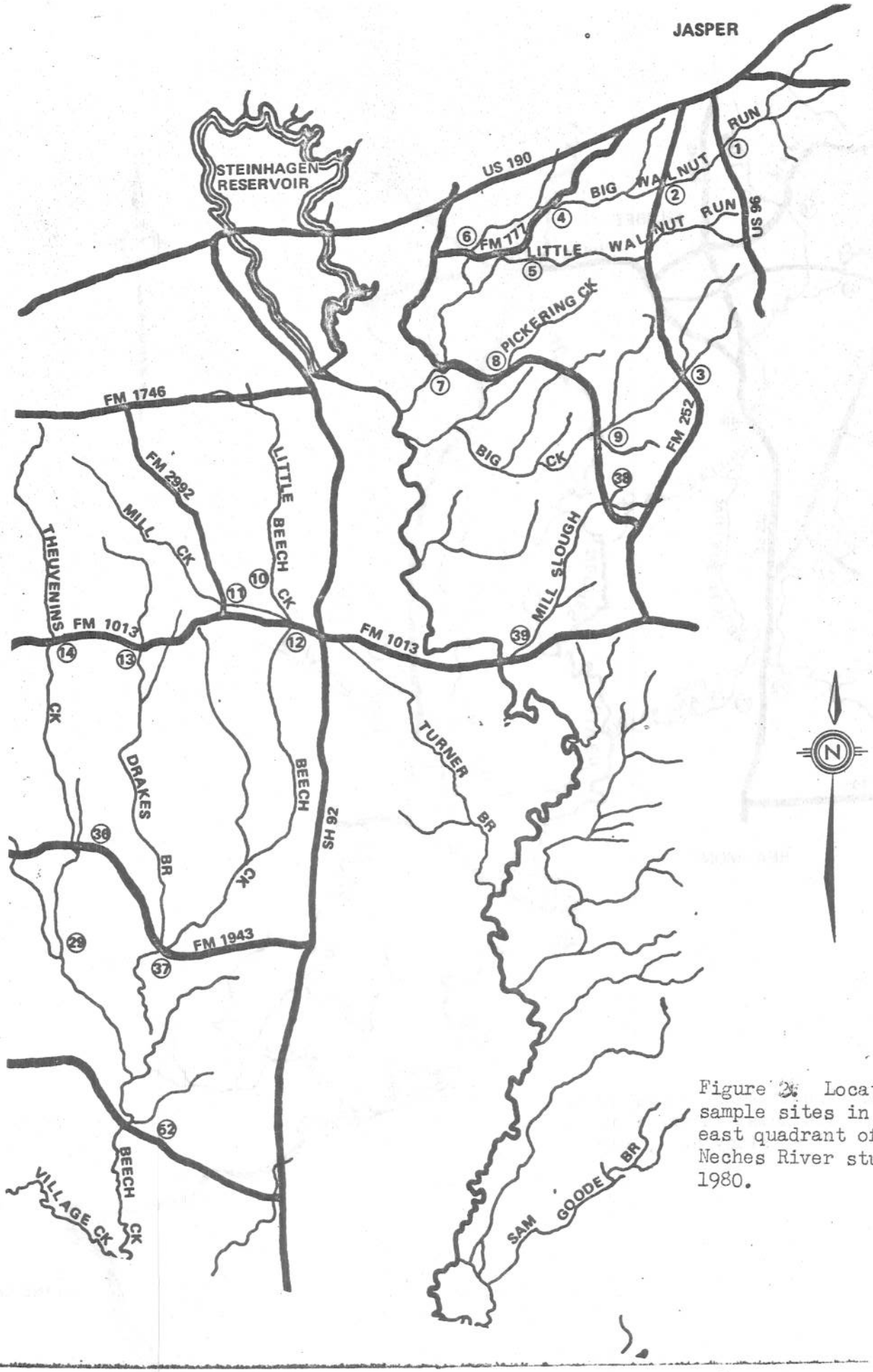

Figure 2. Location of sample sites in the northeast quadrant of the Neches River study area, 1980.

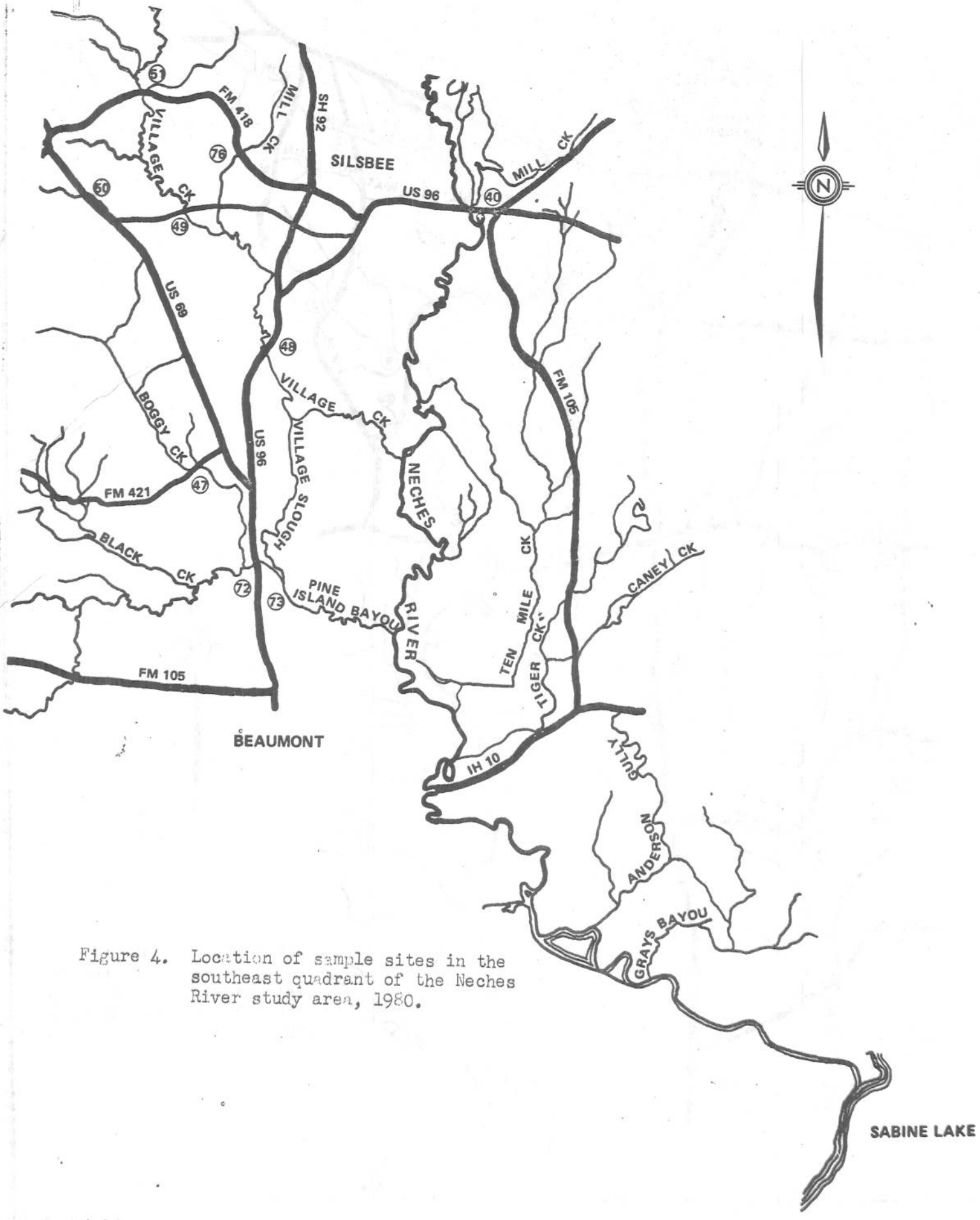

Figure 4. Location of sample sites in the southeast quadrant of the Neches River study area, 1980.

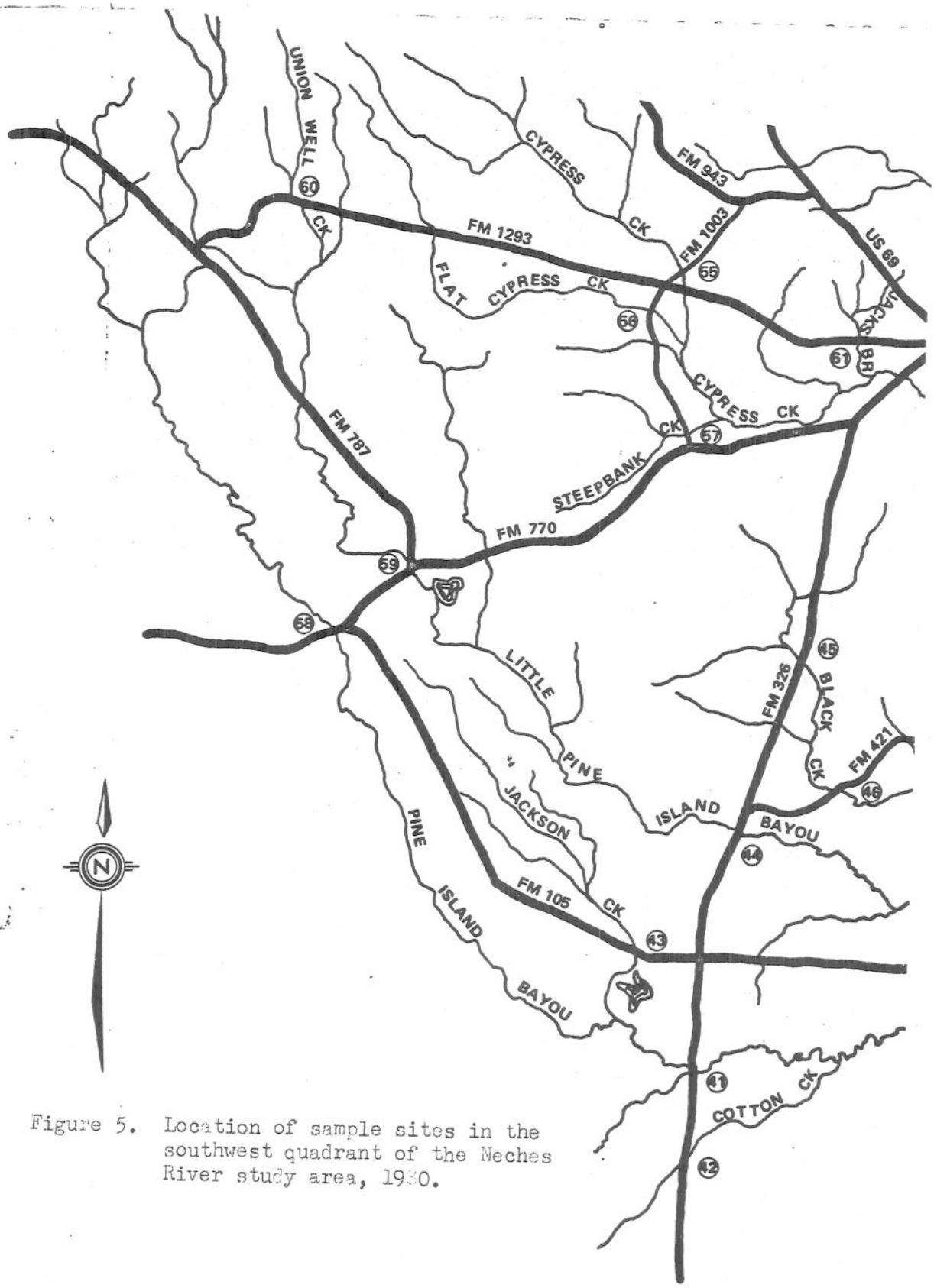

Figure 5. Location of sample sites in the southwest quadrant of the Neches River study area, 1980.