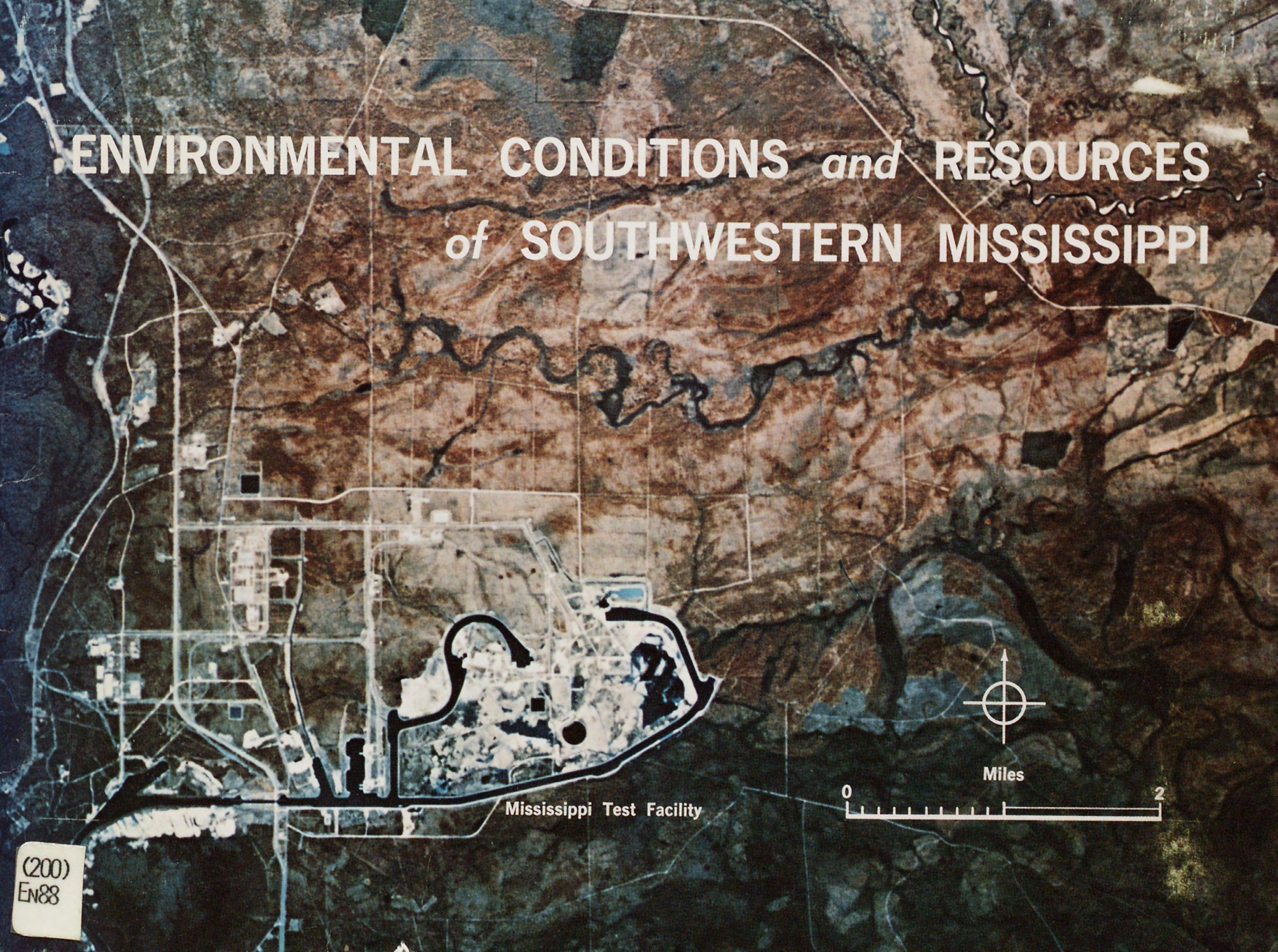
ENVIRONMENTAL CONDITIONS *and* RESOURCES *of* SOUTHWESTERN MISSISSIPPI



Cover: Vertical color infrared photo from more than ten miles up, 17 February 1970.

EROS

Department of the Interior
U.S. Geological Survey
Geographic Applications Program
February 1970

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ABSTRACT

The impending phase-out of Saturn V testing by the National Aeronautics and Space Administration at the Mississippi Test Facility (MTF) necessitates consideration of possible alternative uses for the Facility and surrounding region. To make a rapid and up-to-date study of pertinent environmental factors in that region, remote sensing techniques and data were used by discipline specialists in the U. S. Geological Survey, scientists in other Bureaus of the Department of the Interior and other agencies, and the Project Coordinator. Full cooperation was received from officials, planners, and business executives in Mississippi, as well as timely assistance from NASA Headquarters, the Manned Spacecraft Center/Houston, and the MTF staff.

Results from a multi-sensor equipped RB–57F high altitude overflight on February 17, 1970, and a simultaneous helicopter overflight were compared with existing photographs, maps, reports, and locally collected field data to complete this report rapidly as a Geographic Applications Project of the EROS Program, U. S. Department of the Interior. Pertinent background materials, including a comprehensive, annotated bibliography of existing studies of the area, are attached. This report considers 19 potential uses of the MTF equipment, staff, and property in relation to 16 environmental factors.

PREFACE

This report was prepared as a special project of the EROS Program, Department of the Interior (USDI), in response to a request received from National Aeronautics and Space Administration (NASA) Headquarters on February 4, 1970, with a completion deadline of February 27. The use of remote sensor data and techniques was a primary factor in making possible an up-to-date regional study of this scope in such a short time.

The report presented here will provide a broad range of current information for those who are considering participation in the development of southern Mississippi and utilization of the Mississippi Test Facility as an integral part of a regional program of significance to the entire nation.

Credit for substantive contributions and assistance in preparing the report is due particularly to:

Department of Agriculture (USDA) for enlarged aerial photographs of MTF, and soils information.

Department of the Interior (USDI):

- Bureau of Commercial Fisheries for fisheries statistics.
- Bureau of Outdoor Recreation/Atlanta Regional Office, for summary of outdoor recreation facilities, programs, and recommendations.
- Federal Water Pollution Control Administration (FWPCA) for water quality data.
- Geological Survey (USGS):
  - Geographic Applications Program staff members, Gary North for organization and management of the project, as well as interpretation of the photography, and James Wray for the graphics.
  - Geologic Division for the geologic map and text.
  - Topographic Division for aerial mosaics and topographic maps. National Atlas Project staff for compilation of a substantial number of thematic maps.
  - Water Resources Division/Jackson, Miss. for water data.

National Aeronautics and Space Administration (NASA):

- Earth Resources Aircraft Program (MSC/Houston) for high altitude overflight data of high quality, collected, processed, and delivered within a period of three days.
- Headquarters for funding.
- Mississippi Test Facility (MTF) manager Jackson Balch and staff for assistance in collection of on-site data for correlation with instrumental overflight returns.

Mr. Gilbert Carmichael, Meridian, Mississippi, for consultation on related State and regional development plans and programs.

Dr. Gordon Gunter, Gulf Coast Research Laboratory, Ocean Springs, Mississippi, for analysis of current and prospective fishery and mariculture activities.

Mr. Leo Seal, President of Hancock Banks, for local and regional economic information.

Compilers of reports listed in the bibliography section of this report.

Arch C. Gerlach, Chief Geographer
U.S. Geological Survey
Department of the Interior

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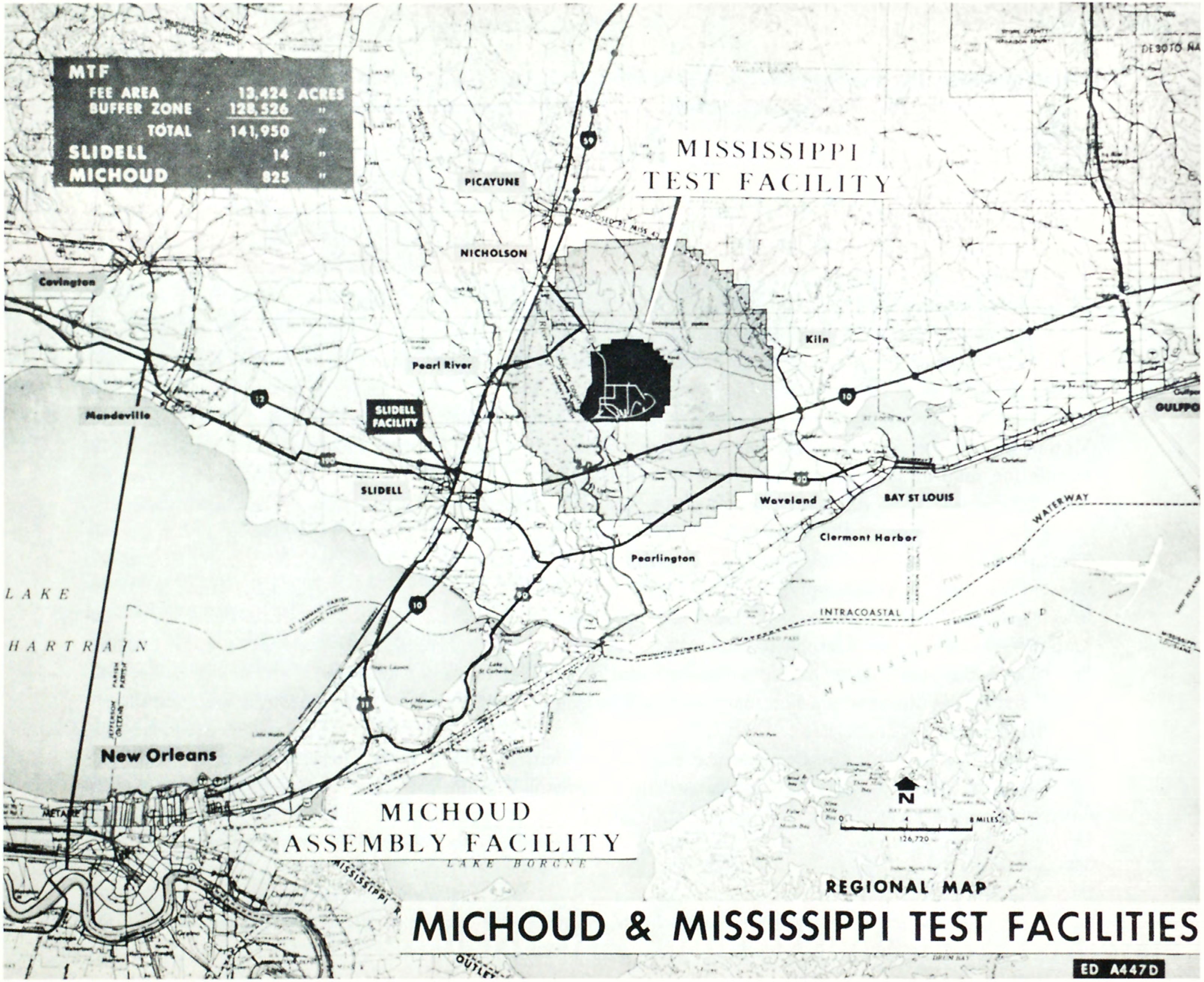

REGIONAL MAP

MICHOUD & MISSISSIPPI TEST FACILITIES

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POTENTIAL USES OF THE MISSISSIPPI TEST FACILITY AND ENVIRONS

The possibility that completion of tests on Saturn vehicles and engines might lead to closing or mothballing the NASA Mississippi Test Facility (MTF) is viewed by many State and community officials, planners, business executives, and residents of the vicinity as a disaster second only to Hurricane Camille which swept that area on August 17, 1969. To a large extent the planning for alternate uses of the MTF and planning for recovery of the area destroyed by Hurricane Camille are interwoven in designs for the future development of southern Mississippi to make it an increasingly productive part of the United States as a whole. Consequently, suggestions for future use of the MTF site, its landscaped grounds, buildings, equipment, staff of trained and experienced scientists and engineers, buffer zone, and the related computer center at Slidell, Louisiana, became of regional and national concern.

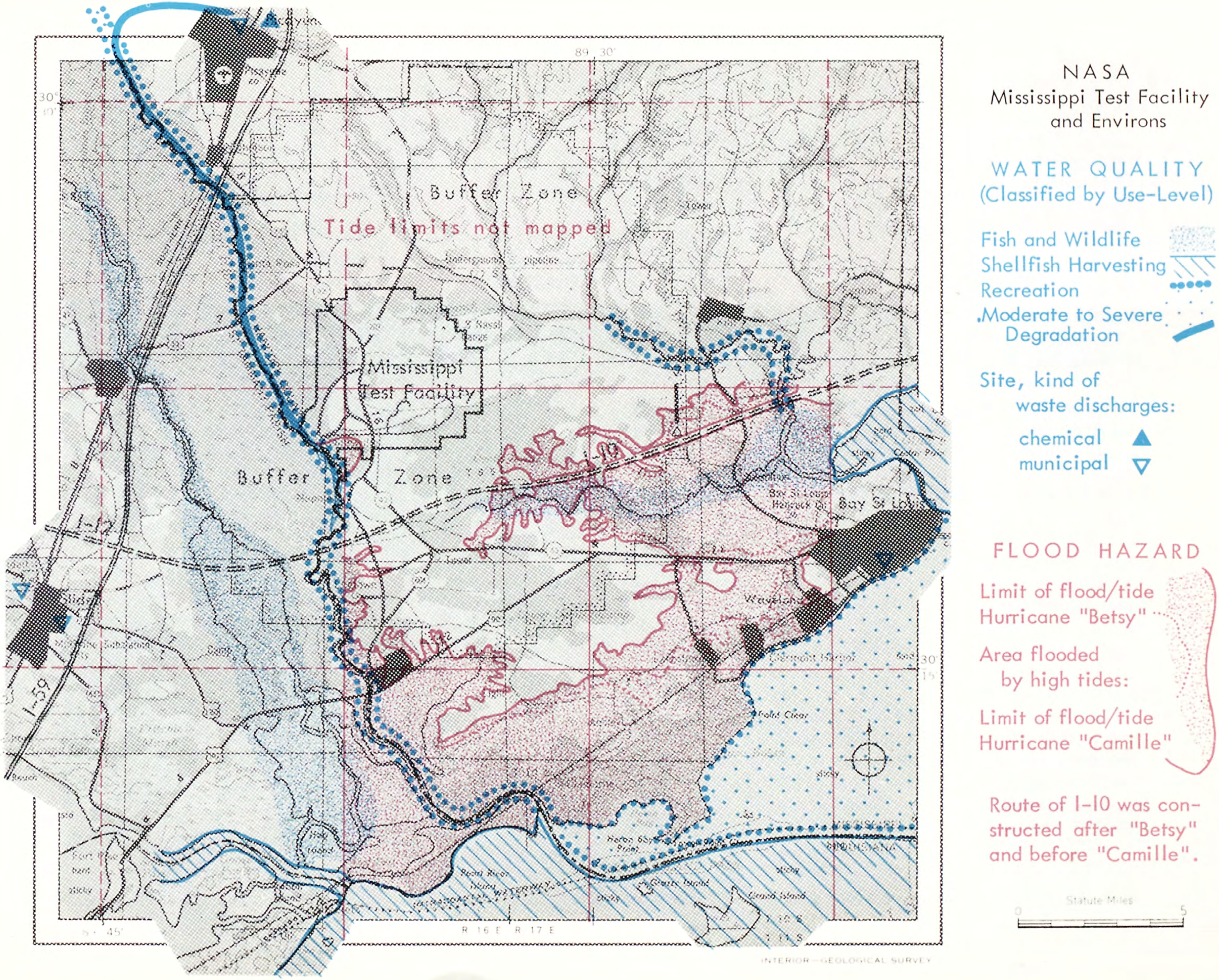
The potential uses of the MTF and vicinity considered in this report appear to fall within two broad categories: 1) uses based on the NASA facility and its equipment and staff; and 2) uses based upon environmental conditions and related to potential development of southern Mississippi and a closely adjacent coastal area in Louisiana.

Both categories are included in the matrix diagram which follows, because the best interests of the nation will be served by combining those categories so that the facilities and technological capability of MTF are put to uses that relate to broader plans for development of the region as a whole. The ratings of the respective potential uses are, however, categorized according to: 1) their utilization of the MTF-Slidell equipment and personnel as part of a larger, regional development program; 2) their dependence primarily upon the MTF-Slidell equipment and personnel; and 3) their suitability for the environmental conditions (physical, economic, and cultural) of the region covered by this study. Each of the headings on the matrix chart is discussed in sequence following the chart.

The principal resources of southwestern Mississippi are:

1) an abundance of land (development space); 2) an abundance of fresh, unpolluted water from wells; 3) Gulf of Mexico and ocean transportation connections; 4) commercial and sport fisheries; 5) modest reserves of petroleum, and possibly natural gas, but at depths which prevent profitable recovery of the products under present conditions; 6) second growth timber for pulpwood and some lumber industry; 7) inland waterways and recreation sites (most of which need development); waterfowl and a variety of animals to attract hunters; 8) a good labor force for construction, service trades, and other functions that do not require highly trained scientists; 9) housing, marketing, and truck gardening adequate to serve modest influxes of people until they develop new or expanded facilities of their own; and 10) a subtropical climate with an average of 278 frost-free days per year (long growing season).

Constraints on the development of southwestern Mississippi include: 1) lack of construction materials (suitable sand and gravel); 2) higher cost of electricity than in adjacent states due to lack of coal, petroleum, or local water power; 3) water and air pollution (at the foot of the Mississippi drainage basin and along the southern margin of continental air masses that circulate urban and industrial wastes to the latitude of the Gulf Coast); 4) health conditions and pests, such as mosquitos, flies, snakes and wild hogs (all related to pollution); 5) hurricane hazards (severe damage limited to a narrow coastal strip); 6) buffer zone of 128,000 acres around MTF limited in use (no residential housing permitted); 7) lack of highly trained scientists and engineers; and 8) limited school facilities.



NASA
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and Environs

Route of I-10 was constructed after "Betsy" and before "Camille".

Climate

The subtropical latitude of southern Mississippi, combined with the marine influence of the Gulf of Mexico, results in a mild, humid climate. Seasonal isotherms on the following map show a temperature range along the coast from 82°F in July (and August) to 52°F in January in the upland area to the northeast. The growing season (frost free period) averages about 278 days per year, with the first killing frosts being associated with polar air mass intrusions to the Gulf Coast early in December.

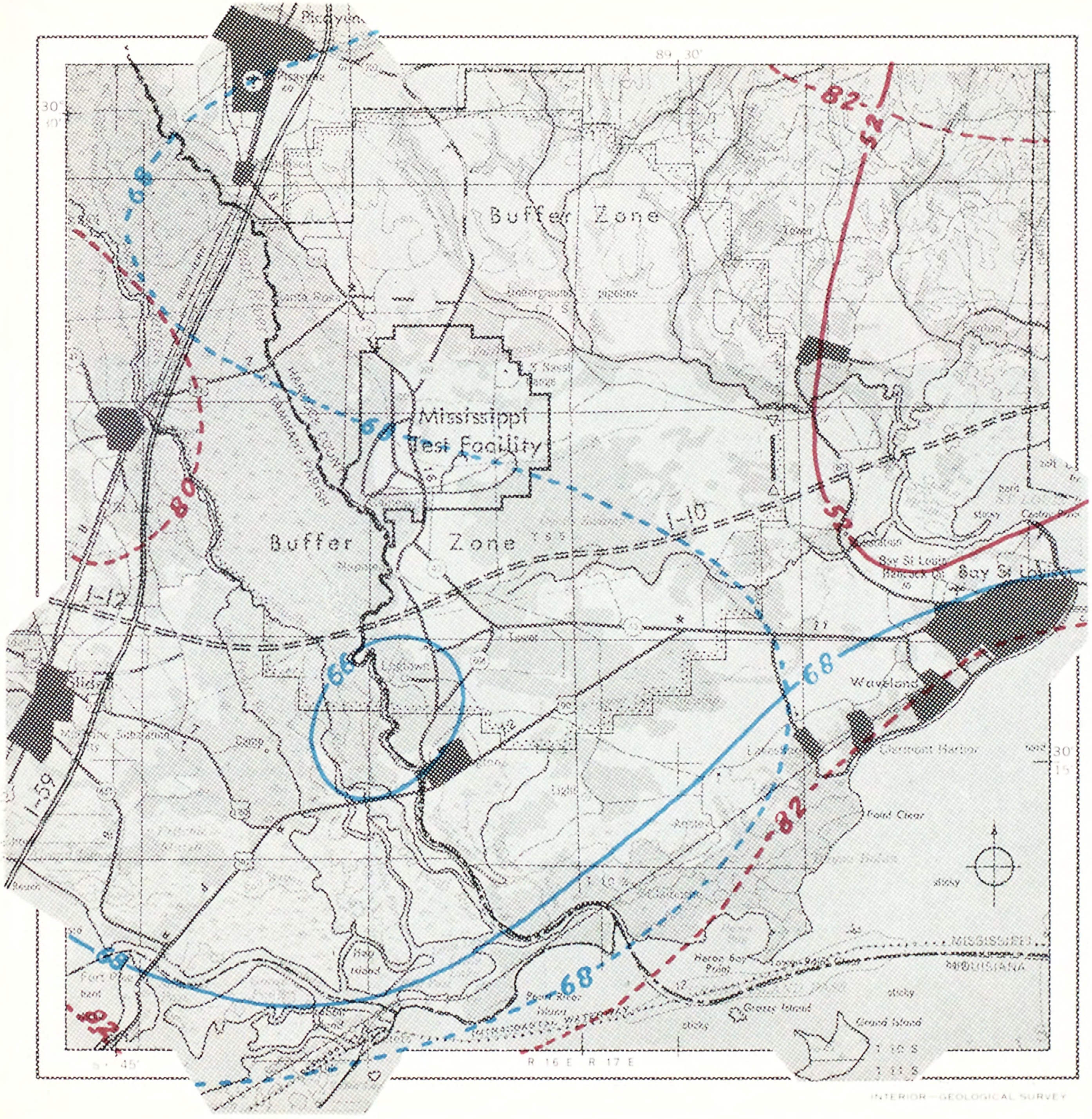
The average annual precipitation recorded by stations in Hancock County is 61.42 inches per year. The isohyet lines on the overlay for the precipitation map show a gradual decrease in the total precipitation from southwest to northeast, with 64 in. near the mouth of the Pearl River and 58 in. in the northeastern uplands. In sharp contrast, the isolines showing the frequency of precipitation, cross the isohyets (showing amounts of precipitation) at nearly right angles. The frequency of precipitation increases gradually from 65 days per year (with 0.10 in. of precipitation or more) in the southeast near Grand Island, to 80 days in the northwest near Picayune. The exception is a small area in the northeastern uplands with 85 rainy days per year. The monthly distribution of precipitation shows a maximum (7.86 in.) in July and a minimum (2.68 in.) in October, thus giving no truly dry season. Snow is almost unknown in Hancock County.

Thunderstorms are frequent and severe, due in the summer to connectional uplift of moist Gulf air as it passes over even warmer land. Like the entire Gulf Coast, southern Mississippi is occasionally subjected to hurricanes, usually in the Autumn. Hurricane Camille, in August 1969, swept in from the Gulf of Mexico, covering a coastal strip from Biloxi to the Pearl River, with a barometric pressure recorded as low as 26 in., and winds up to 200 miles per hour. High tides combined with such wind velocities to bring almost total destruction to the area in the hurricane's path, but the MTF site was far enough from the Gulf and on sufficiently high land to escape flooding, and wind damage was minor. Consequently, the MTF buildings were used for shelter by many of those evacuated from homes as far away as Biloxi.

Hurricane Camille destroyed the bad with the good, and left a desolate coastal strip in southern Mississippi which now offers a real challenge to planners and decision makers.

Ships 350 feet long were beached by tides and winds of Hurricane Camille. They will be cut up for scrap.

Gulf water 15 to 20 ft. deep raced through buildings at 20 to 30 mph, thus weakening structures for further damage by Hurricane Camille winds up to 200 mph. HUD house trailers were rushed to the area to provide temporary rental shelter for hundreds of families.



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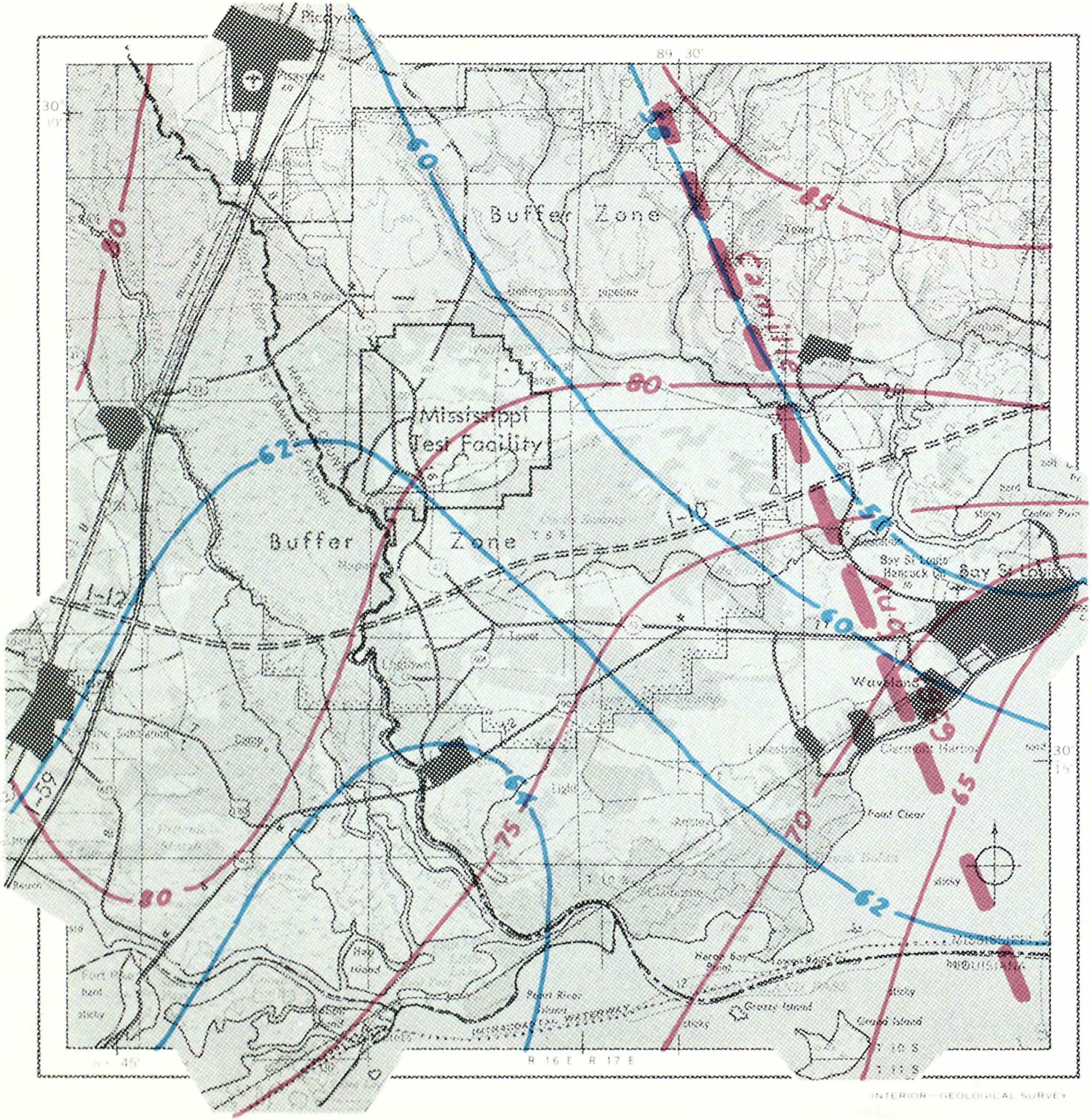
MEAN ANNUAL TEMPERATURE degrees Fahrenheit

January	———
April	———
July	- - - - -
October	- - - - -

Assume higher temperature to south

Statute Miles
0 5



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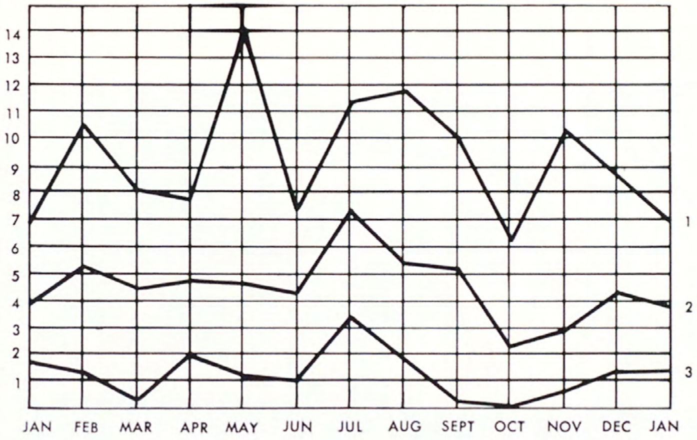
MEAN ANNUAL
PRECIPITATION
total inches

NUMBER OF
DAYS ANNUALLY
WITH .10 INCHES
OR MORE
PRECIPATION

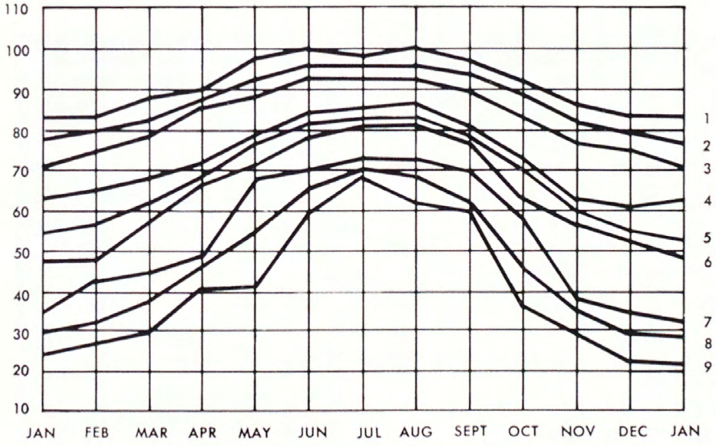
Statute Miles



MONTHLY PRECIPITATION (INCHES)

1 GREATEST MONTHLY
2 MONTHLY MEAN
3 LEAST MONTHLY

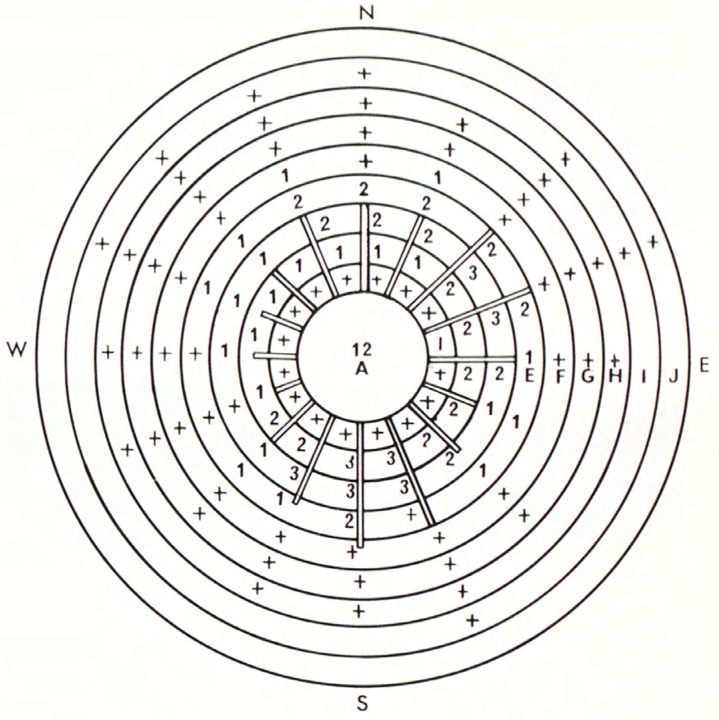
PRECIPITATION CHART



MONTHLY TEMPERATURES (°F)

1 HIGHEST
2 MEAN MONTHLY MAXIMUM
3 LOWEST MONTHLY MAXIMUM
4 HIGHEST MONTHLY AVERAGE
5 MEAN MONTHLY
6 LOWEST MONTHLY AVERAGE
7 HIGHEST MONTHLY MINIMUM
8 MEAN MONTHLY MINIMUM
9 LOWEST

Average Monthly Temperature Chart. (5-year period)



Line denotes percentage of occurrence of winds from direction indicated. Starting from 1st circle, each subsequent circle represents 2 percent.

Numbers indicate percentage of occurrence of winds in each group category. "+" indicates percentage value of less than 0.5 percent.

Group Categories (mph)

A Calm	C 4-7	E 15-18	G 25-31	I 39-46
B 0-3	D 8-12	F 19-24	H 32-38	J iv 47

Annual Wind Rose

Area struck by Hurricane Camille seen from 60,000 ft.

Shopping center damaged by Hurricane Camille.

Land being cleared for a new crop of soybeans within the Mississippi Test Facility buffer zone.

Barges being loaded with pulpwood harvested in the area.

Agriculture and Forestry

The agricultural production of the MTF and its buffer zone is negligible, but Hancock County as a whole produces more livestock than crops. On the other hand, the distribution of farms by size appears to be about even for five categories ranging from 1–10 acres to more than 220 acres. The principal farm products of Hancock Co., according to the 1964 census of agriculture are, in decreasing order of value:

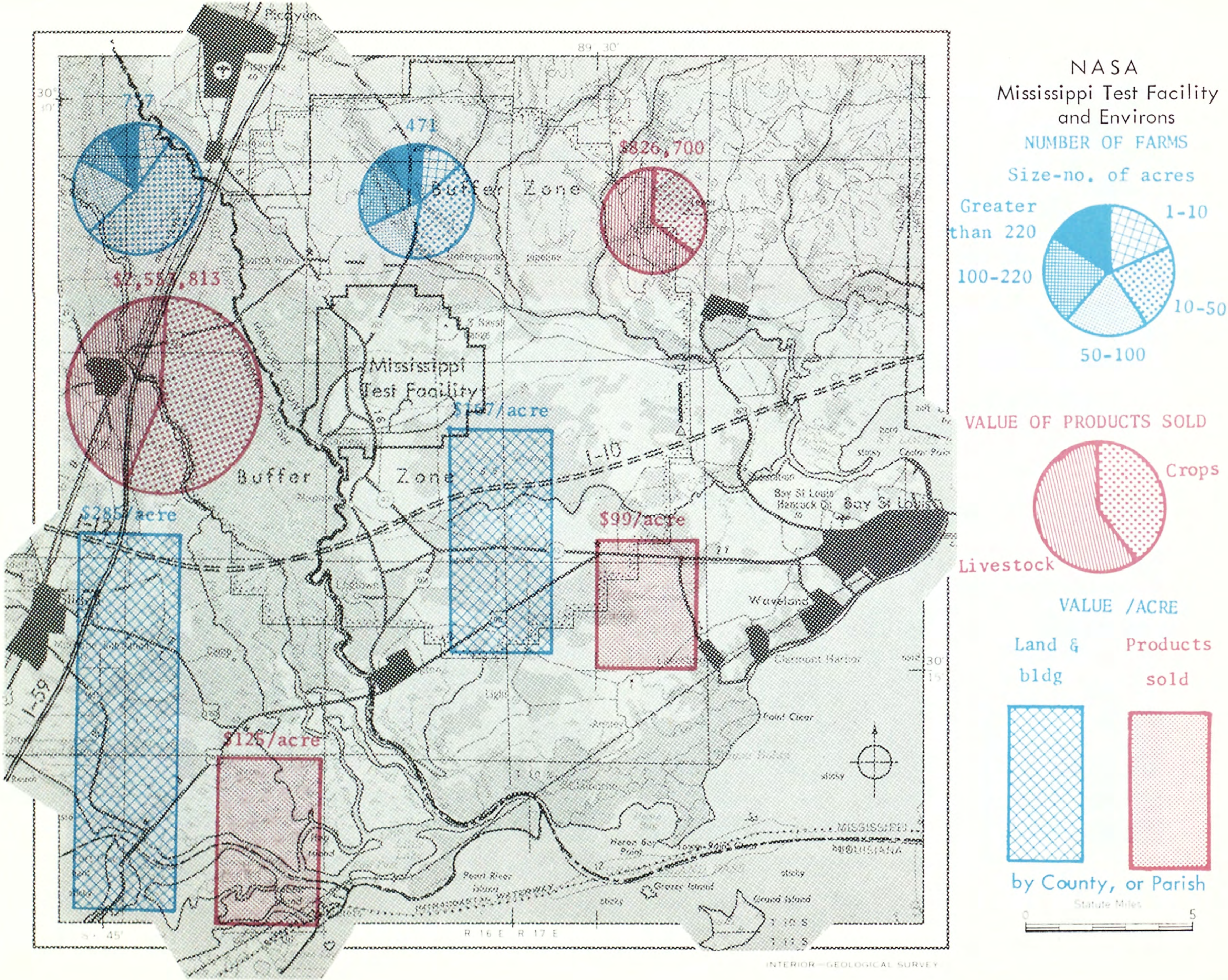
Livestock	$ 587,093
Dairy products	382,652
Fruit & nuts (pecans)	230,642
Field crops (soybeans)	80,527
Poultry & poultry products	64,450
Forest & horticulture (tung oil)	32,380

In general, however, the trend of agriculture in southern Mississippi is toward more production of soybeans and hay for animals and some increase in the production of fruits and truck garden products for local consumption. The soil is too poor to allow intensive cultivation over prolonged periods without expensive fertilization which is soon lost through leaching of the sandy soils in a continuously humid climate.

The forests of southern Mississippi were seriously depleted by cutting, fires, and diseases or pests during the first decade of this century. A strenuous effort is being made to re-establish the forests through the planting of millions of pine seedlings, and better protection against fire, pests, diseases, and premature cutting.

About 80% of the total area of Hancock County, and practically all of the MTF buffer zone, are now in second growth commercial timber, most of it being 5 to 8 inches in diameter, and 20–50 ft. tall. Pulpwood is the principal forest product, with poles and sawlage following in that order. Much of the MTF buffer zone property is owned by three pulpwood shippers: International Paper Co., St. Regis Paper Co., and the Crown Zellerbach Corporation.

The U.S. Forest Experiment Station, in Harrison County, carries out studies in forest genetics, insect and disease control, and fire protection. Some efforts are being made also to grow improved varieties of tung oil trees which will blossom later and avoid killing frosts in the Spring. Forest lands are used also to a large extent for rangelands, and sometimes for mixtures of crops and trees.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NUMBER OF FARMS
Size-no. of acres
Greater than 220
1-10
100-220
10-50
50-100
VALUE OF PRODUCTS SOLD
Crops
Livestock
VALUE /ACRE
Land & bldg
Products sold
by County, or Parish
Statute Miles
0
5
717
471
$826,700
$2,557,813
Buffer Zone
Buffer
Zone
Mississippi
Test Facility
$167/acre
$285/acre
$99/acre
$125/acre
I-10
I-59
Bay St Louis
Waveland
Clermont Harbor
MISSISSIPPI
LOUISIANA
Pearl River
89°30'
30°30'
30°15'
R 16 E
R 17 E
INTERIOR—GEOLOGICAL SURVEY

Fish, Wildlife and Pests

Fresh-water sport fishing, particularly in the relatively unpolluted Jourdan and Wolf Rivers, yields bass, catfish, bluegill, bream, trout, and several other varieties of edible fish. Fish may also be caught in the East Pearl River, Mikes' River and bayous of the swamp area south of U.S. Highway 11, and north of U.S. Highway 90. Some 7½ miles of canals in the Fee area have been stocked with fish, and are temporarily closed until the fish have spawned. Excellent salt and brackish water fishing along the Gulf Coast attracts both residents and tourists for flounder spearing, crabbing, and line fishing for croaker, spot, and some varieties of fish that are important commercially. If pollution of the streams and coastal waters is reduced, sport fisheries as well as commercial fisheries along the Gulf Coast can be improved far beyond their present high yields.

The commercial fisheries constitute a major segment of the present economic base for southern Mississippi. *Fishery Statistics of the United States*, published by the U.S. Department of the Interior, indicate that the Gulf Coast from Pascagoula, Mississippi to Cameron, Louisiana produced one-fifth to one-fourth of this nation's fishery products.

Hurricane Camille caused severe damage to much of the Mississippi Coast in 1969, but virtually all of the damaged facilities are being restored or replaced. Oyster production appears to have received the greatest damage because of siltation of the oyster reefs.

However, statistics for 1968, the year before Camille, showed that the Gulf of Mexico may have produced a larger proportion of the U.S. catch, both in weight and in value, than either the Atlantic or the Pacific.

In 1966, Mississippi's catch was approximately 270 million pounds, worth more than $9 million. For the same period, the total Gulf Coast catch was nearly a billion and a half pounds, worth more than $100 million. Most important in the Mississippi catch were oysters, shrimp, crabs, and menhaden, the last being by far the largest in weight of catch. The quantity of fish caught each year had been increasing steadily since 1880.

Values of marine fishery products for the State of Mississippi in 1962 and 1966 are shown in the following table. (Taken from Fishery Statistics of the U.S. Fish and Wildlife Service.)

Dockside value	1962	1966
Menhaden	$3,404,360	$3,465,000
Shrimp (heads-on)	1,356,690	2,751,000
Oysters	752,456	597,000
Edible finfish	659,929	2,148,000
Unclassified finfish for reduction and animal food	1,306,585	
Crabs	144,456	105,000
TOTALS	$7,624,476	$9,066,000

In regard to future growth potential of Mississippi fisheries, Dr. Gordon Gunter of the Gulf Coast Research Laboratory, Ocean Springs, Miss., believes that an increase may be expected in the production of a) oysters, b) offshore shrimp, c) bottom fishes for pet food, d) pelagic fishes related to the menhaden which can be a source of fish meal, e) sharks caught around the river mouths, and f) Spanish mackerel, bonita, and the large tunas. It is possible to generate an increase in production by about four times between 1990 and 2000. The regular commercial fishery could increase by that much, primarily due to increased technology, better facilities, and increased efficiency. Mariculture, i.e., fish farming, should not be expected to make any large contribution to fishery production for about 20 to 25 years. For mariculture to succeed, it is important that coastal waters not be polluted.

Dr. Gunter further reports that the estuaries and bays of Mississippi are undergoing hyperfertilization because of sewage. It has not been biologically damaging so far, but sewage pollution excludes almost half of the available oysters in some years. There seems to be only one spot—near Moss Point—where industry is at present harming the fishery environment. With regard to heat pollution, the effluents probably could be up to 95°F without causing a great deal of trouble, but with higher temperatures the danger to fisheries environment would increase greatly.

The U.S. Fish and Wildlife Service reported in 1954 that most studies of water pollution have been in relation to shellfish sanitation and that the most intensive investigations have been on damage to oyster resources by petroleum industry wastes. Other forms of pollution include raw and partially treated municipal sewage, other industrial wastes, and sediment loads from soil erosion. In the vicinity of the MTF, industrial wastes have been discharged at Bogalusa and Picayune; Bogalusa with a sewered population of 10,000 has been discharging untreated sewage to the Pearl River about 50 miles above its mouth.

In summary, the commercial fisheries of coastal Mississippi are important nationally, and have a real potential for development, depending on the demand for fish and the extent of pollution control.

Hunting, which is permitted throughout the area, with some restriction in the MTF zone, has reduced to small numbers the native species of deer, fox, mink, otter, and wild turkey, but there is still an abundance of ducks and geese, nutria, opossums, and squirrels, and considerable numbers of dove and quail, muskrats, rabbits, raccoons, skunks, and other small game.

The absence of national and state fish and wildlife refuges, parks, and wilderness areas, constitutes a conspicuous void in an environment so favorable to ducks and geese, wild animals, and preservation of natural conditions. There are some plans for park and outdoor recreation areas along the Gulf Coast and offshore island areas, but the possibilities for establishing game and waterfowl preserves are very inviting.

Alligators are scarce, but a combination of restrictions against killing them, and alligator farms should soon increase their number. Other reptiles such as copperhead, coral, water moccasin, and rattlesnakes (all poisonous) are more abundant than most of the residents *and tourists* feel is desirable, and flies, mosquitoes, and gnats thrive in the warm, humid climate, particularly in the areas of brackish and polluted waters. Weekly spraying from aircraft and street foggers in populated areas renders them reasonably free from such pests, but control of roaches, water beetles, etc. requires persistent effort by the householders.

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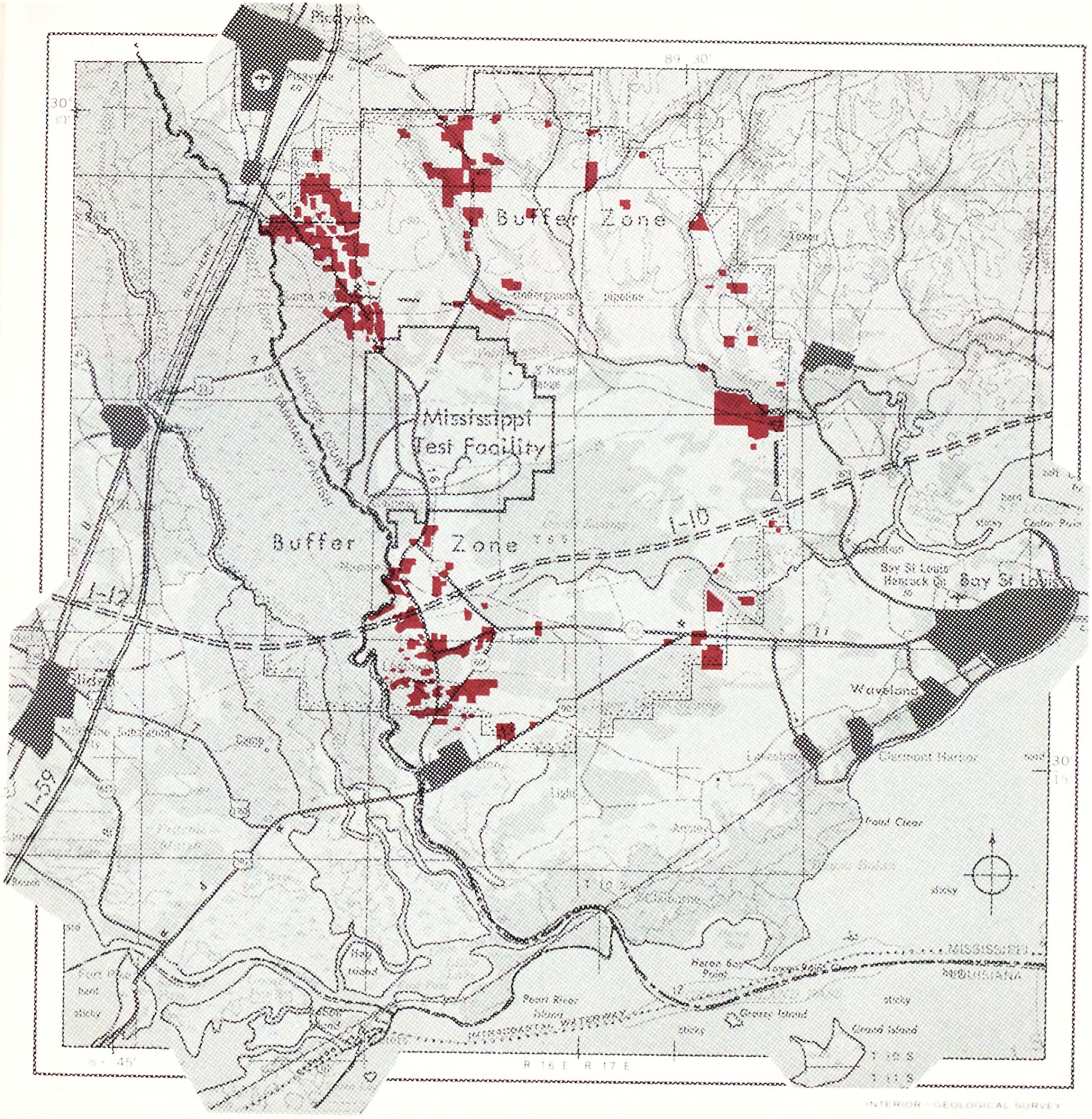


🟥 Private properties within the Buffer Zone

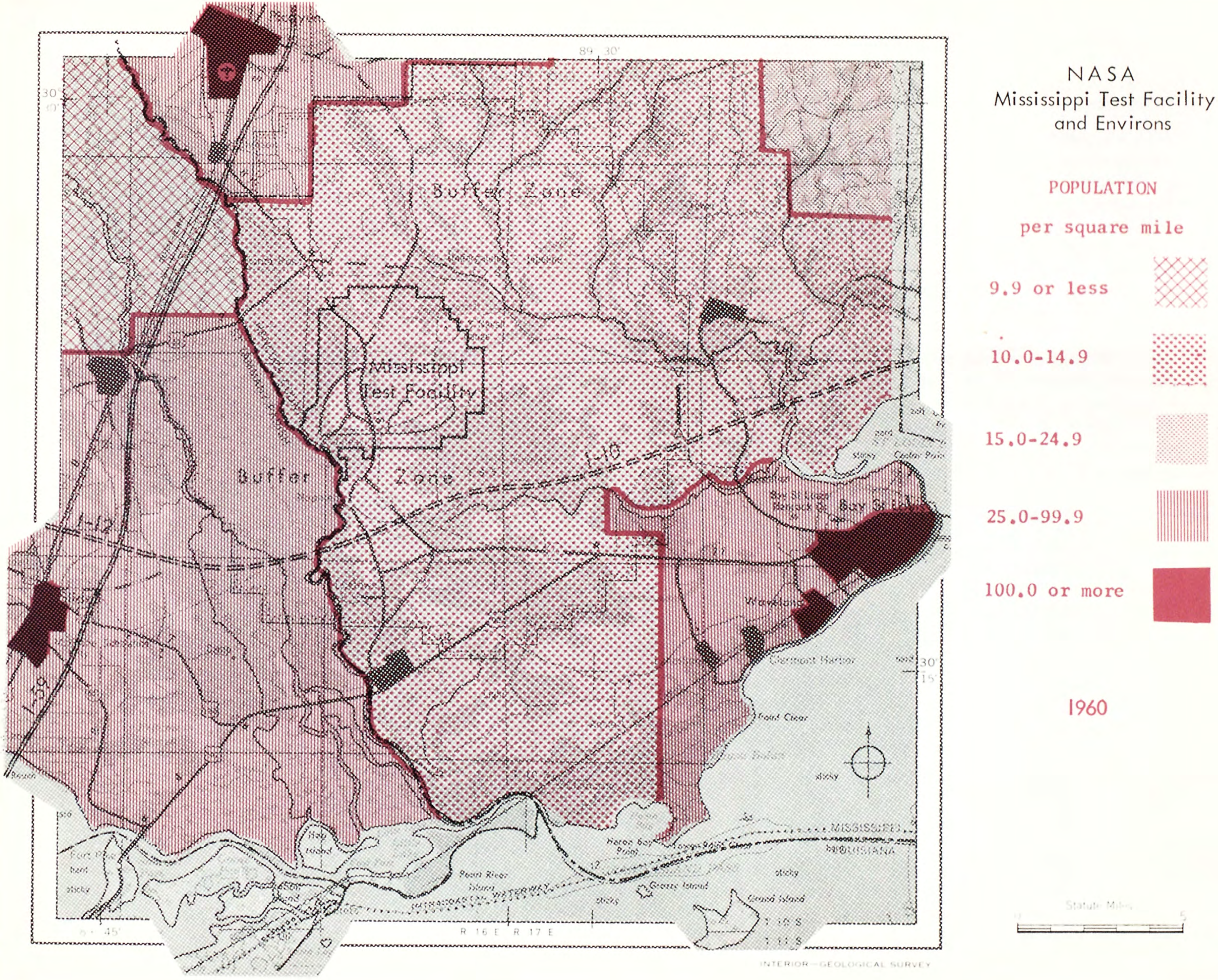
Population

Southern Mississippi was first colonized by a group of French soldiers (1699 A.D.), and remained under French rule until 1763. It was subsequently transferred to Britain, then Spain, and in 1810 to the United States. Groups of French, Spanish, and Anglo-Saxon settlers tended to accumulate in somewhat isolated clusters, with different personalities, architectural types, and occupations, with admixtures of approximately 15% non-white, which provide, even today, differences in community objectives, labor characteristics, and aptitudes.

Large land grants during the periods of French and Spanish control have continued to influence the economy, population distribution, and development of southern Mississippi, but in Hancock County prior to construction of the MTF (1965) the populace was youthful (median age 28), modestly educated (median 8.6 years of schooling), 36% urban, and somewhat resistant to organized labor.

Hancock County has been primarily an agricultural and recreational area, but the impact of MTF and related industries has increased the amount of immigration from surrounding areas. The rate of population increase for 20 years preceding 1960 was 24%, a very low rate in comparison with other parts of the State, but projections of the 1960–1965 growth indicate an increase by 100% in the next decade. An effective balance of locally trained construction workers, mechanics, tradesmen, and blue collar workers, with immigrant scientists, engineers, and scholars, would result in a gradual increase of the education level, personal capability, and economic stability of the area.

The County now contains only two incorporated cities (Bay St. Louis and Waveland), both of which were very severely damaged by Hurricane Camille, and some unincorporated settlements such as Lakeshore, Pearlington and Kiln. On the other hand, Hancock County was originally about four times its present size, and included the surrounding counties of Harrison, Stone, and Pearl River, all of which constitute a hinterland for the Mississippi Test Facility, for the employees of which Picayune, Gulfport, and even Biloxi constitute residential and shopping centers. The establishment of a data management industrial park, a specialized university for environmental studies or oceanography, or the construction of a major airport or seaport facility would provide a better market for truck garden produce, and lead to the development of service industries for a fully integrated urban community.



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Transportation

The combination of road, railroad, coastal and inland waterway, and air transportation facilities constitutes one of the larger plus factors in the development of southern Mississippi.

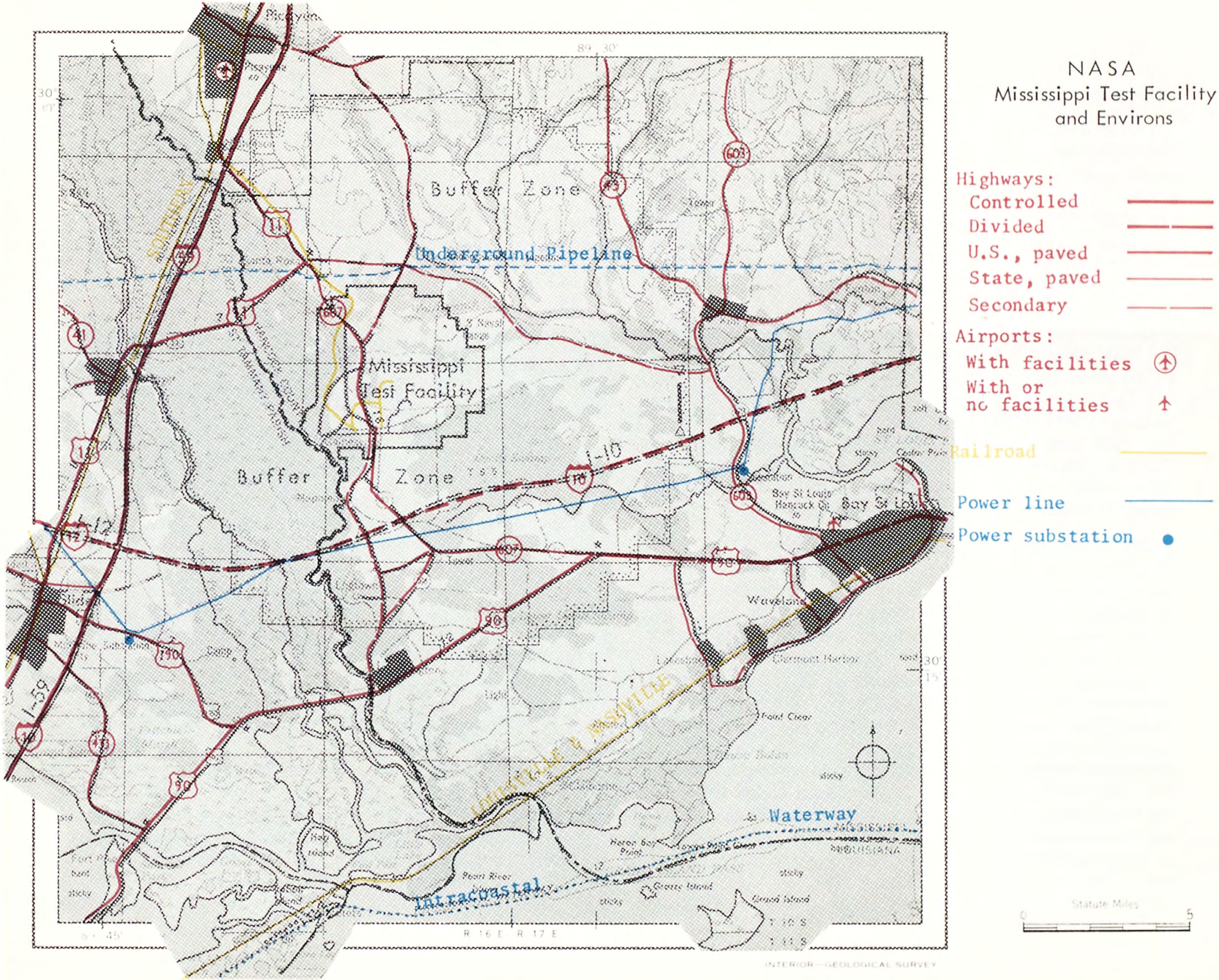
U.S. Highway No. 90, extending from Jacksonville, Florida to Texas, has been the principal east-west route for both truck traffic and tourists, but the Mississippi section was severely damaged by Hurricane Camille. A new and generally parallel Interstate Highway (No. 10) is nearing completion a few miles to the north, where it will be out of range of hurricane destruction. In addition, there are three State Highways (43, 53, and 603) in the area, and MTF is connected by Route 607 to Routes 11 and 59 west of the Pearl River, and to Routes 90 (and 10 when the interchange is completed) to the south.

Hancock County is served by the mainline of the Louisville and Nashville Railroad (L & N) along its south coast, and by the north-south oriented Southern Railroad just west of the Pearl River. A spur line has been built into the MTF site.

The county has a 6,000-foot airstrip in the eastern part of the buffer zone, and plans to construct an airport facility there. The field could be enlarged for commercial use if needed, or converted into a jet training center. Within an hour's drive, are commercial airports at New Orleans and Gulfport.

Aside from coastal shipping at Gulfport, Biloxi, and Pascagoula, there is considerable pleasure craft traffic through the Intracoastal Waterway and canalization of inland waterways could provide inexpensive freight and pleasure craft access to inland locations. The canal to the MTF is 15 feet deep and 150 feet wide at the bottom and has a single lock between the Facility and the Gulf.

New Interstate 10 of the Federal Interstate System, being constructed through the southern easement buffer zone of the Mississippi Test Facility.



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Outdoor Recreation

The Mississippi Test Facility is in an area where existing recreational facilities are oriented principally toward beach and salt water, and where park and recreational acreage is generally low. Major recreational opportunities are afforded, however, by the Mississippi Coast Parkway and sand beaches, Magnolia State Park, Flint Creek Reservoir, DeSoto National Forest, Red Creek and Wolf River wildlife management areas, the Pearl and Pascagoula Rivers, and offshore islands, particularly Horn, Petit Bois, and Ship. Extensive facilities have also been developed within the MTF area by its recreation association. One of these is an old plantation, now called the Galabank-on-the-Jourdan, and the other is the former Gainesville community site. There is critical need for outdoor recreational facilities that have been almost completely destroyed along the Gulf Coast by Hurricane Camille. New and expanded outdoor recreational areas will be needed if there is any significant urban, industrial, or commercial development in this area.

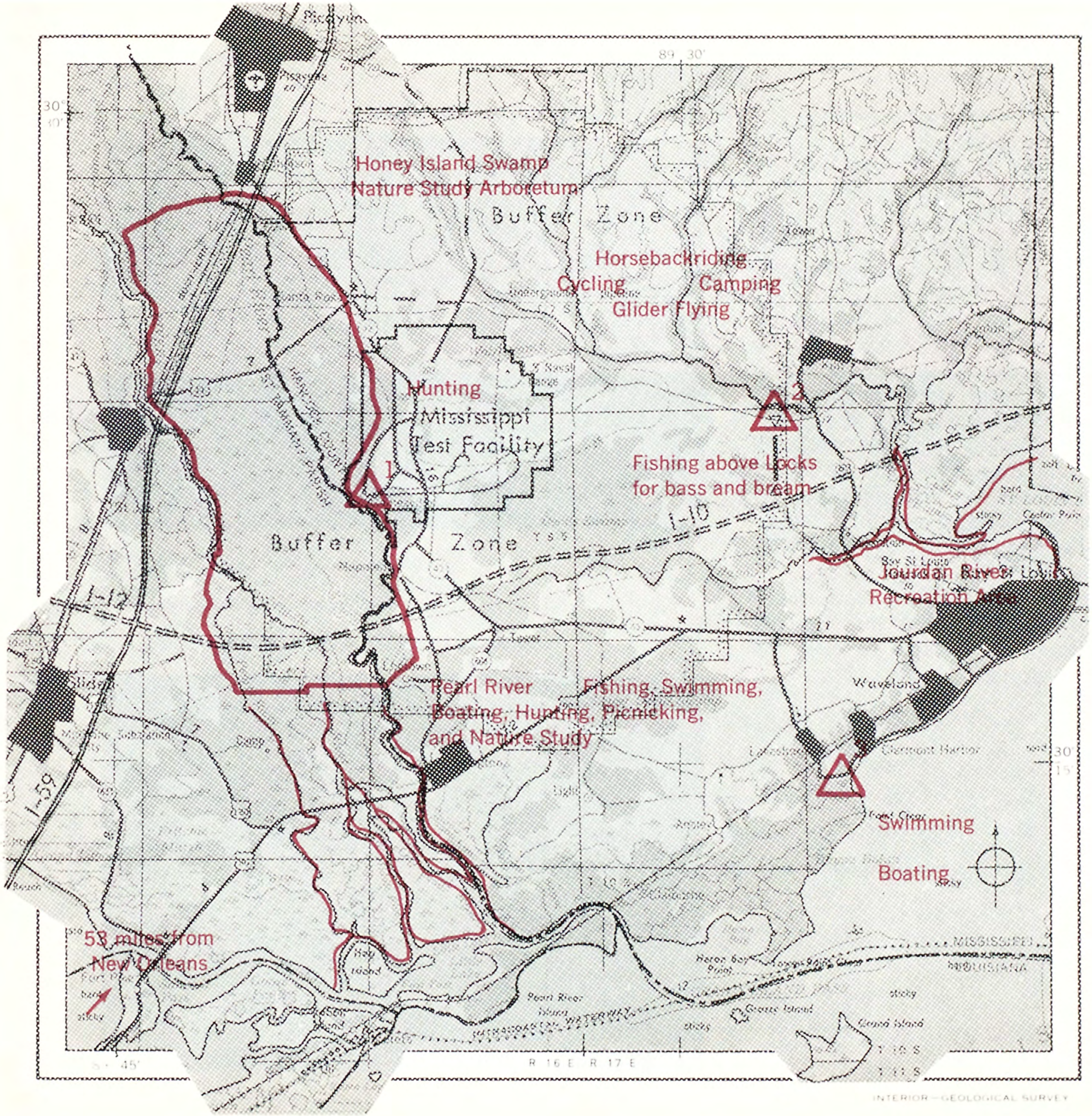
The Mississippi Coast Parkway and sand beach is a prime example of a resource which offers higher potential than it is now providing. This beach and saltwater body is the closest, and has the most direct access, to the heartland of the Nation. The Gulf Coast beach is the only major saltwater beach between Galveston, Texas, and the Alabama-Florida line, and affords opportunities for saltwater based activities. The major limitation for future development is the pollution factor of water in the Mississippi Sound. Due to the shallowness of the water, much of the pollution and murkiness will never completely clear, but man-made pollution, primarily in the form of raw effluent and storm sewers which empty directly onto the beach and into the water, must be corrected. Another limitation is that encroachment on the waterfront by commercial interests is taking more beach acreage out of public use each year.

The DeSoto National Forest offers a prime opportunity for future development to aid in meeting the demand for outdoor recreation as most of the existing development consists of small scattered sites which are meeting only a small portion of the total need for outdoor recreation. Two developments within the forest, however, are unique in Mississippi. The southern terminal point of the Black Creek Float Stream is in this district, and the only true hiking trail within the State is also found here.

Beauvoir, the home of Jefferson Davis, had considerably more potential for historical interpretation and recreational uses than it has been providing. The original buildings were damaged by Hurricane Camille, but could be restored. The major limitation for development is the small amount of acreage within the complex.

There are two projects, one of which is programmed and the other proposed, which offer outstanding potential for outdoor recreation in the Gulf Coast District. These two projects will not only aid the district residents, but will also help meet the state and interstate demand for outdoor recreation. The U.S. Army Corps of Engineers has a reservoir project programmed on the Escatawpa River. When this project is completed, it will offer 37,600 total acres of usable recreation lands, of which 14,000 acres will be in surface water and 23,600 acres in land. This reservoir will be the largest freshwater body in the southern half of Mississippi, and will be located only 20 miles from the major growth centers of Pascagoula and the Mississippi Gulf Coast. Convenient access will be provided off Interstate Highway 10 and U.S. Highway 90. This early action project has been authorized for development pending the availability of funds.

The major proposed project in the Gulf Coast District is one of national significance rather than only state and district significance. This project, Gulf Islands National Seashore, would include the Mississippi offshore islands of Cat,



NASA
Mississippi Test Facility and Environs

RECREATION

Historical, Recreational and Natural Area. Site of Old Gainesville. △ 1

Galabank-on-the-Jourdan, Recreational and Natural Area △ 2

Jackson Ridge Recreational Project △ 3

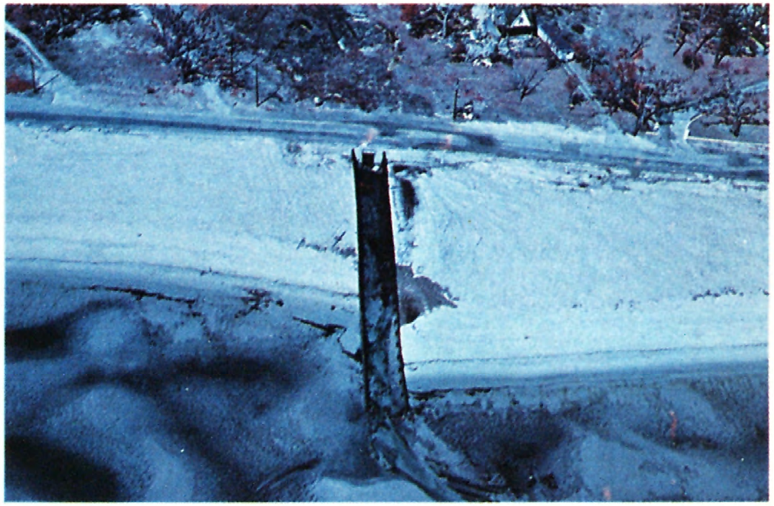
Statute Miles

Horn, Petit Bois, and Ship. These islands are among the few remaining islands which are suitable for public recreation. The creation of the national seashore would provide access to the clean water and white sand beaches on the islands which is presently limited to a few individuals with large boats. This project is perhaps the most significant project for outdoor recreation in the State of Mississippi, and the potential is favorable.

Jackson Ridge Recreational Park on the Mississippi Sound in Hancock County has been programmed by the State Park System and the Hancock County Board of Supervisors, and will provide a much-needed park along the Gulf Coast. This project consists of the acquisition of approximately 62 acres located adjacent to Waveland, Hancock County, Mississippi. The total Bureau of Outdoor Recreation assistance for the first phase of the development is $73,000. It is planned to develop the land area into a public recreation area to include camping, swimming, hiking, fishing, and other outdoor activities.

Because of the economic hardship resulting from Hurricane Camille, there is serious doubt that the Hancock County Board of Supervisors will be able to raise the matching funds needed for the project to begin.

Beach Pollution (Helicopter Views)



Pass Christian
Color Infrared

Bay St. Louis
Color Ektachrome

177. Black Creek Scenic Float Stream

189. DeSoto National Forest

198. Wolf River Wildlife Management Area

199. Flint Creek Reservoir

200. Escatawpa River Reservoir (programmed)

201. Airey Lake Recreation Area

202. Big Biloxi River Recreation Area

203. Mississippi Coast Sand Beach

204. Tuxachanie Hiking Trail

205. Bluff Creek Water Park (programmed)

206. Magnolia State Park

207. Jackson Ridge Recreational Park (programmed)

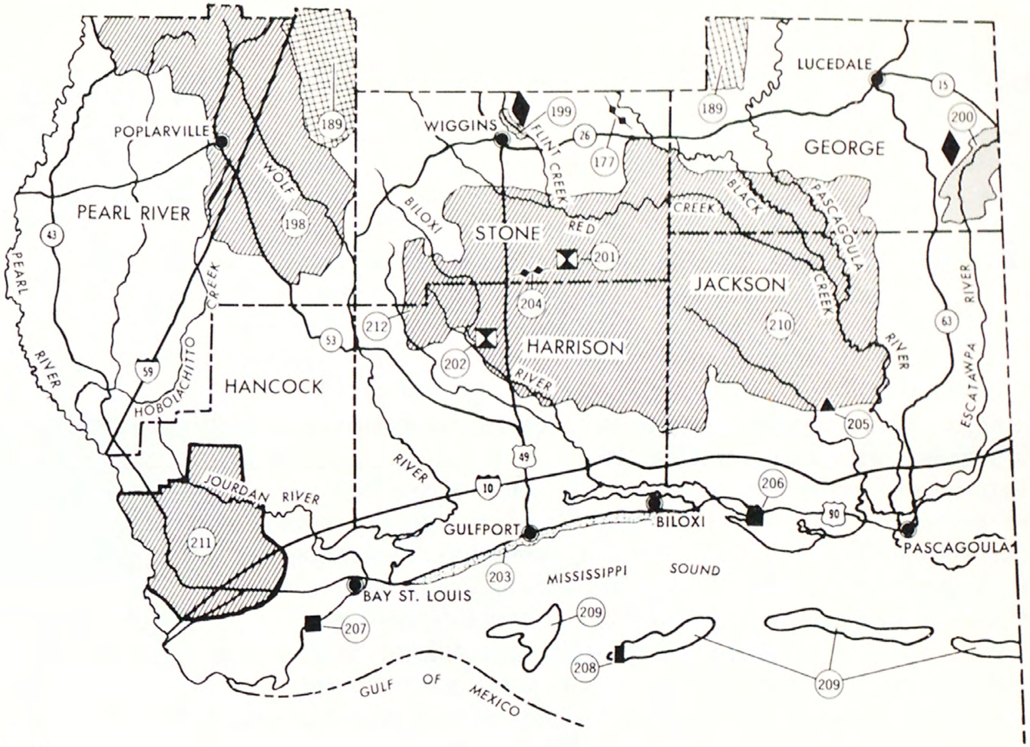
208. Fort Massachusetts

209. Gulf Islands National Seashore (proposed)

210. Red Creek Wildlife Management Area

211. Jourdan River (NASA) Wildlife Management Area (proposed)

212. Stone-Harrison Primitive Wildlife Management Area (proposed)



■ STATE PARK

▮ ARCHEOLOGICAL OR HISTORICAL SITE

MISSISSIPPI COAST SAND BEACH

-◆◆- TRAIL OR FLOAT TRIP

▦ NATIONAL FOREST

▨ STATE WILDLIFE MANAGEMENT AREA

INTERSTATE SYSTEM

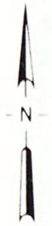
U.S. HIGHWAY

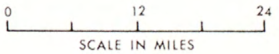
○ STATE HIGHWAY

◆ PUBLIC LAKE OR RESERVOIR

⧗ NATIONAL FOREST RECREATION AREA

░ RESERVOIR RECREATION AREA





RECREATION AREAS Present and Potential

MISSISSIPPI RESEARCH AND DEVELOPMENT CENTER

Esthetic Qualities of the Area

Scenery, both natural and cultural, is one of the more important resources of southern Mississippi. The forests, bayous, beaches, and fauna provide a residential environment that holds the affection of local inhabitants and attracts tourist interest. The old homes, plantations, waterways lined with moss-covered trees, and a few historical sites add much to the esthetic qualities of the area. The rustic appearance of local parks, picnic grounds, and tourist campgrounds fits well into the recreational activities of fishing, hunting, swimming (mostly in pools), and touring, whether by car, boat, or even hiking.

Hurricane Camille has done much to destroy coastal scenery between Biloxi and the Pearl River mouth, but the natural conditions are favorable for rebuilding that area into a far more scenic one in the future. Restoration of old homes and landmarks, coupled with creation of new parks, drives, waterways, and architecturally suitable tourist accommodations could lead to a substantial improvement in the local economy as well as an increasingly pleasant residential environment in southern Mississippi.

Bay Saint Louis, the U.S. 90 causeway, and coastal urban area of Pass Christian.

The Pearl River, the western boundary of the Mississippi Test Facility, flows through low marsh wildlands.

Beauvoir—Last home of the Confederate States President Jefferson Davis, located along the Gulf Coast at Biloxi, prior to damage caused by Hurricane Camille.

Saturn down the river.

LIST OF MTF PHOTOGRAPHY

1. Gemini and Apollo space photos—S65–64050
   AS9–23–3478
   AS7–8–1917
   AS7–11–2036
2. Partially rectified, 13-times, black and white enlargement of Apollo, AS7–8–1917.
3. 9″ x 9″ Color infrared prints and transparencies, February 1970, Scales 1:120,000 and 1:60,000.
4. Color infrared uncontrolled mosiac from February 1970 photography, Scale 1:120,000.
5. 9″ x 9″ Black and white prints and transparencies, February 1970, Scale 1:120,000.
6. 70mm Color transparencies, February 1970, Scales 1:120,000 and 1:60,000.
7. Department of Defense 9″ x 18″, black and white prints, September 1969, Scale 1:23,300.
8. Photo index sheet for September 1969, Dept. of Agriculture photography with 1:500 enlargement of MTF.
9. 9″ x 9″ Black and white prints, 1952, Scale 1:70,000
10. Black and white semi-controlled mosaic, 1952, Scale 1:125,000.
11. 9″ x 9″ Color Ektachrome prints and transparencies, February 1967, Scales 1:4,000 and 1:8,000.
12. 9″ x 9″ Color infrared prints and transparencies, February 1967, Scales 1:4,000 and 1:8,000.
13. Six rolls of 35 mm color and color infrared ground truth photography (Some taken from helicopter over MTF).
14. Approximately 70 NASA, 8″ x 10″, black and white and color photos of MTF (includes aerial obliques).

ANNOTATED BIBLIOGRAPHY

Agriculture, U.S. Dept. of Soil Survey of Hancock County, Mississippi. Lounsbury, Clarence, E. B. Deeter, S. R. Bacon, and J. T. Miller. Series 1930, no. 4, 31 p., illus., tables, map.

This report, issued in 1930, describes the Hancock County area, climate, agriculture and soil types. A folded map depicts soil types, drainage, dams, state, county, and community boundaries, roads, trails, railroads, and cemeteries.

Autometric Operation, Raytheon Co., Report No. OEPR–3311, prepared under Contract 14–08–0001–11505 with the USGS Geographic Applications Program and NASA Earth Resources Program for Office of Emergency Preparedness. Huffman, Edward T., Charles A. Bay and Richard Pascucci. December 1968, 52 p., color and black and white photographs, tables.

The target sites for this study were: NASA Michoud Assembly Facility, Michoud, La.; NASA Computer Operations Office, Slidell, La.; NASA Mississippi Test Facility, Bay Saint Louis, Miss.; and the residential areas, rail yards, plus roof materials discrimination, water pollution and analysis, thermal analysis, of petroleum tanks of New Orleans, La.; and Anchorage, Alaska. Black and white, color, color infrared, multiband, and thermal infrared imagery was studied and analyzed to: 1) determine the level of detail interpretable from each type of sensor record; 2) examine industrial, urban and other culture activities and installations in southern Mississippi, New Orleans, Louisiana, and Anchorage, Alaska, and 3) determine the applicability of each type of sensor record to functional and structural analysis and to the post-emergency analysis of hurricane and earthquake.

Camille 1969. (Photo essay of Hurricane Camille destruction at Pass Christian, Biloxi, Gulfport, Long Beach, and Bay Saint Louis/Waveland, Miss.) Art by Charles Swan, 1 map, illus., 27 p.

Excellent color photographs show strikingly the extensive destruction caused by Hurricane Camille in August 1969. Included is a list of both personal and commercial losses, and a map showing the path of the hurricane. No text.

General Electric Company, Mississippi Test Support Department. Data Systems at the Mississippi Test Facility. (NASA Mississippi Test Facility, Bay Saint Louis, Miss.) GE–MTSD–B–015. 103 p., spiral bound. (No date).

This document records in detail, through graphs, tables, and photographs, the multitude of applied and potential uses of data systems at the NASA Mississippi Test Facility.

General Electric Company, TEMPO Center for Advanced Studies, Santa Barbara, Calif. December 1969. 69TMP–95. The Future Use of NASA's Mississippi Test Facility: A Preliminary Study of Alternatives for Economic Growth. i-viii, 90 p., illus., graphs, bibl.

This is a very effective study of various uses to which NASA's Mississippi Test Facility might be put following Saturn booster test phasedown. It describes many potential alternative uses designed to alleviate the effects of MTF employment downturns and overall economic loss to the area resulting from Hurricane Camille, as well as to stimulate long-range economic growth in the Mississippi Gulf Coast Region. One set of alternatives is based on industrialization. The report analyzes various combinations of the alternatives and arrives at some tentative conclusions on their feasibility and desirability.

Gulf Publishing Company, Inc., Gulfport, Miss. (The Daily Herald). The Story of Camille. (1969), 51 p., photographs, maps.

Story told through short texts, newspaper editorials, and black and white photographs of damage caused by August 17, 1969 Hurricane Camille, and the determination of residents of the Gulf Coast of Mississippi to restore their homes and businesses. Includes an area listing of loss of lives, and damaged or destroyed homes and businesses.

Hancock County (Miss.) Development Organization, co-sponsored by the Hancock County Chamber of Commerce, Bay Saint Louis, Miss. Hancock County Development Plan (OEDP). 1967, 178 p., maps, graphs, and tables.

This very useful reference document contains a comprehensive economic development program for Hancock County, Mississippi. Location, history, topography, climate, human and natural resources, and community facilities are treated rather fully, and transportation networks, telecommunication lines, power sources and rates, and recreational areas are described and mapped. Problems, development goals, and plans for Hancock County are also discussed and mapped.

Hancock County (Miss.) Development Organization, Bay St. Louis, Miss. Hancock County Overall Economic Development Plan—1969 Hurricane Supplement. 1969, 32 p., spiral bound.

This document details losses and damages suffered by Hancock County, Miss. from Hurricane Camille in August 1969, and concludes with suggested strategy and means for redevelopment of this area. This is a supplement to the Hancock County Development Plan issued in 1967 which was co-sponsored by the Hancock County Chamber of Commerce.

Meta Systems, Inc. (843 Mass. Ave., Cambridge, Mass. 02139). Mississippi Gulf Coast: Comprehensive Development after Camille. Prepared under the direction of Robert P. Burden for the Governor's Emergency Council (Mississippi). To be completed in March 1970.

Analysis of resources and relation to strategies for economic development after Camille, including studies of physical environment, human resources, housing, education, transportation, marine resources, and industrial development. Special attention is given to the relation to diversification and the co-location program at MTF.

Mississippi Monitor Publications, Bay St. Louis, Miss. Coast Area Mississippi Monitor. Editor: Wayne Ducomb. 1969, 9th ed., 79 p., illus., maps.

Thirty-six short articles, some of which include small area maps and color or black and white photographs, detailing the historical, cultural, and commercial background and enterprises of the Gulf Coast of Mississippi. Areas covered include: Counties of George, Harrison, Hancock, Jackson and Pearl River; the towns of Bay St. Louis, Lucedale, Ocean Springs, Pascagoula, Pass Christian, Picayune, Poplarville, and Waveland, plus coastal port facilities and the Magnolia State Park, Mississippi.

National Aeronautics and Space Administration. Field Installations. January 1970. (42 pages), appendix.

This publication contains the results, in abbreviated format, of a survey conducted in 1969 by the National Science Foundation for the Federal Council for Science and Technology of 42 NASA Field Installations. Each installation, including the Mississippi Test Facility, is outlined on a two-page form designed for this survey and information included is as follows: installation location, funding in dollars, number of personnel, brief resumé of major functions and activities, resumé of major facilities, and comment (by installation staff) and publications concerning the installation.

National Aeronautics and Space Administration. George C. Marshall Space Flight Center—Mississippi Test Facility. Component Test Facility Capabilities. March 1969, i-v, 52 p., illus., graphs, spiral bound. (Prepared by General Electric Co., Mississippi Test Support Department, Bay St. Louis, Miss. GE–MTSD–B–013.)

This document describes the multi-faceted capabilities of the laboratory areas within the NASA Mississippi Component Test Facility. Equipment, physical facilities and capabilities of the Test Facility are extensively illustrated with photographs and graphs.

National Aeronautics and Space Administration. George C. Marshall Space Flight Center. Master Plan, Mississippi Test Facility. 1968, v. 3, 75 p., illus., tables, maps, appendix, spiral bound.

This document is in atlas format (17 x 22 in.) with maps in color, at 2,000 ft. per inch, showing the location, land use, transportation networks, telecommunications, drainage, soils, and other environmental conditions. Larger scale maps show the buildings, sewage systems, and plans for further development. Also included are extensive tables of buildings, equipment, functions, etc., of the "Fee Area," and numerous photographs pertaining to the NASA Mississippi Test Facility, its location, existing buildings, equipment, mission and capabilities, community relations, land use, and general development. (Vol. 1—Huntsville; Vol. 2—Michoud; and Vol. 4—various locations.)

National Aeronautics and Space Administration. Mississippi Test Facility, Bay St. Louis, Miss. 34 p., illus., tables, spiral bound.

A description of the physical and equipment facilities located at NASA's Mississippi Test Facility and their value for potential future uses.

National Aeronautics and Space Administration. Mississippi Test Facility. Computer Center Capability. Photographs, tables, attachments, spiral bound.

This document describes and evaluates for potential future uses the equipment and physical facilities at the NASA Mississippi Test Facility, Slidell Computer Center. Attachments A, B, and C are graphic descriptions of the management functions, equipment and hardware specifications.

National Aeronautics and Space Administration. NASA Mississippi Test Facility—Electronic, Instrumentation, and Materials Laboratory. i, 29 p., illus., tables.

This document lists and describes the technical facilities and equipment available at the Electronics, Instrumentation and Materials Laboratory at the NASA Mississippi Test Facility. Included are descriptions of equipment and physical facilities of the four divisions of the Laboratory—Materials Analysis, Standards and Calibration, Electronic Services, and Photography.

National Aeronautics and Space Administration. Public Affairs Office. Welcome to Mississippi Test Facility, Bay Saint Louis, Miss.

A collection of pamphlets and brochures which describe the physical surroundings, the origin and mission of the NASA Mississippi Test Facility.

U.S. Army, Corps of Engineers. Mobile District. Land Management Plan. NASA Marshall Space Flight Center, Mississippi Test Facility. 1967, 2 vols., maps, illus., graphs.

This report outlines a land management plan which was developed with a view toward obtaining the maximum utilization of the Mississippi Test Facility lands and equipment which are no longer required by NASA for its operations. The document primarily considers the large integrated tract of land called the "fee area" of MTF and the interim management of numerous relatively small parcels of land also acquired in fee throughout the surrounding area defined as the "buffer zone." Volume 1 of the report consists of 12 pages of text and 2 maps. Volume 2 consists of exhibits, text, and annexes covering soil classification and capabilities, economic data, and plans for recreation, wildlife management, forest management, and forest fire control, plus control and potential uses of the buffer zone.

U.S. Geological Survey. Geological Survey Water-Supply Paper 1839-H. Development of Ground-Water Supplies at Mississippi Test Facility, Hancock County, Mississippi. Newcome, Roy Jr., 1967, 28 p., refs., graphs, tables, map.

This report, which was prepared in cooperation with NASA, describes ground-water exploration, testing, and development at the NASA Mississippi Test Facility.

U.S. Geological Survey, Water Resources Division. (NASA) Mississippi Test Facility Administration Reports, October 15, 1965–July 15, 1968. (Unpublished, typewritten, multilithed and xeroxed reports, including graphs and tables.)

These are office file copies of reports on the ground-water project concerning water needs and resources conducted at the NASA Mississippi Test Facility site, October 15, 1965 to July 15, 1968. Included are copies of pertinent correspondence, graphs, and tables.

U.S. Geological Survey, Water Resources Division, *and* Dept. of the Army, Corps of Engineers, Mobile District. Geohydrologic Summary of the Pearl River Basin, (Miss.). Lang, Joseph W., 1967, 44 p., illus., maps, graphs. (USGS Open File Report).

Fresh water in abundance is available in the watershed of 8,760 square miles in the Pearl River Basin of Mississippi. Because of water availability at shallow depths, most of the deeper aquifers have not been developed anywhere in the basin, but the water in nearly all the aquifers is of good to excellent quality, of a soft sodium bicarbonate type, and requires little or no treatment for most uses. Ground-water levels, except in the higher altitudes, are within 50 to 60 feet of the surface, and flowing wells are common in the valleys and on the coastal Pine Meadows. Wells with pumping rates of 500 to 1,000 gallons per minute are common throughout the Pearl River Basin, and some deep wells flow as much as 3,500 gallons per minute in the coastal lowland areas. Problems of saline water encroachment are inherent in the lower coastal reach, and pollution is a problem in oil fields and in reaches of some streams below sewage and other waste disposal points.

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