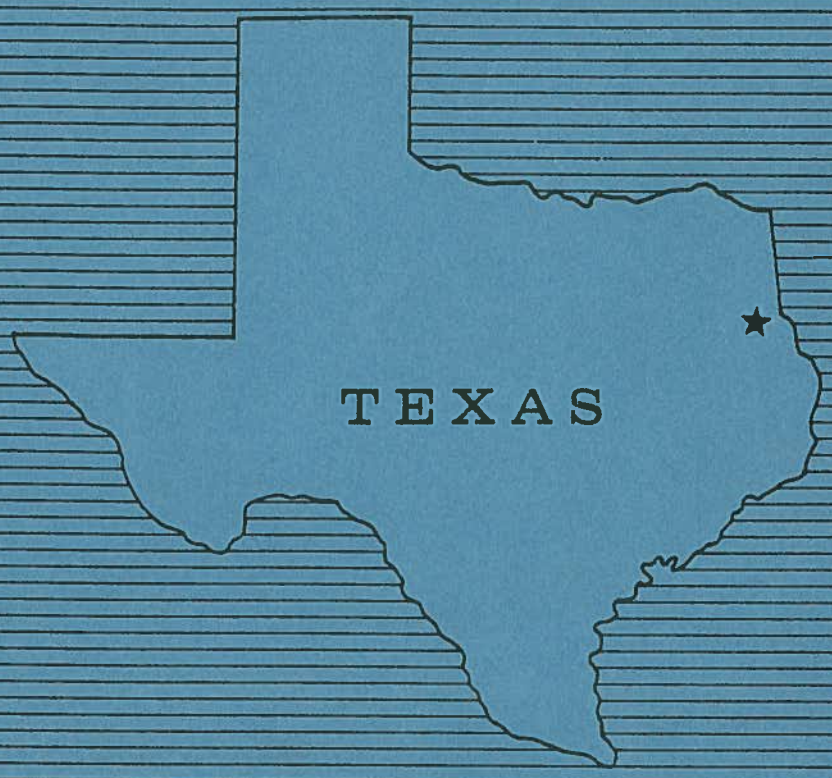
FINAL ENVIRONMENTAL IMPACT STATEMENT

ATTOYAC BAYOU WATERSHED

NACOGDOCHES, RUSK, SHELBY, AND SAN AUGUSTINE COUNTIES, TEXAS



Attoyac Bayou Watershed
Nacogdoches, Rusk, Shelby, and San Augustine Counties, Texas

FINAL ENVIRONMENTAL IMPACT STATEMENT

Sponsoring Local Organizations

Attoyac Bayou Watershed Authority
Route 2, Center, Texas 75935

Nacogdoches County Commissioners Court
Nacogdoches, Texas 75961

Rusk County Commissioners Court
Henderson, Texas 75652

Shelby County Commissioners Court
Center, Texas 75935

Nacogdoches Soil and Water Conservation District
315 N. University Drive, Nacogdoches, Texas 75961

Rusk Soil and Water Conservation District
Route 7, Box 155, Henderson, Texas 75652

Shelby Soil and Water Conservation District
Route 3, Box 232, Timpson, Texas 75975

Piney Woods Soil and Water Conservation District
Route 3, Box 17A, San Augustine, Texas 75972

October 1980

Prepared by:

United States Department of Agriculture
Soil Conservation Service
Temple, Texas 76501

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PREFACE

ATTOYAC BAYOU WATERSHED

Land treatment measures and 12 floodwater retarding structures have been installed in the Attoyac Bayou watershed in accordance with the project plans approved July 14, 1965, under authority of Public Law 566, 83rd Congress, 68 Stat. 666, as amended.

The Draft Environmental Impact Statement circulated for review in February 1980, covered the action of installing remaining planned project measures consisting of one multiple-purpose structure (No.23) and eight floodwater retarding structures. The Final Environmental Impact Statement reflects the action by the project sponsors to install the planned multiple-purpose structure (No. 23) and one floodwater retarding structure (No. 22) and to delete all of the other remaining planned floodwater retarding structures which have not been installed. This is in accordance with actions taken by two project sponsors, Shelby County and Rusk County, to stop any further actions in obtaining any additional landrights within their respective counties for installation of remaining measures and the decision by Nacogdoches County to obtain the landrights required for installation of the two remaining structures within their area of jurisdiction. These two structures are located in the Nacogdoches County on Naconiche Creek subwatershed portion of the Attoyac Bayou watershed. This action will complete the installation of all planned measures within this hydrologic unit.

The Final EIS reflects the deletion of the other remaining planned measures. Nacogdoches County will be responsible for obtaining the required landrights for the remaining planned measures to be installed and, along with Rusk and Shelby Counties, will be responsible for operation and maintenance of all structures previously installed.

USDA ENVIRONMENTAL IMPACT STATEMENT
ATTOYAC BAYOU WATERSHED
NACOGDOCHES, RUSK, SHELBY, AND SAN AUGUSTINE COUNTIES
TEXAS

Prepared in accordance with Section 102(2)(C) of PL-91-190

SUMMARY

I. Final

II. Soil Conservation Service

III. Administrative

IV. Description of Action

This is a watershed project being carried out by the sponsoring local organizations with assistance from the Soil Conservation Service, USDA, under the authority of Public Law 566, 83rd Congress, 68 Stat. 666, as amended, for the purpose of watershed protection and flood prevention. The project, located in portions of Rusk, Shelby, Nacogdoches and San Augustine Counties, comprises an area of 213,440 acres (333.5 square miles). The project, as planned and supplemented, provides accelerated technical assistance for application of land treatment, the installation of 13 floodwater retarding structures, and one multiple-purpose structure with basic facilities for water-based recreation. The accelerated technical assistance for land treatment and 12 floodwater retarding structures have been completed. One floodwater retarding structure and one multiple-purpose structure which remain to be installed are covered in this environmental document.

V. Summary of Environmental Impacts Including Favorable and Adverse Environmental Effects:

The installation of the remaining floodwater retarding structure No. 22 and multiple-purpose structure No. 23 will reduce the frequency and depth of flooding on the 4,600 acres of flood plain on Naconiche Creek subwatershed below the structures. This will permit flood plain users to use their resources more productively and efficiently and will provide for greater income stability. The table below shows the area from which flooding is to be eliminated by various frequency events.

	100-Year Flood Plain	25-Year Flood Plain	10-Year Flood Plain	2-Year Flood Plain	1-Year Flood Plain
Area Eliminated From Flooding (Acres)	750	600	650	625	800

The average annual acres flooded will be reduced from 4,600 to 2,650 acres, a reduction of 1,950 acres.

The reduction in floodwater damages will result in greater agricultural efficiency and income stability for about 60 farm units receiving flood damages and strengthen the local agricultural economy.

Installation of multiple-purpose structure No. 23 will provide the following recreational facilities: 585-acre lake, a 60-acre park with campsites, picnic tables, boat ramp, fishing piers, swimming beaches, ballfield, picnic shelters and children playground. These facilities are expected to provide 140,000 activity days of recreation annually.

The multiple-purpose reservoir will have a potential capability for supplying a dependable source of water to rural water systems in this region. An interest has been shown by several community systems supplying water to 2,190 metered customers for obtaining municipal water supplies from this reservoir in the future. However, these systems have not taken any official actions to initiate and finance the required detailed studies that must be completed before municipal water could be obtained from this reservoir.

The construction of the remaining structures will result in the loss of 220 acres of type 1, five acres of type 3, 26 acres of type 6 and 43 acres of type 7 wetlands. Open water will be increased by 602 acres and type 5 wetlands will develop as aquatic vegetation becomes established.

The sponsors will construct a greentree reservoir for mitigation of the wetland values lost due to installation of the remaining project measures. A low dam with conduits for water control on 315 acres of existing bottomland hardwoods will be installed. This will be for seasonal impoundment of shallow water (0 to 4 feet deep averaging 18 inches deep) for wetland preservation and enhancement to offset habitat value losses associated with the project measures. Another 202 acres of bottomland hardwoods surrounding the greentree reservoir will be temporarily inundated when the emergency spillway functions at maximum designed capacity. The bottomland hardwoods occur on public owned land which is administered by the U.S. Forest Service and lies downstream from the project area. This land is presently inaccessible to the public. The sponsors will also acquire the right-of-way needed for an access road to the reservoir and the surrounding bottomland hardwoods area.

Installation of the floodwater retarding structure, the multiple-purpose structure, the recreational facilities and parks, and the greentree reservoir will require land presently being used as follows:

Land Use	Dams and Emergency Spillways	Water Areas 1/	Detention Pools	Buffer Lands 2/	Total
Woodland (ac.)	35	875	577	70	1,557
Grassland (ac.)	8	39	41	223	311
Other (ac.)	0	3	13	3	19
Total (ac.)	43	917	631	296	1,887

1/ This includes 315 acres of woodland which is to be inundated seasonally within the greentree reservoir for wetland enhancement and increased production.

2/ Parkland and buffer zone lands lying outside of the pools, the dam, and the spillway.

The greentree reservoir and the lands surrounding the multiple-purpose reservoir will provide areas of use for research by groups such as the Wildlife Research Group at Stephen F. Austin University to conduct studies on inundations and management.

The multiple-purpose structure (Site 23) will require 1,100 acres which will be purchased by fee simple title. Land purchased for the detention pool and the adjacent land not used for recreational facilities will be maintained as wildlife habitat. This area will be fenced where necessary to protect from livestock grazing and managed for preservation and enhancement of wetland values around the impoundment.

Sediment and recreation pools of the structures will provide resting areas for migratory waterfowl, opportunities for fish production, drinking water for wildlife and livestock and recreational uses. Additional aquatic habitat for fish, waterfowl, and wading birds will be created by the impoundment of 602 acres of water in the sediment and recreation pools. This along with the dams, spillways and park area will entail a loss and alteration of 705 acres of terrestrial habitat. Existing habitat value will be altered by 23 percent within the land committed to the structural measures.

Approximately 10 miles of streams will be covered by dams, sediment pools and recreation pools of the remaining structures to be installed. About 3.2 miles of these streams have perennial flow conditions.

VI. List of Alternatives Available:

1. Stop all further project action in the Attoyac Bayou watershed, thus avoiding the wetland losses, foregoing the flood damage reductions, the recreational benefits, the associated potential future municipal water supply, and the opportunities for research.

2. Do not install the remaining project measures, change the land use of the flood plain to one that is less susceptible to damage by frequent flooding and thus avoid wetland losses, eliminate the need for flood prevention, and forego the recreational benefits, the associated potential for future municipal water supplies and opportunities for research.

3. Do not install the multiple-purpose structure and in its place install a single-purpose floodwater retarding structure and the remaining floodwater retarding structure, thus providing flood protection, reducing losses of wetlands, and foregoing the recreational benefits, the associated potential for future municipal water supply, and the opportunities for research.

4. Do not install the multiple-purpose structure and in its place install a single-purpose floodwater retarding structure and eight remaining originally planned floodwater retarding structures, thus providing flood protection throughout the watershed, reducing losses of wetlands, and foregoing the recreational benefits, the associated potential for future municipal water supply, and the opportunities for research.

5. The selected alternative is the installation of the remaining planned floodwater retarding structure and the multiple-purpose structure to reduce floodwater damages, provide recreational benefits, provide mitigation for wetland losses, and provide associated potential for future municipal water supplies and opportunities for research.

VII. Agencies Which Responded and Provided Comments On the Draft EIS

Department of the Army
Department of the Interior
Environmental Protection Agency
Office of Equal Opportunity, USDA
Department of Commerce
Department of Health, Education, and Welfare
Federal Energy Regulatory Commission
Advisory Council On Historic Preservation
Budget and Planning Office
(State agency designated by Governor and State Clearinghouse)
East Texas Council of Governments
Deep East Texas Council of Governments

Other Groups and Individuals Who Provided Comments

Stephen F. Austin State University (Elroy S. Nixon for Texas Organization for Endangered Species)
Wildlife Management Institute (Southcentral Representative)
Dan W. Lay

USDA SOIL CONSERVATION SERVICE

FINAL ENVIRONMENTAL IMPACT STATEMENT

FOR

ATTOYAC BAYOU WATERSHED

NACOGDOCHES, RUSK, SHELBY AND SAN AUGUSTINE COUNTIES, TEXAS

INTRODUCTION

This document concerns the installation of remaining planned measures consisting of one multiple-purpose reservoir (flood prevention and recreational storage) and one floodwater retarding structure on the Naconiche Creek subwatershed within the Attoyac Bayou watershed.

The installation of this project constitutes an administrative action. Federal assistance will be provided for under the Authority of the Watershed Protection and Flood Prevention Act, (Public Law 566, 83rd Congress, 68 Stat. 666), as amended.

SPONSORING LOCAL ORGANIZATIONS

The sponsoring local organizations for this project are:

Nacogdoches Soil and Water Conservation District
Rusk Soil and Water Conservation District
Shelby Soil and Water Conservation District
Piney Woods Soil and Water Conservation District
Attoyac Bayou Watershed Authority
Nacogdoches County Commissioners Court
Rusk County Commissioners Court
Shelby County Commissioners Court

PROJECT SETTING 1/

The Attoyac Bayou watershed comprises an area of 213,440 acres or 333.5 square miles in portions of Rusk, Shelby, San Augustine, and Nacogdoches Counties, Texas. Attoyac Bayou is a tributary of the Angelina River occurring within the Neches River basin in East Texas. It heads approximately two miles northeast of

1/ Detailed resource data pertinent to understanding key economic, environmental, and social factors are presented under the environmental conditions and impact section. All data and information, except as noted by reference to source, were taken from the watershed plan, from files of SCS offices, or were collected in process of preparing the environmental statement by the USDA, SCS.

Mount Enterprise in Rusk County and flows south to southeasterly into the Sam Rayburn Reservoir. Naconiche Creek and its branch, Wanders Creek forms the largest tributary in the watershed. It drains 58,970 acres (92.14 square miles) on the western side. Other large tributaries include Caney and Golondrino Creeks to the northwest, Turkey and Terrapin Creeks to the southwest, Blackwater Creek to the north and West Creek to the east of the main stem. The watershed area included in the project drains southeast Rusk County, western Shelby County, and northeast Nacogdoches County. The project ends near the Shelby and San Augustine County line east of the village of Martinsville.

The climate of the Attoyac Bayou watershed is warm, temperate and humid. In summer, the days are generally hot while the nights are moderately warm. The winter months are generally mild, with occasional cold periods of short duration. The mean annual temperature is 65 degrees Fahrenheit which varies from an average of 48 degrees in January to an average of 80 degrees Fahrenheit in August. The date of the last killing frost is March 15 and that of the first frost in the fall is November 7, which provides an average frost-free period of 243 days (U.S. Department of Commerce, 1974).

The mean annual rainfall is 48 inches. Rainfall generally occurs throughout the year. However, the spring months of April and May and the winter months of November through January usually receive the greatest amounts of rainfall during the year.

The watershed lies within the Southern Coastal Plain land resource area. It is heavily timbered with mixed pine and hardwood forests. The topography ranges from gently rolling to steeply rolling or hilly. Most of the streams are bordered by well developed flood plains with nearly level surfaces. Elevation ranges from 220 feet above mean sea level on the flood plain of the Attoyac Bayou near Martinsville to 700 feet on hills adjacent to the headwaters near Mount Enterprise.

The watershed is made up of poorly consolidated sedimentary rocks of Eocene Age except for the alluvial flood plain. The alluvial flood plain is of Recent Age (Bureau of Economic Geology, 1968).

Formations occurring in the watershed are undivided units of the Wilcox Group, the Carrizo Sand, the Reklaw Formation, the Queen City Sand, the Weches Formation and the Sparta Sand.

The Mount Enterprise fault system, which is a major fault, extends across the northern part of the watershed from Rusk to Shelby Counties.

The Wilcox outcrop covers almost 60 percent of the watershed and extends across the central and eastern part of the watershed. The Carrizo Sand crops out along the main valley of the Attoyac Bayou on the north side of the fault zone and to the south in a wide band along the upper drainage areas of the larger tributaries in the western part of the watershed and along the larger tributaries in the southeastern part of the watershed. The Reklaw Formation occurs along the western side of the fault zone and along the northern watershed divide north of the fault zone. Outcrops of the Queen City Sand, the Weches Formation and the Sparta Sand are confined to small areas lying on the north side of the fault zone.

The mineral resources of the watershed are varied and are extensive. The Wilcox Group contains extensive lignite (Appendix D) and clay deposits. Kaolinite clay is being utilized for the manufacture of brick at Garrison. Lignite deposits occur over most of the watershed. Glauconite from the Weches Formation is being mined for cement production in the Rusk County area. Some areas of surface accumulation of ironstone gravel and rock are utilized for road and highway construction. These materials are found in the Wilcox and Weches formation. Petroleum production, primarily gas production, occurs in the northern part of the watershed.

The major soils of the Southern Coastal Plain land resource area that contribute runoff and sediment are Bowie, Cuthbert, Fuquay, Kirvin and Socul series. Also, Darco, Nacogdoches, Tonkawa, and Trawick series contribute runoff and sediment primarily in the western and northwestern part of the watershed. The flood plain soils are mainly Iuka, Marietta and Mantachie soils.

The Bowie, Lilbert, Kirvin and Nacogdoches series are deep, acid, upland soils that occur as gently sloping and sloping broad interstream divides. These soils have a moderate inherent fertility and will respond well to good management practices. Forest and improved pastures of bermudagrass, bahiagrass and lovegrass are the main uses. Some small areas are used to grow corn and truck crops.

The Darco, Tonkawa and Sacul series are deep acid upland soils that occur as gently sloping and sloping interstream divides and strongly sloping and moderately steep side slopes above drainageway.

The Darco, Tonkawa and Sacul series have low inherent fertility but will respond well to addition of fertilizer. Forest and improved pasture are the main uses. Runoff is slow and the water erosion is slight on Darco and Tonkawa soils. The Sacul soils have rapid runoff and the water erosion hazard is severe if unprotected.

The Cuthbert and Trawick series are well drained, moderately slowly permeable upland soils that occur as sloping to moderately steep side slopes above drainageways. Runoff is rapid and the water erosion hazard is severe. These soils are used mainly for woodland and to some extent for improved pastures of bermudagrass and bahiagrass.

Iuka, Marietta, and Mantachie soils occur as deep nearly level flood plains along the Attoyac Bayou and its tributaries. The Iuka and Marietta soils formed in sandy or loamy alluvium and are moderately well drained and moderately permeable. Both of these soils have a high inherent fertility. They are used mainly for pastureland with minor areas of corn grown on the Iuka soils. The Mantachie soils have high water tables and are used mainly for forest production.

Watershed lands are predominately in private ownership and primarily in forest, pastureland, with a small amount of cropland consisting of truck crops and corn.

The watershed is in the Pineywoods Vegetational area and the Western Coastal Plains (East Texas Timberlands) land resource area. Gould describes this area as consisting of a part of a much larger region of pine hardwood forest which extends into Louisiana, Arkansas, and Oklahoma (Gould, 1962).

Major commercial timber species are loblolly and shortleaf pines. Longleaf pine occurs in scattered remnant stands. The important hardwoods include the red oak and white oak groups, hickory, sweetgum, ash, and maple. Pines are predominant on the uplands while hardwoods are the dominant species in the bottomlands and riparian areas. Hardwoods are the climax species in the overstory but pines are prevalent and considered subclimax species by most ecologists.

Understory vegetation is comprised of reproduction of overstory trees, shrubs, and vines. Only a few grasses and forbs thrive under the dense canopy of trees. The principal native forage plants in understocked woodland areas and in openings include giant switchcane, longleaf uniola, beaked panicum, various sedges, Canada wildrye, savannah panicum, white tridens, broadleaf uniola, dallisgrass, and vaseygrass. The latter four grasses occur in more moist sites. Buds and new growth of shrubs, greenbriar, dewberry and various vines supply available forage for wildlife species such as deer and rabbit in late winter and early spring. Common forbs found are tickclover, milkpea, St. Andrews Cross (a woody perennial shrub), catclaw sensitivebrier and perennial lespedeza. Annual weeds include ragweeds, partridgepea, snow-on-the-prairie, yankeeweed, Texas bullnettle and blackeyedsusan.

PROJECTS OF OTHER AGENCIES

Lake Timpson, which is a 125-acre lake located in Shelby County, is owned by the Shelby County Water Control Improvement District and was constructed as a water supply for proposed industrial development. Center Reservoir is a 600-acre reservoir constructed by the City of Center for municipal water use. Sam Rayburn Reservoir, a 114,000-acre multiple-purpose reservoir constructed by the U.S. Army Corps of Engineer, is located downstream from the watershed. It was constructed for flood control, hydroelectric power, and water conservation. No federally-owned land occurs in the watershed. Large tracts of forest land in the watershed are owned and operated by lumber companies. The remaining land is owned and operated by small private owners.

RELATIONSHIP TO LAND USE, POLICIES AND CONTROLS

The flood plain does not have any urban development, buildup, or threat of future urban development. The land is in agricultural and forest use. None of the land in the flood plain lies within the city limits of an incorporated or unincorporated municipality. The level of protection provided by the project will be adequate for efficient use of the present land use but not sufficient for urban development.

The remaining planned measures were reviewed for compliance with Executive Orders 11988, Flood Plain Management and 11990, Protection of Wetlands.

PROJECT FORMULATION

INTRODUCTION

The plan for the Attoyac Bayou watershed was developed in 1964 and approved for operations July 14, 1965. Work in the watershed began shortly thereafter with the provision of accelerated technical assistance for the application of accelerated land treatment and the installation of the first floodwater retarding structure on June 30, 1970. All of the accelerated technical assistance for application of land treatment has been applied. A total of 12 floodwater retarding structures have been installed or are in the process of being installed.

The plan was supplemented in 1971 to comply with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Public Law 91-646, 84th Stat. 1894). Concerns about possible severe environmental impacts from installation of channel work contained in the original plan resulted in evaluation of the project for deletion of the planned channel work. These evaluations, begun in early 1971, resulted in minor modification of the structural measures to include two-stage outlets and allow for the deletion of the planned channel work. A plan including 8 remaining planned floodwater retarding structures and the multiple-purpose structure with recreational facilities was selected by the sponsors for review in the draft EIS. Review of the remaining planned project measures by the sponsors resulted in deletion of all remaining structural measures except two structures, floodwater retarding structure No. 22 and multiple-purpose structure No. 23, in Naconiche Creek subwatershed (map, Appendix B).

PROJECT GOALS

The purposes and goals for the project were developed by representatives of the sponsoring organizations. Studies were made of watershed problems and meetings held to discuss these problems, possible solutions, watershed resource needs, and formulation of project objectives.

In the development of the plan the sponsors initially agreed upon the following objectives:

1. Establishment of land treatment measures which contribute directly to watershed protection and flood prevention.

2. Attainment of complete protection to agricultural land from the one-year frequency storm and to attain a reduction of at least 70 percent in average annual flood damages by floodwater retarding structures supplemented by channel improvement.

3. Develop the large floodwater retarding structure site on the Naconiche Creek into a multiple-purpose structure for recreational use.

In the early 1970's, following additional studies on environmental concerns about the planned channel modification work, the sponsors agreed to delete the channel work and reduce protection to the agricultural land.

The goals for establishment and maintenance of the land treatment measures have been achieved. However, the following objectives of the plan, as supplemented, remain:

1. Attainment of 30 percent reduction in average annual flood damages by floodwater retarding structures in the Naconiche Creek subwatershed portion of the watershed and maintenance of the level of flood protection provided in the remainder of the watershed by the measures already installed.

2. Development of a multiple-purpose structure on Naconiche Creek for recreational use.

In addition to these goals, there is a growing interest by rural community water supply systems in northern Nacogdoches County for development of a dependable source and supply of surface water. No formal action has been taken by these systems to hire a consultant to make the required studies and develop plans needed for accomplishing such a goal. Appendix C contains letters from these systems expressing interest in development of a surface water supply. The section on Environmental Conditions and Impacts contains a summary of assessment of existing water supply problems, present and projected water needs and the potential of the multiple-purpose structure for use as surface water supply. The multiple-purpose reservoir, as presently planned, could be modified to meet projected future surface water needs without adversely affecting the recreational use of the reservoir or management for waterfowl habitat.

ADVERSE IMPACTS

The significant adverse environmental impacts that have been identified as resulting from installation of the remaining planned project measures are listed below. A more detailed description of these impacts is given in the section ENVIRONMENTAL CONDITIONS AND IMPACTS.

1. Adversely affect 705 acres of existing terrestrial wildlife habitat for installation of the remaining two structures.

2. Convert 74 acres of types 3, 6, and 7 wetlands and approximately 220 acres of type 1 wetlands to surface water for public recreational use.

3. Commit the potential lignite deposits under 1,100 acres of land in the multiple-purpose structure and park area.

4. Cover 10 miles of stream for project installation.

5. Convert 602 acres of pastureland and woodland to water area and land for public recreational use.

ALTERNATIVES

The possible alternatives available at this time are described below. Only the most significant economic, environmental, and social impacts are presented.

A total of 12 floodwater retarding structures have been installed. The total cost, federal and nonfederal, of these 12 structures is $2,722,950. In addition, one originally planned multiple-purpose structure has been built by the City of Center without project assistance.

Alternative 1 - Alternative 1 consists of foregoing the installation of the remaining planned project measures. This includes foregoing the installation of the remaining floodwater retarding structure and the multiple-purpose structure with basic recreational facilities.

The adverse environmental impacts associated with the installation of the remaining project measures on 705 acres of land and associated 294 acres of wetlands would be avoided. Flood damage reductions and associated economic benefits would be foregone. Recreational opportunities associated with the multiple-purpose structure would be foregone. The establishment of a greentree reservoir and public access road to this reservoir and surrounding bottomland hardwood area would not be provided as part of the project action.

The project goals for flood damage reduction and recreational facilities by the sponsors would not be met.

Alternative 2 - Alternative 2 consists of foregoing the installation of the remaining project measures and changing the land use to one that is less susceptible to damage by flooding.

This alternative would have impacts somewhat similar to Alternative 1. The flood plain land use has changed from a significant amount of cropland in the past to two percent cropland, 43 percent pastureland and 55 percent woodland at present. With this alternative all of the flood plain would be converted to bottomland hardwoods with little or no remaining damage by flooding. Cost-share funds are available for assisting in such a conversion under the Agricultural Conservation Program and the Forest Improvement Program; however, there is no provision for economic compensation for conversion to help offset the lost income that will occur until harvestable timber is produced. Such conversions would create an economic hardship for most land users of the flood plain. It would also affect the local economy that is served by these landowners and their families.

This alternative would reduce the agricultural monetary damages caused by floodwater but would not affect damages to roads and other agricultural properties. Flood damage reductions on flood plains below the installed structures would continue.

Alternative 3 - Alternative 3 consists of foregoing the installation of the multiple-purpose structure and, in its place, installing a single-purpose floodwater retarding structure and the remaining floodwater retarding structure.

The land adversely affected by installation of the remaining structural measures would be reduced to 100 acres and the associated wetlands involved would be reduced to 65 acres.

The adverse impacts associated with installation of the multiple-purpose structure would be reduced to those required for a single-purpose structure. Flood damage reduction benefits would be the same as those with the selected plan. The recreational facilities and recreational opportunities associated with the multiple-purpose structure would not be realized. This land area would remain in private ownership for pastureland and woodland use. The greentree reservoir and road for public access to existing bottomland hardwoods on public owned lands on lower Attoyac Bayou would not be installed or would be delayed until such time as public funds were made available for this purpose.

This alternative would not meet the sponsors' objectives for recreational facilities and benefits.

Alternative 4 - Alternative 4 consists of foregoing the installation of the multiple-purpose structure and, in its place, installing a single-purpose floodwater retarding structure and the remaining originally planned eight floodwater retarding structures.

Installation of these originally planned remaining structural measures would adversely affect 574 acres of land with 188 acres of associated wetlands.

The adverse impacts associated with installation of the multiple-purpose structure would be reduced to those required for a single-purpose structure. Average annual acres flooded on the 17,200 acres of flood plain in Attoyac Bayou would be reduced 13,950 acres. Reductions in average annual acres flooded on the Naconiche Creek portion of this flood plain would be 1,950 acres, the same as Alternative 5, the selected plan. The recreational facilities and recreational opportunities associated with the multiple-purpose structure would not be realized. This land area would remain in private ownership for pastureland and woodland use. The greentree reservoir and road for public access to existing bottomland hardwoods on public lands on lower Attoyac Bayou would not be installed or would be delayed until such time as public funds were made available for this purpose.

This alternative would not meet the sponsors' objectives for recreational facilities and benefits and would forego the potential for future municipal

water supply from the reservoir. Rusk and Shelby counties do not plan to obtain the landrights needed for installation of this alternative.

Alternative 5 - This alternative consists of installing the multiple-purpose structure and associated recreational facilities and the floodwater retarding structure. Flood damage reduction and the recreational opportunities would be provided. The greentree reservoir and public access would also be provided. Detailed information on impacts is contained in the Planned Project and the Environmental Conditions and Impacts sections.

PLAN SELECTION

Of the alternatives listed all are acceptable to the USDA but only alternative 5 has full acceptance by a public body with capability for implementation. Alternative 1 is not acceptable because it would not accomplish any of the goals for the project. Alternative 2 is not acceptable because it would accomplish only part of the flood damage reduction portions of the goals and would cause unacceptable adverse economic impacts. Alternative 3 would accomplish the flood damage reduction goals but would not accomplish the recreational goals and the potential for future utilization of the site for water supply. Alternative 4 would accomplish the present goals of the sponsors for flood damage reductions on Naconiche Creek subwatershed and, in addition, would provide flood damage reductions to other portions of the watershed. However, this alternative would not meet goals for recreational facilities or provide the potential for future municipal water supply. This alternative is not acceptable to the sponsors because Rusk and Shelby counties do not plan to obtain the landrights required for installation of measures in their respective counties. Alternative 5 will accomplish the goals of the sponsors.

PLANNED PROJECT

The planned project, as supplemented, provided for accelerated technical assistance for land treatment, the installation of 13 floodwater retarding structures, and one multiple-purpose structure with basic recreation facilities for water-based recreation.

The project goals for accelerated application of land treatment measures have been achieved on watershed lands. A total of 12 floodwater retarding structures have been installed. One planned floodwater retarding structure (No. 22) and one multiple-purpose structure (No. 23) with basic recreation facilities remain to be installed and are covered in this environmental document.

STRUCTURAL MEASURES

Installation of the remaining floodwater retarding structure and the multiple-purpose structure with associated recreational facilities will control 29.85 square miles or 19,104 acres of drainage area in Naconiche

Creek subwatershed. The total storage capacity to be provided is 13,463 acre-feet of which 611 acre-feet are dedicated for sediment storage, 6,235 acre-feet for detention storage and 6,617 acre-feet are for recreational use. Basic recreational development around the recreational reservoir will provide opportunities for boating, fishing, swimming, picnicking, nature trails and related activities. (These facilities are described in further details under Recreational Facilities.)

Floodwater retarding structure No. 22 will require 55,000 cubic yards of embankment with a maximum fill height of 30 feet. Multiple-purpose structure No. 23, the larger of the two structures will require 230,000 cubic yards of embankment with a maximum fill height of 42 feet and 1,424 feet length of dam. Additional structural information is contained in Appendix E.

The embankments will be constructed from materials consisting of weathered residual soils classified as CL, SC, and SM under the Unified Soil Classification System which are available from the hillside borrow areas upstream of the abutements. The foundations will be on soft shale and sandstone bedrock with sandstone predominating at site No. 22 and soft shale (subcompacted clay) predominating at site No. 23.

The project will provide cost-share funds to the sponsors for the purchase of about 1,100 acres of land for the multiple-purpose structure and related facilities. The multiple-purpose reservoir and recreational facilities will require the following land areas:

Dam and Emergency Spillway (Acres)	13
Recreation Pool Surface Area (Acres)	585
Detention Pool Area:	
In area to be purchased (Acres)	206
Area not to be purchased (Acres)	92
Land Purchased Above Detention Pool Area (Acres)	296

This acreage includes the land needed for widening of the existing road. The park facilities will cover 60 acres within the purchase area with 10 acres of this being in the detention pool and 50 acres lying above the detention pool. Approximately 442 acres will be managed for wildlife uses. All of the purchased land will be open for public access and use.

The floodwater retarding structure (No. 22) will require 155 acres of land of which 7 acres will be used for the dam and emergency spillways, 17 acres will be inundated by water stored in the sediment pools and 131 acres will be temporarily inundated in the detention pools. The sponsors will obtain

the necessary landrights for floodwater retardation and associated sediment storage with the land remaining in private ownership.

Two-stage principal spillways are being designed for the remaining structures to be installed. Of the structures already installed, two were installed with single-stage principal spillways and 10 have been installed with two-stage principal spillways.

The principal spillways for all structures will be ungated to operate automatically, and will have provisions to release impounded water in the sediment pools in order to perform maintenance; and if it becomes necessary, to avoid encroachment upon prior downstream water rights. Water that is initially retained in the sediment pools will be displaced gradually with sediment over the life of the project. The dams will be earthen embankments and the emergency spillways will be in soils around the end of the embankments.

The emergency spillways and dams will initially be sodded to Coastal or Selection-3 bermudagrass for protection against erosion. These areas will then be overseeded with bahiagrass or other grasses which are beneficial to wildlife. Shoreline plantings of switchgrass and common reedgrass will be made near the pool line on the front slope of the floodwater retarding structure to protect against shoreline wave erosion. Rock riprap will probably be needed at the multiple-purpose structure for wave shoreline erosion protection.

Care will be taken during construction to prevent unnecessary soil erosion and water and air pollution. Excavation and construction will be scheduled and controlled to prevent unnecessary disturbance of soils and exposure of these areas to erosion and resultant sediment production. Fuels, lubricants, and chemicals will be stored in protected areas to prevent spillage into the water courses. Disposal of brush cleared from the construction sites will be disposed of in accordance with applicable laws, ordinances, and regulations in respect to burning or disposal by burying. Necessary sanitary facilities, including garbage disposal facilities, will be located to prohibit such facilities from being injuriously adjacent to live streams, wells, or springs.

Efforts will be made to avoid creating conditions which will increase populations of noxious vectors which might affect public health conditions. Prevention and control measures will be implemented, if needed, in cooperation with appropriate federal, state, and local health agencies to suppress proliferation of vectors such as aquatic insects, terrestrial arthropods, rodents, etc., that could occur with installation of the structural measures.

ENHANCEMENT MEASURES

The following enhancement measures are planned for installation in conjunction with the structural measures for compensation of unavoidable losses of wetland values and wildlife habitat.

Odd areas such as between the dam and emergency spillway and along the side of the emergency spillway that is cleared during construction will be

revegetated to forbs, shrubs, and trees that have a recognized value for wildlife. Vegetative species may include autumn olive, crabapple, lespedeza, partridge pea, and various species of oak.

Fences will be constructed around these dams, spillways, and odd areas to protect these plantings until establishment and to facilitate proper management. The odd areas will be fenced separately to exclude livestock grazing.

The sponsors will construct a greentree reservoir for seasonal inundation of 315 acres of bottomland hardwoods. The reservoir will be constructed at the same time that the multiple-purpose structure is built. It will have a low dam with conduits for controlling seasonal impoundment of water averaging 18 inches in depth for wetland enhancement and to benefit waterfowl. An additional 202 acres surrounding the greentree reservoir will be temporarily inundated when the emergency spillway functions at its maximum designed capacity. These 517 acres of bottomland hardwoods are high quality habitat which consists predominantly of oaks and will benefit terrestrial wildlife when not inundated.

These bottomland hardwoods occur on public owned land administered by the U.S. Forest Service and are located on the Attoyac Bayou downstream from the watershed in the upper reaches of Sam Rayburn Reservoir. This land is presently inaccessible to the public. The sponsors will acquire a route for public access to these areas.

Approximately 50 percent of the woody vegetation will be left in the pool area of the multiple-purpose structure primarily in the upper reaches for fish and wildlife habitat. As much of the woody vegetation as possible will be left in the sediment pool of the floodwater retarding structure to preserve quality of habitat. A minimum area of the full length of the dam for a distance of 400 feet upstream from the principal spillway, plus any additional area for borrow, must be cleared. The emergency spillway and areas needed upstream for proper functioning must also be cleared. The existing hardwood vegetation on the 442 acres of land surrounding the reservoir will be preserved and protected from grazing. Approximately 57 acres existing improved grassland within this area will be planted to forbs and shrubs such as lespedeza, partridge pea, autumn olive, crabapple, or other species for wildlife habitat improvement.

RECREATION FACILITIES

Recreational facilities will be installed in a 60-acre public park area adjoining the 585 acres of surface water in the multiple-purpose reservoir. This county sponsored facility will be open for water-based recreation to all persons and will provide 48 campsites, 55 picnic tables, 10,000 square yards of swimming beach, 70 yards of fishing piers, and 2 boat ramp lanes. In addition, a picnic shelter, ballfield, and one-half acre children's playground will be provided.

The soils within the park area are suitable for the installation of septic tanks for treatment of sewage wastes. Solid wastes will be disposed of in

a solid waste disposal site that is being operated by Nacogdoches County several miles from this site. Water for drinking purposes will be supplied by the Appleby Water Supply Corporation which currently supplies water to farms in this general vicinity.

The recreation facilities will be designed in accordance with guidelines in "Federal Accessibility Standard" (draft) for making the recreation facilities accessible to handicapped persons. Safety hazards will be avoided by use of accepted standards for safety for design of the facililities to be installed. The fishing pier will have safety railings including center railings for protection of children. The pier will be properly braced or anchored. The swimming area will be roped off and buoys used to prevent boats from entering the area. Bottom hazards will be eliminated and a safe slope of less than 15 percent will be utilized. Appropriate information signs and warning signs will be used and placed in strategic locations. Care will be taken to protect the quality of water for contact recreational use and for carrying out an effective maintenance program on the facilities. Lighting for night use of facilities will consider proper spacing and sizing for adequate and safe illumination. Enforcement of state boating safety requirements will apply to the reservoir.

LANDRIGHTS

The sponsors will acquire all landrights needed for installation of the remaining project measures. Cost-share funds will be provided for acquisition of land needed for the multiple-purpose structure and associated recreational facilities.

Installation of the structural measures will require changes in location or modification of existing improvements such as utility lines, county roads, pipelines, etc. In the event that displacements do occur, necessary relocations will be carried out under the provisions of Public Law 91-646, Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970.

There is a slight possibility that lignite resources may be involved at the multiple-purpose structure site. Additional investigations and needed drilling will be made and the state conservationist will advise the sponsors of the importance of mineral rights to this project measure and review the findings on outstanding mineral rights against design criteria for the measures.

Information supplied by the Corps of Engineers indicate that installation of the planned structures is covered by a nationwide permit issued under the authority of Section 404 of the Federal Water Pollution Control Act Ammendment of 1972.

The planned structure and the multiple-purpose structure have a low potential hazard from failure (Class A) since failure may damage only isolated farm buildings, agricultural land, and county roads. The rainfall used to determine the elevations of the top of the dams ranges from 1.8 to 3 times the 100-year frequency rainfall.

MANAGEMENT OF WETLANDS AND THE POTENTIAL WETLANDS

Greentree Reservoir

Management of the greentree reservoir to be installed by the sponsors on the federal land administered by the U.S. Forest Service will be performed by U.S. Forest Service. This action will dedicate this land for maximum use for wildlife resources rather than timber production. The management practices will assure that water from early fall and winter rains are retained on the 315 acres of bottomland hardwoods during the winter dormant season to prevent dry soil conditions and maximum wetting of the soil to make the food source (mast) more available to waterfowl. This inundation will be managed for increased tree growth and acorn yields and decreased loss of acorns to weevil damage. The water will be removed in early spring to allow aeration of the soil for optimum tree growth.

Multiple-purpose Reservoir

The sponsors (Nacogdoches County) will manage the 442 acres of land obtained above the acreage needed for the reservoir surface area, the dam and emergency spillway, and the park area for wildlife land. The existing hardwood vegetation on this land will be preserved and recovery of the natural plant community will be encouraged by restricting grazing. During the life of the project it is anticipated that wetland vegetation will develop in and along the edge of the recreational pool. Inundation frequencies and depths will be favorable for the development of approximately 135 acres of Types 1, 3, 6, and 7 wetland vegetation as plant successional trends occur. In addition, approximately 200 acres of the open water in the reservoir, water less than 10 feet deep, are expected to develop aquatic vegetation and function as Type 5 wetlands. These areas will be managed to maximize the wetland values.

Expertise for management of these areas will be obtained from the School of Forestry, Wildlife Management Group at Stephen F. Austin University (letter, Appendix C) the Texas Parks and Wildlife Department, the U.S. Fish and Wildlife Service, and the Soil Conservation Service.

OPERATION AND MAINTENANCE

The operation, maintenance and coordination of all structural measures will be the responsibility of the local sponsors with whom the operation and maintenance agreement was signed. Routine operation and maintenance of the greentree reservoir will be performed by the U. S. Forest Service since the greentree reservoir is located on U. S. Forest Service land.

Immediately following the completion of the construction and vegetation by the contractor, the local sponsors will assume responsibility for maintenance of the structural measures. The local sponsors will be responsible for

maintenance of vegetation associated with structural measures after the initial vegetation work is adequately completed, as determined by the Service.

Prevention and control measures for vector populations will be implemented in cooperation with the Nacogdoches County Health Office and appropriate state and federal agencies, as needed, to prevent proliferation of noxious vectors at the reservoir.

RSEARCH

The planned county owned lands surrounding proposed Lake Naconiche Reservoir and the proposed greentree reservoir on the federally owned lands will provide easily accessible areas for field laboratory work by students in the School of Forestry, Wildlife Research Group, Stephen F. Austin University. Nacogdoches (letter, Appendix C). The Lake Naconiche site lies about 15 miles north from Nacogdoches and the greentree reservoir site lies about 25 miles southeast.

The results of management will be observed by the research programs and opportunities for refinement of management techniques on reservoir lands and greentree areas will be made available for other similar projects in the future.

INSPECTIONS

The sponsors will make an inspection of the structural measures annually and after unusually severe floods or other events of unusual nature that might adversely affect the structural measures. The SCS will inspect the structures after initial filling and after major storms or other events. Annual inspections will be made for the first three years and then reduced to once every two years. An SCS engineer will inspect the structure after initial filling and once every five years. Items of inspection are those that may need maintenance such as control of vegetation, removal of sediment bars, and corrective measures for eroding areas on the structural works and sediment sources from side drains or spoil bank material.

An operation and maintenance agreement has been executed for the structural measures. The agreements set forth specific details on procedures in line with recognized assignments of responsibility and will be in accordance with the Texas Watersheds Operations and Maintenance Handbook. An operation and maintenance plan will be prepared for each structural measure.

PROJECT COSTS

The estimated costs of installation of the remaining project measures are presented in the following tabulation:

Installation Cost Item	Estimated Cost (Dollars) - 1978 Price Base		
	Federal	Nonfederal	Total
Structural Measures and Recreational Facilities (Total)	1,888,380	1,315,550	3,203,930

The estimated average annual cost of operations and maintenance of the remaining project measures is $45,000.

The ratio of the average annual benefits to the average annual cost is 1.6:1.

ENVIRONMENTAL CONDITIONS AND IMPACTS

A broad range of environmental, economic and social factors were evaluated in the review of the remaining project measures to be installed and of the various possible alternatives to further action on the project. The factors evaluated that are important to decisionmaking are shown in the list below:

Environmental, Economic and Social Factors	Degree of Impacts	Significant to Decisionmaking	Remarks
Flooding	Major	Yes	
Erosion and Sedimentation	Minor	No	
Land Use and Prime Farmland	None	No	None affected
Streams	Minor	No	
Water Quality	Minor	No	
Water Quantity	None	No	
Ground Water and Water Tables	None	No	
Wetlands and Bottomland Hardwoods	Moderate	Yes	Mitigation provided
Wildlife and Fish	Moderate	Yes	Mitigation provided
Endangered Species	None	No	None affected
Mineral Resources	Minor	Yes	
Economic and Social Resources	Major	Yes	
Recreational Resources	Major	Yes	
Historical and Archeological Resources	Minor	No	None affected
Air Quality	Minor	No	
Visual Resources	Minor	No	
Municipal, Industrial, and Domestic Water Supplies	Minor	Yes	Future Potentials
Short-term Vs. Long-term Productivity	--		
Commitments of Resources	--		

General conditions for the important environmental factors are described for the total Attoyac Bayou watershed and, where appropriate, for Naconiche Creek subwatershed to help identify specific impacts expected to result with installation

of the remaining planned measures. These remaining measures are located in the Naconiche Creek subwatershed and will have direct impacts in this subwatershed. The watershed plan and the measures already installed cover the entire watershed.

FLOODING

Approximately 4,600 of the 19,000 acres of flood plain in the Attoyac Bayou watershed lies within the Naconiche Creek subwatershed. This is the area that is inundated by the 100-year frequency event.

Detailed studies for a 23-year evaluation period, 1940 to 1962, for development of the original project plan for the Attoyac Bayou watershed showed that there were 86 floods, of which 26 were major floods inundating more than half of the 19,000 acres of flood plain. An average of about 4 floods occurred within the watershed, causing damages to pastures, crops, roads, bridges and other agricultural properties.

The most recent flood occurred in April 1980. This storm covered the western part of the watershed with the highest rainfall occurring in Upper Naconiche Creek subwatershed. This storm event caused significant damages to pastures, other agricultural properties and roads in the Naconiche Creek subwatershed. A large portion of the 4,600 acres of flood plain on Naconiche Creek was overflowed. Two of the four planned structures have been installed on this subwatershed, however, they only provide 23 percent of the total control that is planned.

The tabulation below shows the extent of flooding that occurred in Naconiche Creek subwatershed in the 23-year evaluation period (1940 to 1962) before any structural measures were installed.

	100-Year Flood Plain	25-Year Flood Plain	10-Year Flood Plain	2-Year Flood Plain	1-Year Flood Plain
Acres	4,600	3,975	3,700	3,000	2,500

The flood plain is an important resource for agricultural use as well as for other uses. Farmers and ranchers continue to rely on the flood plain as an important part of their agricultural operation because of its high productivity. Frequent flooding on these soils causes high annual damages to pastures, other agricultural properties, roads, and bridges. The average annual area flooded is 4,600 acres.

Impacts

Installation of the remaining two structures will reduce the frequency and depth of flooding on Naconiche Creek. The tabulation below shows the area subject to flooding and area on which flooding has been eliminated by frequency after installation of all planned floodwater retarding structures.

	100-Year Flood Plain	25-Year Flood Plain	10-Year Flood Plain	2-Year Flood Plain	1-Year Flood Plain
Acres Subject to Flooding	3,850	3,375	3,050	2,375	1,700
Acres Eliminated From Flooding	750	600	650	625	800

Average annual flooding will be reduced from 4,600 acres to 2,650 acres, a reduction of 1,950 acres.

The amount of floodwater now flowing out of banks will be decreased and the inbank flow will be increased. Depth of flooding and associated velocity of flow will be reduced. The out-of-bank flows that still occur will continue for longer durations than under without project conditions. However, damage will not be increased by this longer duration since depth and velocity of flow have been reduced. The type 1 wetlands which occur in the low lying shallow basin and slightly depressed portions of the flood plain will continue to be flooded by the remaining flooding but at shallower depths and reduced velocities. Pasture production will be enhanced by the reduction in flooding. The woodland productivity which is supported by the soil water tables will not be affected by the reduced flooding.

EROSION AND SEDIMENTATION

Erosion rates in the watershed are extremely low because of effective vegetative cover on the pastureland and forest land. Higher rates of erosion occur on the small areas of land in cultivation, the areas disturbed by logging, and areas being prepared for replanting of trees. Some erosion also occurs from old, inactive gullied lands and from roadways. The erosion from roadways, though not severe, tends to be high due to lack of cover. The average gross erosion rate from all sources averages less than 2.5 tons per acre annually.

Sedimentation rates similarily tend to be very low. However, evidence of past severe erosion when one-third or more of the uplands was cultivated is evidenced by modern flood plain deposits of 4 to 6 feet on the main stem of Attoyac Bayou.

Impacts

The sediment pools of the remaining planned structures will initially trap up to 95 percent of the sediment produced from the 19,104 acres of additional drainage area controlled. This will decrease gradually as the sediment pools fill with sediment over the life of project to a low of 75 percent after filling.

The potential for erosion during installation of the structures will be temporarily increased due to soil disturbance. Any increase in erosion will be quickly offset by the immediate effects that the structures will have for trapping sediment.

LAND USE AND PRIME FARMLAND

The land use in the Attoyac Bayou watershed is principally agricultural with 56 percent of the area being in woodland, 38 percent in grassland and 2 percent in cropland. The remaining 4 percent is in other land including urban and built-up areas, water, roads, and miscellaneous uses. The land use on the 19,000 acres of flood plain is 2 percent cropland, 43 percent grassland and 55 percent woodland. There are 24,460 acres of prime farmland in the watershed.

Impacts

Installation of the floodwater retarding structure, the multiple-purpose structure, the recreational facilities and park, and the greentree reservoir will require land presently being used as follows:

Land Use	Dams and Emergency Spillways	Water Areas 1/	Detention Pools	Buffer Lands 2/	Total
Woodland (ac.)	35	875	577	70	1,557
Grassland (ac.)	8	39	41	223	311
Other (ac.)	0	3	13	3	19
Total (ac.)	43	917	631	296	1,887

1/ This includes 315 acres of woodland which is to be inundated seasonally within the greentree reservoir for wetland enhancement and increased production.

2/ Parkland and buffer zone lands lying outside of the pools, the dam, and the spillway.

The dams, emergency spillways and areas disturbed by construction will be vegetated with improved bermudagrass and overseeded with pensacola bahiagrass. These areas will be fenced. The fenced areas on the floodwater retarding structures will have limited agricultural use and also will serve as wildlife habitat. The vegetated area on the multiple-purpose structure will be used for recreation and wildlife. The land use in the detention pool of the single-purpose structure will continue in its present use except for interruptions of use due to temporary inundations by floodwater. The land use in the 1,100 acres of recreation land will be changed to 585 acres of surface water, 60 acres of park facilities, 13 acres of dam and spillway, and 442 acres of wildlife.

Installation of the project measures will not involve any prime farmland.

STREAMS

There are more than 600 miles of defined streams within the watershed. Approximately 125 miles have perennial flow conditions and the remainder have intermittent to ephemeral flow conditions. The source of the perennial flow is from springs originating out of sand aquifers in the Carrizo Sand and the Wilcox Group.

The following tabulation shows the volume of flow that was measured in segments of the main stem Attoyac Bayou and in segments of important tributaries seven days following the break in a prolonged summer drought by a no runoff producing general rain of 1.5 inches over the watershed:

Location	Flow (cfs)
Main Stem Attoyac Bayou:	
End of project near Martinsville	91.0
Central reach at FM RD 138 Bridge	8.0
Upper central reach at Hwy 59 Bridge	4.5
Naconiche Creek Tributary:	
Lower reach at FM RD 274 Bridge	45.0
At confluence with Wanders Creek	28.0
Central reach of Naconiche Creek	23.2
At Hwy 59 Bridge	19.4
Near planned dam site for multiple-purpose structure	16.6
Near headwaters of Naconiche Creek	5.6
Wanders Creek upstream of confluence with Naconiche Creek	2.3

The perennial tributaries are shallow sand-bedded streams with few waterholes of any significant depth. The main stem Attoyac Bayou contains up to 8 feet of organic silty sand from modern sedimentation throughout the main stem reach. However, the number of deeper waterholes is increasing as less sand is brought in due to decreased erosion in the uplands and as the accumulated sand is gradually being swept out.

Impacts

Approximately 10 miles of streams will be covered by the dams, sediment pools, and recreation pools of the remaining structures to be installed. About 3.2 miles of these streams have perennial flow conditions, all of which occur within the multiple-purpose structure. Flood flows within the streams will be prolonged by the releases from the structures.

WATER QUALITY

The assessment of water quality conditions in the watershed was accomplished through a sampling and testing study for the SCS under a contract with Bio-Chem Lab, Waco, Texas. Samples were collected for testing at 16 stations

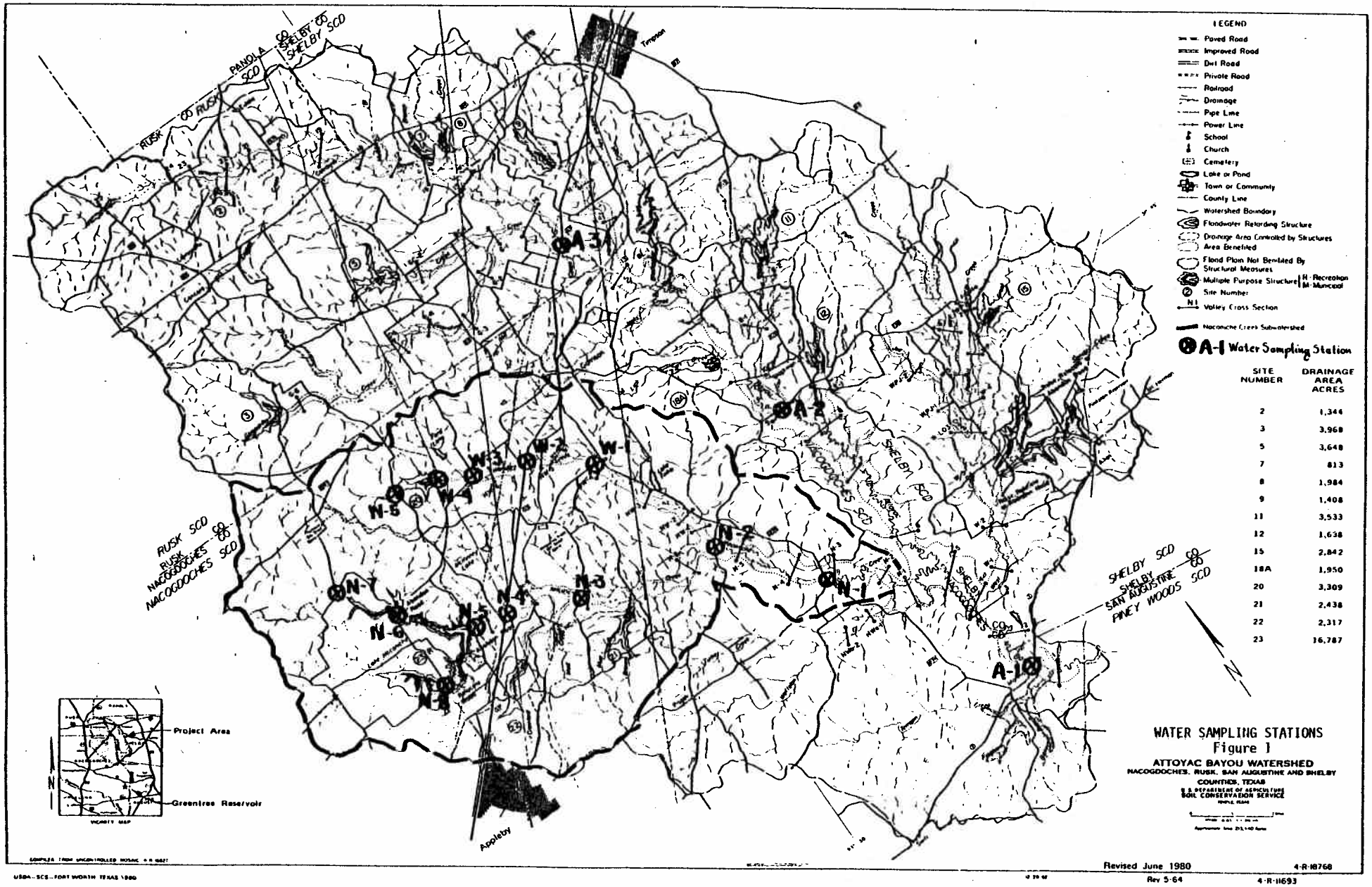
TABLE 1
WATER QUALITY DATA
Attoyac Bayou Watershed

Parameter		Sample Collection Stations and Stream Locations (September 1978)															
		Attoyac Bayou (Main Stem)			Naconiche Creek								Wanders Creek				
WATER		A-1	A-2	A-3	N-1	N-2	N-3	N-4	N-5	N-6	N-7	N-8	W-1	W-2	W-3	W-4	W-5
Flow	(cfs)	90.98	7.95	4.45	45.07	28.08	23.16	19.43	16.63	5.30	5.58	1.70	2.28	1.89	1.82	2.00	1.69
Temperature	(°C)	22	20	21	20.5	20.5	22	21	22	21	20	21	20.5	21	22	25	20
Dissolved Oxygen	(mg/l)	7.7	6.9	8.0	7.5	7.7	7.5	8.1	8.1	7.9	8.3	8.1	7.6	7.9	7.7	7.1	8.3
pH		7.0	7.3	7.3	6.4	6.7	6.6	6.4	6.6	6.7	6.4	6.6	6.9	7.2	6.9	6.4	6.4
T.D.S.	(mg/l)	112	116	93	103				104	52		48					
T.S.S.	(mg/l)	38	26	17	27				6	8		12					
Specific Cond.	(Micromhos)	21	30	16	52				8.4	5.4		8.7					
Turbidity	(J.T.U.)	50	30	20	70				15	10		20					
Chlorides	(mg/l)	12	18	8	9				6	5		5					
Sulfates	(mg/l)	17	26	9	52				7	5		8					
Nitrate	(mg/l)	0.20	0.04	0.07	0.17				0.02	0.18		0.35					
Ammonia	(mg/l)	0.73	1.95	0.73	1.71				1.46	0.73		0.49					
Total Nitrogen	(mg/l)	7	7	10	14				11	14		14					
Total Phosphorus	(mg/l)	0.47	0.39	0.20	0.29				0.16	0.05		0.21					
Fecal Coliform	(N/100ml)	450	230	90	280				370	290		360					
Fecal Streptococci	(N/100ml)	1640	950	730	1610				430	490		660					
F.Coli/F.Strep	(Ratio)	0.3:1	0.2:1	0.1:1	0.2:1				0.9:1	0.6:1		0.5:1					
Total Solids	(mg/l)								112	58		60					
Color	(Pt.Cobalt)								25	20		20					
BOD_5	(mg/l)								0.9	1.2		1.8					
SEDIMENT																	
2,4D	(ug/l)								<10	<10		<10					
2,4,5T	(ug/l)								<10	<10		<10					

Sampling was performed in September 1978, seven days after a 1.5 inch general rain over the watershed. No significant runoff resulted from this rain; however, bacterial content may have been affected.

PESTICIDE AND/OR OTHER RESIDUE TESTS OF FISH TISSUE

Fish Species Tested	Station N-6	Pesticide Found	Station N-1	Pesticide Found	Station N-5	Pesticide Found	Station W-1	Pesticide Found
Bass	X	None	X	None	X	None	X	None
Sunfish	X	None	X	None	X	None	X	Chlordane 0.07 ppm
River Carp							X	None
Buffalo			X	None				


LEGEND
Paved Road
Improved Road
Dirt Road
Private Road
Railroad
Drainage
Pipe Line
Power Line
School
Church
Cemetery
Lake or Pond
Town or Community
County Line
Watershed Boundary
Floodwater Retarding Structure
Drainage Area Controlled by Structures
Area Benefited
Flood Plain Not Benefited By Structural Measures
Multiple Purpose Structure
R-Recreation
M-Municipal
Site Number
Valley Cross Section
Nacogdoches Creek Subwatershed
A-1 Water Sampling Station
SITE NUMBER
DRAINAGE AREA ACRES
2 1,344
3 3,968
5 3,648
7 813
8 1,984
9 1,408
11 3,533
12 1,638
15 2,842
18A 1,950
20 3,309
21 2,438
22 2,317
23 16,787
RUSK CO
PANOLA CO
SHELBY CO
SHELBY SCD
RUSK SCD
RUSK CO
RUSK SCD
NACOGDOCHES CO
NACOGDOCHES SCD
SHELBY SCD
SHELBY CO
SAN AUGUSTINE CO
PINEY WOODS SCD
Appleby
Project Area
Greentree Reservoir
VICINITY MAP
WATER SAMPLING STATIONS
Figure 1
ATTOYAC BAYOU WATERSHED
NACOGDOCHES, RUSK, SAN AUGUSTINE AND SHELBY
COUNTIES, TEXAS
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
Revised June 1980
4-R-18768
Rev 5-64
4-R-11693

within the watershed (Figure 1). Table 1 shows the results of the tests made at the various stations.

The following are excerpts from the report concerning water quality conditions in the watershed and at the planned multiple-purpose reservoir:

> "No significant differences were found in the water quality of the various sample points with respect to the following parameters studied: temperature, dissolved oxygen, pH, turbidity, fecal coliform, fecal streptococci, total coliforms, total dissolved solids, ammonia, nitrates, total nitrogen, total phosphorus, specific conductance, chlorides, sulfates, suspended solids, BOD_5, total solids, color, and pesticides."
>
> "Bacteriological data indicate some pollution, primarily from non-human sources, but not of sufficient quantity to render the proposed reservoir unfit for recreational purposes. The nutrient content (nitrogen, phosphorus, and carbon) of the water is sufficiently low to preclude the possibility of eutrophication of the waters in the impoundment and indicates no problems should be anticipated in the impoundment.
>
> "The overall quality of the waters flowing into the proposed impoundment are generally excellent with respect to temperature, dissolved oxygen, solids, color, and pH.
>
> "The sediments taken from the pool area of the impoundment contain less than 0.01 ppm pesticide and present no problem."

Fish collected at four of the water quality sampling stations by SCS biologists were tested for pesticide residues. Only one fish species at one station showed a residue level of 0.07 ppm chlordane.

There is no active lignite mining in progress in the watershed. The small area disturbed by mining in the early 1920's lies upstream from Lake Timpson and has not had any apparent detrimental effects on biologic productivity in this reservoir. However, about one acre of vegetation was observed to have been damaged by mine seepage.

Impacts

The following impacts of the project action were identified by the water quality contracting firm:

> "Downstream water quality should not be adversely affected by the impoundment on upper Naconiche Creek. Flow data indicates the majority of inflow to Naconiche Creek is below the proposed multiple-purpose reservoir.
>
> "The best quality water in the entire watershed appears to be in the watershed of the multiple-purpose reservoir and should be suitable for recreational use."

"A comparison of water temperature increase of the proposed reservoir with the existing reservoir No. 20 would suggest an increase of 5° - 8°C while in containment. ..."

"...The influent to the No. 20 site was 20°C, the effluent 25°C. The discharge from site No. 20 is from the epilimnion as would be expected from site No. 23. Within one mile the temperature had dropped to 22°C and within two miles had decreased to 21°C.

"The canopy downstream from site No. 23 is much better than site No. 20. Inflow from drainage into Naconiche Creek is greater below the outfall of the proposed site No. 23 than below site No. 20. The water temperature is therefore expected to decrease more rapidly after discharge from the proposed site No. 23. No problems are anticipated with higher water temperatures or resulting lower dissolved oxygen levels."

"...The lack of nutrients in the waters should prevent eutrophication of the reservoir even though stratification should occur..."

Release of water from the oxygenated epilimnion of the multiple-purpose reservoir as well as from the small impoundments in the sediment pools will assure that any detrimental concentrations of iron, hydrogen sulfide or other materials which sometimes form in the hypolimnion of deep impoundments are not released into the stream. Studies have shown that the small increase in water temperature that occurs from release of water from the epilimnion of small watershed structures are not detrimental to warm water stream fisheries in the southern U.S. (Robinette, et al 1978). The study also indicates that water quality was not adversely affected when withdrawal of water was from the epilimnion; and that there may be some increase in biologic productivity due to the higher oxygen content of the water released into the stream. Other studies (USDA, 1979) have shown that benthic populations are much higher and species diversity was improved in streams with impoundments. This implies an improvement to aquatic life. It was suggested that the retardation of flood flows and prolonged release may be responsible.

Initial impoundment in the recreation pool will result in nutrient leaching from the inundated vegetation. Nutrient leaching is expected to occur rapidly during the first several months of filling. Levels of leaching will be highest from grass, shrubs, and leafy vegetation and lowest from the trees (trunks and bark) which dominate to pool area to be inundated. The nutrients released will add to the initial fertility of the naturally low nutrient levels of the inflow and help improve aquatic productivity. The standing trees which are to be left in the upper segment and arms of the reservoir will contribute low levels of nutrients for a longer period of time.

Waterfowl use of the reservoir will add nutrients and coliforms during the migratory season of the year. This use and resultant nutrient contribution will occur in the upper reaches and arms of the reservoir

during the cool season of the year. Time lag between the cool season use by the migratory waterfowl and the warm season use for water-based recreational activities will be sufficient for biologic assimilation of the added nutrients and for normal die off of the coliforms. Periodic draw-down of the reservoir to expose shallow areas for terrestrial vegetative growth will help maintain long-term aquatic productivity. Water-based recreation, other than fishing or hunting, will be in the deeper waters of the reservoir during the warm season months when waterfowl coliform and nutrient input will be minimal.

Onsite nutrient input by waterfowl in the greentree reservoir will add to the productivity of the bottomland hardwoods on this site. Some of the dissolved nutrients could be released from this site when the reservoir is drained in late winter. Such nutrient levels are not expected to be high and would enter into the headwaters of Sam Rayburn Reservoir to provide needed nutrients to this aging reservoir.

Nutrient levels are naturally low in the watershed and the possible increase in nutrients is not expected to be of such magnitude to affect the use of the water for other purposes or to pose any problem meeting downstream water quality standards.

The deep sandy top soils surrounding this reservoir will help reduce shoreline erosion and keep the water clear. The deep sandy soils in the drainage area of the structure help prevent and reduce the amounts of fecal coliform and other bacteriological contaminates produced by animals and livestock from being washed into the stream by initial runoff from rain storms.

It is not anticipated that the reduction in flooding and the increased productivity of the pastureland will result in any increase in water pollution. The increased productivity of the pastureland will result from reduced damages to forage quality, timely harvesting of the forage and stopping the washing away of applied fertilizers and pesticides.

WATER QUANTITY (YIELD)

The Attoyac Bayou drains directly into the Sam Rayburn Reservoir downstream from the project area. An evaluation of the effects of the project measures on water yields from the drainage area they control was made using streamflow data from the stream gage on the Attoyac Bayou near Chireno. The 17-year period starting with 1941 and ending in 1957 was used. The following is the results of this study.

Year 1985 With The Structures Already Installed And Those Covered Under Previous NEPA Actions (45.15 square miles controlled)

	Inflow (Ac.Ft.)	Outflow (Ac.Ft.)
17-year Total	497,177	496,387
17-year Average Annual	29,245	29,199
Percent Reduction		0.16

Year 1985 With The Total Project Installed (75.00 square miles controlled)

	Inflow (Ac.Ft.)	Outflow (Ac.Ft.)
17-year Total	825,880	823,078
17-year Average Annual	48,581	48,416
Percent Reduction		0.34

Impacts

The effects of the installation of the remaining planned project measures on water yield is insignificant. Effects with possible future use of the multiple-purpose reservoir for surface water supply would result in only minor reduction of water yield.

GROUND WATER AND WATER TABLES

The Carrizo Sand and sand members of the Wilcox Group are important ground water aquifers in the watershed and surrounding areas. Permanent flow in Attoyac Bayou and the major tributaries originate from springs flowing out of these sands. Water tables ranging from near surface to 3 feet depths are common in the alluvial soils throughout the watershed. These water tables are sustained on a regular year-round basis by the normal rainfall. Flooding saturates portions of these soils depending on size of the runoff event and the number of times runoff events occur during a given year. Some years there is no flooding and no saturation of soils.

Impacts

Installation of the structures will have only minor impacts on aquifer recharge and increase of wetness of the soils and soil water tables near the structure pool areas. The dam and pool of the multiple-purpose reservoir lie on soft shale bedrock and will have little loss of water due to seepage or recharge. The area of saturation of flood plain soils will be reduced. There will be no reduction of water tables in any areas.

WETLANDS

The wetland types encountered in this watershed were Type 1 (seasonally flooded hardwood basin or flats), Type 3 (inland shallow fresh marshes), Type 5 (inland open freshwater), Type 6 (shrub swamp), and Type 7 (wooded swamp), as defined by the U.S. Fish and Wildlife Service's Circular 39 (Shaw and Fredine, 1971).

Impacts

The construction of the remaining two planned structures will result in the loss of 220 acres of Type 1 wetland, 5 acres of Type 3 wetland, 26 acres of Type 6 wetland, and 43 acres of Type 7 wetland. The 220 acres

of Type 1 wetlands affected consist of the following woody vegetation: 118 acres of oak-gum-maple, and 102 acres of gum-maple. The temporary storage of water in the detention pools will temporarily inundate an additional 50 acres of Type 1 wetland, 8 acres of Type 5 wetland, and 1 acre of Type 7 wetland. This temporary inundation should not alter these wetlands.

The wetland values on 315 acres of Type 1 wetlands in the planned greentree reservoir will be enhanced by seasonal inundation of the bottomland hardwood vegetation.

The impoundment of 602 acres of water in the sediment pools and the recreation pool of the structures may increase the amount of Type 5 wetland when the aquatic vegetation becomes established. Wetland vegetation may also develop around the pool areas of the multiple-purpose reservoir and around the edges of the sediment pool at the floodwater retarding structure.

BOTTOMLAND HARDWOODS

Approximately 10,450 acres of bottomland hardwoods occur in the watershed. These hardwoods are characteristic of the flood plain along the streams and are sustained by the water tables in the alluvial soils. Generally, the most prevalent woody species are oaks, sweetgum, red maple, and hickory.

Impacts

The installation of the planned project measures will result in the loss of 461 acres of bottomland hardwoods. These bottomland hardwoods are comprised of the following habitat types: oak-gum-maple, 249 acres; oak-gum, 8 acres; and gum-maple, 204 acres. The growth and productivity of these hardwoods on the flood plain will not be adversely affected by the reduction of flooding. Some hardwoods growth will be favored around the edges of the recreation pool and the sediment pool and will be enhanced on 315 acres in the greentree reservoir.

WILDLIFE AND FISH

The Attoyac Bayou watershed is located in the Pineywoods vegetational area (Gould, 1962). The vegetation within the "Pineywoods" is basically a pine-hardwood forest interspersed with open grasslands and cropland. The woody vegetation in this watershed covers 56 percent of the area, which is typical of this vegetational area.

Wildlife habitats can be categorized as being either upland or bottomland. Ninety-one percent of the watershed is considered to be upland and the remaining 9 percent bottomland.

Woody vegetation in the upland is either pine or pine-hardwood association. Pine species include loblolly, shortleaf and remnant stands of longleaf. Hardwood species are white oak, post oak, blackjack oak and sweetgum.

The woody vegetation in the bottomland is a mixture of hardwood species which include water oak, willow oak, sweetgum, and red maple. Major species in the understory are yaupon, prickly ash, american beautyberry, greenbrier, rattan, honeysuckle and peppervine.

A variety of wildlife inhabit this watershed. The number of wildlife species whose known range encompasses this project area are 46 species of mammals (Davis, 1974), 230 species of birds (Peterson, 1963), 25 species of amphibians and 53 species of reptiles (Conant, 1975). Game species found in the watershed are white-tailed deer, turkey, quail, dove, fox squirrel, gray squirrel and waterfowl (Texas Parks and Wildlife Department 1978).

The fishery habitat within this watershed is comprised of 1,480 surface acres of water and 600 miles of streams. The surface water is derived from 750 farm ponds (approximately 187 acres), 10 floodwater retarding structures (447 acres), and seven other reservoirs (846 acres).

The stream fishery habitat includes 125 miles of streams having perennial flow characteristics. This includes the Attoyac Bayou and Naconiche Creek, which provides a fair to good quality fishery resource. The remaining 475 miles of streams are considered to have intermittent or ephemeral flow. These streams provide a limited fishery resource.

Fish species that inhabit this watershed are carp, freshwater drum, grass pickerel, largemouth bass, spotted bass, white crappie, black crappie, and various species of sunfish, catfish, buffalo, shad, gar and minnows.

The principal problem affecting wildlife resources is the loss of existing habitat by clear cutting and harvesting of quality hardwoods. Areas presently growing hardwoods are cleared to be used for other land uses such as establishing pine monocultures in the uplands and to grow crops or increase livestock production in the bottomlands. The preservation and improvement of existing habitat for wildlife is hindered by a combination of factors which includes the lack of knowledge and understanding of wildlife requirements and the lack of economic incentives for the landowners to make such a commitment.

Impacts

Installation of the floodwater retarding structure and the multiple-purpose structure will adversely affect the terrestrial wildlife associated with the 622 acres of existing habitat that is needed for these measures. The recreational park will affect 60 acres and the dam for the greentree reservoir another 23 acres. Table 2 reflects the acreages of various habitat types to be affected. The habitat types reflect the dominant plant species present.

Table 2

HABITAT TYPES
AFFECTED BY STRUCTURE INSTALLATION
ATTOYAC BAYOU WATERSHED

HABITAT TYPES	Dam and Spillway	Recreation and Sediment Pool (Water)	Recreation Facilities	Total
		ACRES		
Open				
Native Grassland	0	22	21	43
Improved Grassland	8	12	-	20
Subtotal	8	34	21	63
Wooded				
Oak-Gum-Maple	0	249	15	264
Oak-Pine	3	24	18	45
Pine	3	0	-	3
Brushy Native Grassland	0	12	-	12
Oak-Gum	24 1/	7	-	31
Gum-Maple	5	199	6	210
Subtotal	35	491	39	565
Wetlands				
Type 1 2/	-	-	-	-
Type 3	0	5	-	5
Type 6	0	26	-	26
Type 7	0	43	-	43
Subtotal	0	74	-	74
Other				
Roads	0	3	-	3
TOTAL ADVERSELY AFFECTED	43	602	60	705

1/ This habitat type includes 23 acres for construction of the dam for the greentree reservoir.

2/ The acreage of Type 1 wetlands is included within the appropriate wooded habitat types. A total of 220 acres of Type 1 wetlands will be affected as follows: 2 acres affected by dam and emergency spillway and 268 acres will be inundated by the recreation and sediment pools.

The 43 acres needed for the dams, emergency spillways, and greentree reservoir will remain as terrestrial habitat. However, the existing habitat which includes 35 acres of woody habitat and 8 acres of improved grassland will be converted or temporarily disrupted as in the case of the existing grassland to an improved grassland habitat.

The initial impoundment of 602 acres of surface water of which 17 acres is in the sediment pool and 585 acres is in the recreation pool will displace the wildlife species associated with 22 acres of native grassland, 12 acres of improved grassland, 491 acres of woody habitat, 74 acres of Types 3, 6, and 7 wetlands, and 3 acres of roads. The 60 acres to be used for recreation facilities will displace wildlife species associated with 21 acres of native grassland and 39 acres of woody habitat.

The wildlife habitat in the detention pools, 429 acres, is expected to remain nearly the same. Some wildlife species will be displaced when this area becomes temporarily inundated. Generally, frequent inundation is limited to the lower elevations of the detention pools with total inundation limited to only once in 25 years.

The construction of these structures will result in the permanent loss of 10 miles of streams of which 3.2 miles are streams with perennial flow. This 3.2 miles occurs on Naconiche Creek and will be inundated by the multiple-purpose structure. It supports a fair quality stream fishery which lies on privately owned land.

Continuing flows through the principal spillway will maintain the lotic ecosystem in Naconiche Creek downstream from the multiple-purpose structure.

Additional aquatic habitat for fish, waterfowl and wading birds will be created by the impoundment of 602 acres of water in the sediment and recreation pools.

The sponsors have agreed to construct a greentree reservoir having approximately 315 surface acres and inundating another 202 acres of detention area as an enhancement measure for offsetting the loss of wetlands and bottomland hardwoods. This shallow water reservoir with an average depth of 18 inches will be constructed in conjunction with the multiple-purpose reservoir on public land administered by the U.S. Forest Service, located in the upper reaches of Sam Rayburn Reservoir.

The purpose of this reservoir is to create a higher quality habitat for waterfowl and other aquatic life by impounding water over an oak flat along Attoyac Bayou. This area will be inundated during the winter and dewatered by March 1. This will not adversely affect the bottomland hardwoods, in fact, it will improve the annual growth.

The construction of the dam will require the removal of 23 acres of forest land. This area will be reestablished to bermudagrass and overseeded with bahiagrass.

Public access will be provided to the greentree reservoir and surrounding area. The U.S. Forest Service will provide the management of the 517 acres of hardwood. They will also operate the water level fluctuation of the greentree reservoir.

The multipurpose structure (Site 23) will consist of 1,100 acres which will be purchased by fee simple title. The recreation pool will be approximately 585 surface acres of the total. The dam and spillway will utilize 13 acres. Of the remaining 502 acres, 60 acres will be used for recreational facilities and the remainder used for detention pool area and buffer area around the structure.

The detention pool and the buffer zone land not used for recreational facilities will be maintained as wildlife habitat. The area will be protected from livestock use by constructing fences in areas where livestock are presently being grazed. The hardwood trees that occur within this area will be preserved.

The sponsors will have the responsibility to fluctuate the water levels in the recreation pool of Site 23 as needed to control undesirable aquatic vegetation. Late summer drawdowns will be done annually to manage the fish population and to establish food sources for migratory waterfowl. A one-time seeding of plants such as smartweeds for use by waterfowl will be made on the exposed mud flats by the sponsors after the first drawdown.

ENDANGERED SPECIES

Consultation with the U.S. Fish and Wildlife Service on June 7, 1979, in accordance with Section 7 of the Endangered Species Act identified four species listed in the federal register as endangered and one proposed species that may occur within the watershed. No critical habitat has been designated for this watershed.

The four endangered species include the bald eagle, the peregrine falcon, the red-cockaded woodpecker and the American alligator. The proposed species is the plains pocketbook pearly mussel which has been recorded on the Angelina River of which Attoyac Bayou is a tributary.

It was concluded from field investigations at each structure site and from consultation with other agencies and recognized authorities, that these species will not be affected by project action. As of November 1979 the plains pocketbook pearly mussel was removed from the proposed list.

MINERAL RESOURCES

Mineral resources in the watershed include deposits of lignite, ceramic clays, sand, and glauconite and minor petroleum resources (Bureau of Economic Geology 1965). Oil and gas drilling activities have been intensified in the watershed and in surrounding areas in recent years. Lignite

was mined in the northeastern part of the watershed near Garrison and Timpson from 1900 to the 1920's. This resource is again becoming an important source of energy, but no mining is occurring in the watershed area. The area of potential lignite deposits occurs under most areas of the watershed. (Bureau of Economic Geology, 1976) and are shown in Appendix D.

Multiple-purpose structure site No. 23 lies on the edge of the area with potential near-surface mineable deposits of lignite and the floodwater retarding structure site (No. 22) lies outside of potential mineable deposits of lignite.

Impacts

Lignite is the most significant mineral resource that could be affected by installation of the remaining planned measures. Multiple-purpose structure site No. 23 lies on the edge of potential near-surface mineable lignite deposits. About 1,100 acres may be committed for the dams, emergency spillways and for the park facilities and pool of the multiple-purpose structure.

The ultimate amount of lignite that is committed will depend on what actually occurs under this land, the amount that would have or could have been mined and also on the time frame in which this resource is used in the future. The project is evaluated for a 100-year period.

The in situ recovery of deep lignite deposits under the structures would pose a problem of possible damage. Cracking of the foundation, the earthen embankments, or the concrete conduits of the principal spillways could result in failure of the dams.

Ceramic clay deposits are widespread and are mined at Garrison for brick production. Sand deposits associated with the Carrizo Sand formation cover large areas of the watershed but are not being mined. These sands are an important ground water aquifer. Glauconite for cement production is mined in the Rusk County area. Petroleum production is limited to gas production from scattered wells in the northern part of the watershed.

ECONOMIC AND SOCIAL RESOURCES

The economy generated within the watershed is based primarily on agriculture and associated agribusiness. Agriculture and associated agribusiness are expected to be of prime importance to the economy for the foreseeable future due to the basic demand for food and fiber.

Nearly all of the agricultural land in the watershed is privately owned. There are about 1,049 farms located wholly or partially within the watershed. Agricultural land values range from $350 to $800 per acre, depending upon soil capability and location.

Approximately 10 percent of the agricultural income of the watershed is derived from crops and the remaining 90 percent from livestock and its associated products. Agricultural enterprises are directed mainly toward beef cattle, dairying, poultry, hay, and wood products.

The 1970 population of the four-county watershed area was 67,294. Projections for this area show an increase in population of 24 percent to the year 1990.

The latest statistics which are available (January 1979) show a labor force of 44,857 for the four-counties in which the watershed is located. Approximately 3.9 percent (1,733 workers) are unemployed. This is significantly below both the national and state rate of unemployment.

A total of 137 landowners out of the 1,049 landowners within the watershed are minorities. A total of 61 percent of the minority landowners are cooperators in the soil and water conservation district program as compared with 71 percent for the nonminority landowners. The minority landowners occur in clusters of small 10- to 20-acre holdings in upland areas of the watershed. These people do not farm this small acreage but live on it and work at off-farm jobs. For this reason fewer of these landowners cooperate in the soil and water conservation district program than the nonminority farmers. None of the land owned by minority landowners will be involved with installation of the remaining project measures. No minorities own land that will be directly benefited. The recreational facilities at the multiple-purpose structure will be open to all people. The contractors who will be installing the remaining structures will comply with labor laws requirements for employment of minorities and others.

Impacts

The installation of the structural measures will reduce substantially the direct income losses due to floodwater damage suffered by farm and ranch operators and associated agricultural business. This reduction in floodwater damage will result in greater agricultural efficiency and income stability for about 60 farm units being damaged by floods and will also strengthen the local agricultural economy. A strong local agricultural economy is essential in reducing the number of farmers and ranchers who are forced to the city in search of employment to maintain an adequate standard of living.

The reduction in floodwater, erosion, and sediment damages will result in new revenues in the local area. These revenues will result in an expansion of the local economy by an additional $31,200 annually. This will also create a need for approximately 5 new jobs. In addition, the expenditure of funds for the construction of the remaining works of improvement will create approximately 80 man-years of employment.

RECREATIONAL RESOURCES

Regional Summary

The project area lies on or near the dividing line between Regions 14 and 15 of the Texas Outdoor Recreation Plan (Texas Parks and Wildlife Department, 1975). The Texas Outdoor Recreation Plan (TORP) summarizes the recreational facilities that are now available within the region, the additional facilities that are needed, and the projected needs by the year 2000. There are an estimated 150,000 persons (1979 estimate) that live within these two TORP regions. Recreational participation has nearly doubled since 1970 to a total of 77 million activity days annually. This is expected to double again by the year 2000 to 163 million activity days annually. This region of the state is attractive to residents from other regions and to residents of the surrounding metropolitan areas.

Table 3 lists the TORP summary of regional facilities that are available now, those that are needed now, and the projected additional needs by the year 2000. These facilities are summarized by rural needs (facilities in a rural environment) and urban needs (facilities within or near urban areas).

The regional summary from TORP indicates that a majority of the additional recreational facilities are needed in the rural environment. An adequate supply of surface water is indicated for the region. These figures reflect the existence of several large reservoirs on the borders of Regions 14 and 15. However, TORP states that regional figures are not sensitive to local distribution needs for surface water and the associated recreational facilities.

Local Needs

TORP (1975) states that "Local conditions may indicate needs for facilities which may not be evident on a regional basis. In such cases, priorities should be dictated according to the local situation."

"Distribution is of much importance in recreation planning because resources should be developed, within feasibility, with the objective of satisfying demand."

"In computing freshwater surface acre resource requirements, the <u>availability</u> of freshwater lakes for boating, boat fishing, and skiing was considered. With regard to availability, it was assumed that <u>all</u> freshwater lake surface acreage reported within the region was available for the acitivities of boating, boat fishing, and skiing," (Texas Outdoor Recreation Plan, 1975).

Recreational needs for the northern Nacogdoches County towns of Garrison (population 1,003), Cushing (population 386), and Appleby (population 321) are not being met because of uneven distribution of the surface water and water-based recreational facilities listed in Table 3. Figure 2, Vicinity Map, shows the locations of existing surface water areas within a 30-mile radius of the proposed recreational facilities. Available water-based recreational facilities at this reservoir are shown in Table 4.

Public hearings held by Nacogdoches County at Cushing on April 15, 1975, and at Garrison on April 16, 1975, in conformance to regulations for application for Community Development Block Grants brought out the needs for combination family parks and recreational facilities (Appendix C, Letters from County Commissioner Joan Cason and others). Lack of swimming and recreational facilities for youth as well as adults within a 40- to 50-mile distance of these communities is a continuing concern of community leaders.

The use that a proposed park and reservoir will receive is largely dependent on the quality of the resource. Analysis of this park shows that the quality of environment is high with clean air, no source of pollution, no waste products evident, plentiful wildlife, good waste disposal planned and a pleasant climate. The quality of park facilities will be high with pleasing functional, convenient facilities constructed of high quality and blending well with the natural environment. The quality of the recreational water is high being clear, clean, plentiful, lacking pollutants, aesthetically pleasant, and open views of the water. The aesthetics at the park and near the park, are good with interesting land form, variety and interesting vegetative patterns. Easy access into and throughout the park will be provided from major highways on high quality roads, properly sized with hard surface. There is a pleasant variety of complementary facilities planned in the park to provide the visitor with an interesting experience. The park will be useable nearly year around. Complementary recreational areas are developed in the nearby vicinity. These planned facilities provide for an unmet need in the community. Fishing, camping, boating, skiing, picnicking, swimming, and ball games will all be available at this park.

Impacts

Installation of the multiple-purpose structure will provide the following recreational facilities:

Recreational Facility	Unit	Amount
Public Park	Ac.	60
Water Surface Area	Ac.	585
Campsites	No.	48
Picnic Tables	No.	55
Boat Ramp Lanes	No.	2
Fishing Piers	Yds.	70
Freshwater Swimming Beaches	Sq. Yds.	10,000
Ball Field	No.	1
Picnic Shelter	No.	1
Children Playground	Ac.	0.5

Table 3
SUMMARY OF REGIONAL RECREATIONAL FACILITIES 1/
Attoyac Bayou Watershed

Recreational Facility	Unit	Available Total	Additional Needed Now			Additional Needed by 2000		
			Rural 2/	Urban 3/	Total	Rural 2/	Urban 3/	Total
Public Parks	Ac.	26,297	18,204	1,324	19,528	42,919	3,518	46,437
Water Surface Area	Ac.	296,243	0	321	321	0	1,313	1,313
Campsites	No.	3,061	5,367	0	5,367	12,404	0	12,404
Picnic Tables	No.	1,611	7,479	51	7,800	20,189	74	20,263
Boat Ramp Lanes	Yds.	312	377	8	385	880	19	899
Fishing Piers	Yds.	969	6,918	0	6,918	13,144	0	13,144
Swimming Pools	Sq.Yds.	11,684	102,000	4,000	106,000	270,000	23,000	293,000
Freshwater Swimming Beach	Sq.Yds.	96,415	3,121,000	0	3,121,000	8,326,000	0	8,326,000
Nature Walk Trails	Mi.	63	298	35	333	627	86	713

1/ Regions 14 and 15. Twenty-eight county area surrounding Nacogdoches County (Texas Outdoor Recreation Plan, 1975).
2/ Rural reflects facilities installed or needed in a rural environment.
3/ Urban reflects facilities installed or needed in the urban environment. This includes the needs of all urban areas and small towns.

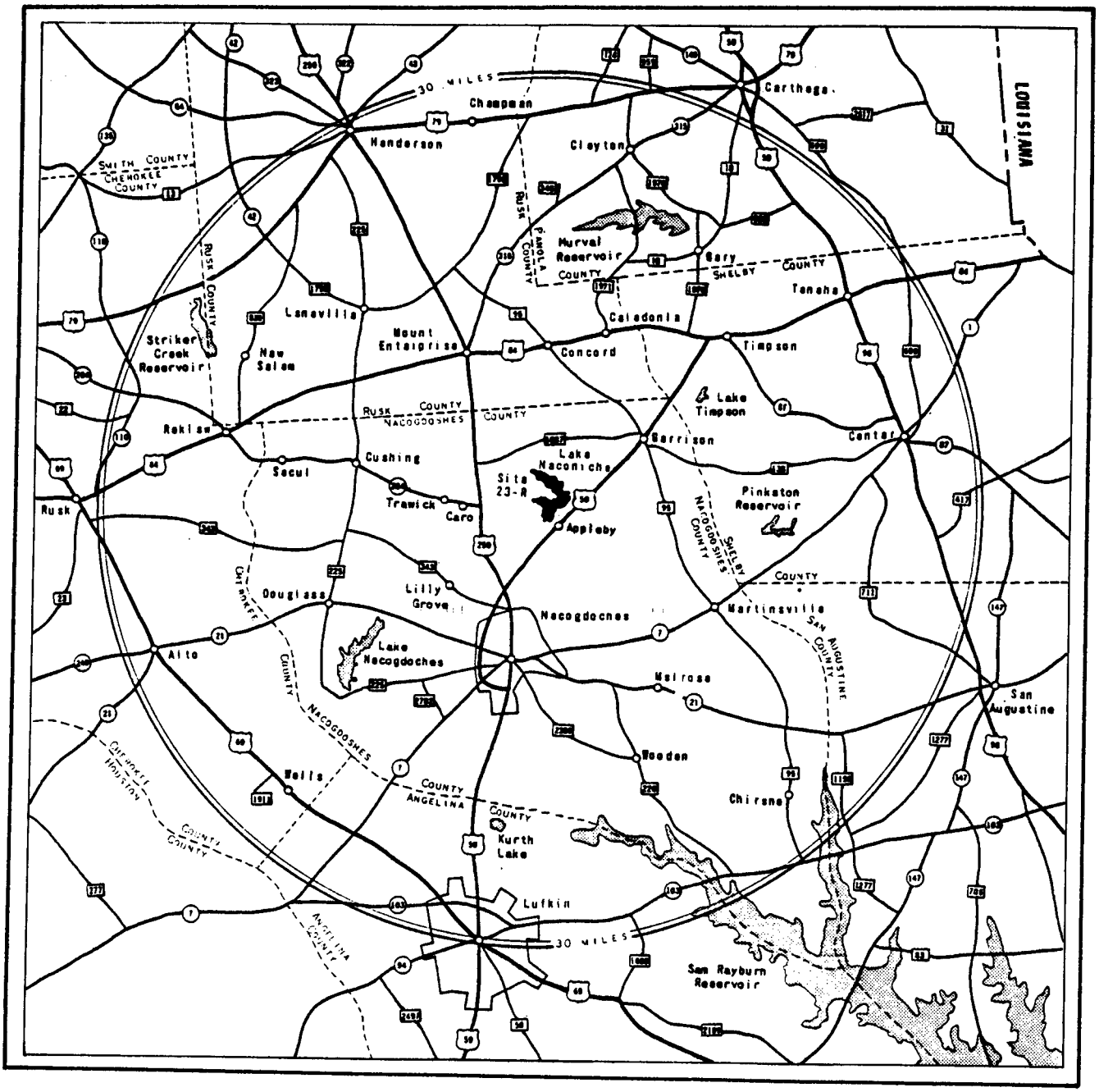


Figure 2

VICINITY MAP

LAKE NACONICHE RECREATION AREA

Attoyac Bayou Watershed
Nacogdoches County, Texas
U.S.D.A. Soil Conservation Service

SCALE OF MILES

0 5 10 15 20

ONE INCH EQUILS APPROXIMATELY TEN MILES

N

TABLE 4

WATER BASED RECREATIONAL FACILITIES AVAILABLE WITHIN 30-MILE RADIUS
OF PROPOSED LAKE NACONICHE (SITE NO. 23)
ATTOYAC BAYOU WATERSHED

Reservoir and Surface Area (Acres)	Proposed Lake Naconiche (585)	Kurth Lake (770)	Murvaul Lake (3,820)	Lake Nacogdoches (2,210)	Pinkston Reservoir (523)	Sam Rayburn Reservoir (114,500*)	Striker Creek Reservoir (2,400)	Lake Timpson (200)
Recreational Facilities								
Public Park	Yes	--	Yes	Yes	--	Yes*	--	--
Camping	Yes	--	Yes	--	--	Yes*	--	--
Picnicking	Yes	--	Yes	Yes	--	Yes*	--	--
Boat Ramps	Yes	--	Yes	Yes	Yes	Yes*	Yes	Yes
Fishing Pier	Yes	--	Yes	--	--	--	--	--
Swimming Beach	Yes	--	Yes	Yes	--	--	--	--
Picnic Shelter	Yes	--	--	--	--	--	--	--
Ball Field	Yes	--	--	--	--	--	--	--
Children Playground	Yes	--	--	--	--	--	--	--
Other		Private lake open to public for fishing	Boy Scout reservation at lake					

*Only the shallow headwaters of this reservoir lie within 30-mile radius. Most of the recreational facilities lie outside of the 30-mile radius.

These facilities are expected to provide 140,000 activity days of recreation annually. Full use of the facilities is expected because of need in this area and the high quality of the environment, the clear water, convenience and accessibility, and the pleasant climate. The area is aesthetically pleasant with interesting land form, variety, and interesting vegetative patterns and open views of the lake from the park. Some form of activity will be possible nearly year round.

A total of about 1,100 acres of pastureland and woodland will be acquired for installation of this recreational facility.

ARCHEOLOGICAL AND HISTORICAL RESOURCES

Four aboriginal cultural stages have been identified as occurring in East Texas (Suhm, et al, 1954). Only two of these, the Archaic and Neo-American, have been identified in the watershed. Sites in the watershed tend to be on terraces near the confluence of two tributaries. Archaic sites are generally located on higher elevations than the Neo-American sites.

East Texas is the scene of some of the earliest Spanish missionary efforts among the Caddoan-speaking tribes of the Hasinai confederacy (Bolton 1970; Newcomb 1961). The French were also active in trading among the Caddo tribes of east Texas, spurring renewed missionary activities of the Spanish (Bolton 1970; Pool 1975:22).

The temporary campsite is the only type of site that has been identified by the archeologists (Hays, 1975; McCormick and Filson, 1975; McCormick, 1979; Nunley, 1978; and Warren, 1977) making surveys for the SCS at the structural measures. Archeological surveys have been made at the remaining planned floodwater retarding structure (No. 22) and at the multiple-purpose structure (No. 23). Two sites, neither of which are eligible for nomination to the National Register of Historic Places, were found at the multiple-purpose structure and none were found at the other structure.

The County Historical Commissions in Rusk and Nacogdoches Counties and the Historical Society in Shelby County reviewed the planned structural locations but did not identify the presence of any local historical sites.

Impacts

Installation of multiple-purpose structure No. 23 will affect two known archeologic sites which are not of sufficient significance for nomination to the National Register of Historic Places. No sites have been found at the other structure. The Texas State Historic Preservation Officer has reviewed and concurred with the findings of the survey and recommended that additional surveys be made at structure No. 22 after the land is cleared and prior to construction. If any evidence of cultural resources is discovered, steps will be taken as outlined in CFR, Title 7, Chapt. VI, Sub-Chapt. F, Part 656.

AIR QUALITY

There are no large urban areas within the watershed. Air quality is affected to a minor extent by vehicular traffic on the highways, local travel by the sparse rural population, logging and timber operations, small town activities, the brick plant at Garrison and the cement plant in Rusk County. Prevailing wind direction is predominantly from the south-southeast (Baldwin, 1973).

Impacts

Construction of the structural measures and minor operation and maintenance activities will increase pollutants such as equipment exhausts and dust. Noise from construction and maintenance activities will only be a short-term nuisance confined to sparsely populated rural areas.

VISUAL RESOURCES

The landscape of the watershed is composed of pine forests with small areas of open pastureland and bands of mixed hardwoods along the narrow valleys. The topography of the area is gently rolling to hilly.

The visual resource quality of the project area is considered average because there is no dominant landform and there is very limited vegetative diversity. Landscape use is of minimal importance as the project area is one of many similar areas. Because of the dense pine forest there will be low visibility of the proposed structures.

Impacts

After considering visual resource quality, landscape use and visibility this project is assigned a low landscape architecture priority. The floodwater retarding structure is located in an area that will avoid adverse landscape impacts. The multiple-purpose reservoir will form an elongated, narrow body of water lying within the incised Naconiche Valley. This will produce picturesque overviews of the lake from the road system, as modified for installation of the structure.

MUNICIPAL, INDUSTRIAL, AND DOMESTIC WATER SUPPLIES

Sources of Water

Municipal, industrial and domestic water supplies in and surrounding the watershed are obtained from both surface and ground water sources. The Wilcox Group aquifer is the most important source of ground water within the watershed and in the northern portion of Nacogdoches County. The Carrizo Sand Formation crops out in the southern part of the watershed and is an important ground water aquifer downdip (south-southeast) out of the watershed. Two surface water reservoirs in the Shelby County portion of the watershed, the city of Center Reservoir owned by Center and Lake Timpson owned by Timpson, supply water for municipal and industrial use for these respective towns.

The northern Nacogdoches County towns of Garrison and Appleby and residents within the surrounding areas of the watershed obtain their water supplies from wells in the Wilcox Group aquifer. The sand, silt, clay, and lignite beds of this group yield small to moderate quantities of freshwater (Texas Water Development Board, 1970). This formation is more than 950 feet thick in the northern part of Nacogdoches County.

Water Quality

The quality of water from the Wilcox Group varies from one well to the next. High iron content is a common problem. The dissolved solids content ranges from 150 mg/l to over 500 mg/l for wells in the upper beds. However with respect to the total thickness of this aquifer "most of this water appears to range from 500 to 1000 ppm with the largest part probably nearer 1000 ppm." (Texas Water Development Board, 1970) Water pH problems are also encountered in development of new wells.

The Appleby Water Supply Corporation at Appleby recently completed a new well which contained a high iron content. Fortunately the water from this well had a low manganese content and could be mixed with the water from other wells to produce a satisfactory water. The City of Garrison is having to deepen its wells into the more highly mineralized zones of the aquifer.

Yields

Yield from an individual well generally is less than 150 gallons per minute. Several wells are usually required to supply the volumes of water needed for a community supply system. Maintenance of a dependable yield from a well is a problem because of corrosion of well screens. Increased rate of pumping during periods of peak demand produces carbon dioxide which accelerates screen corrosion. Yields from good producing newly developed wells will sometimes drop drastically to the point of becoming nonproducers because of clogging of aquifer porosity with lignite particles. This problem is believed to be associated with reduction of pore pressures due to pumping and the rearrangement of lignite particles. Fortunately, none of the lignite enters the water pumped from the well. Often several wells are drilled before a suitable yield is developed.

Community Water Systems

Several community water supply systems in northern Nacogdoches County have expressed an interest and need for development of a dependable surface water supply (letters, Appendix C). The City of Garrison presently supplies water to 540 families. The Appleby, Caro, and Lilly Grove Water Supply Corporations supply water to 2,190 metered water

users. These later systems are financed by the Farmers Home Administration and serve rural residents, livestock, dairy and poultry farms.

These water systems are experiencing growth rates which increased from about 6 percent each year to a 7 to 8 percent in each year at present. Difficulties in development of new wells to meet water demands restrict the number of new households which can be added.

Future Needs

The community water systems surrounding the watershed are presently supplying a demand of up to 720,000 gallons per day to 2,190 metered customers. They are experiencing a 7 to 8 percent growth rate and have waiting lists of people whom cannot be served at this time because of problems in developing adequate sources and volumes of water. This growth has resulted from new homes being built in the rural areas, drastic increases in poultry production throughout eastern Texas, and interest by rural residents for obtaining a more reliable and safer water supply.

The water supply systems estimate that up to 4,700 water meter customers will desire water from these systems within the next 10 years. Problems of developing dependable sources of water from wells limits the number of meters that can be added and served with a safe dependable supply of water.

These systems are experiencing increasing problems with development of new wells for developing needed water supplies. Some wells are being deepened into the more highly mineralized waters in deeper portions of the aquifer. Often several wells must be drilled before wells with adequate yields and quality are found. The wells must also be dispersed over larger areas, adding to inefficiency and cost of producing water.

Impacts

The project as formulated will have no direct impacts on municipal, industrial, or domestic water supplies. There may be a slight increase in demand as a result of increased recreational use of the watershed. The major indirect impact is the possibility of allocating the surface water of Naconiche Creek to recreational uses and the commitment of a reservoir site to recreational and flood prevention purposes when there is an identified need for additional surface water for municipal, industrial, and domestic uses.

Although detailed feasibility studies have not been conducted by local interests to determine the most feasibile source of additional water supplies, multiple-purpose structure No. 23 is a logical candidate for supplying the water.

Multiple-purpose structure No. 23 has the potential for impounding water of high quality. The permanent spring flow out of the deep sandy surface soils (Carrizo Sand Formation) which covers most of the 16,787 acres drainage area into this structure site is of high quality. Testing during the critical summer period of 1978 showed total dissolved solid values of 48 to 104 mg/l in the flow in Naconiche Creek. Values for pH ranged from 6.4 to 6.7.

The proposed reservoir lies within a high rainfall area (48 inches annually) and will have significant inflow from springs. Reservoir operations studies for planning of the recreation pool were made using the severe drought years of 1946 through 1957. These studies showed that the reservoir would have had flow-through conditions more than 90 percent of the time and the reduced inflows during the extremely dry year of 1956 would have caused a maximum drawdown of 1.2 feet in September of that year. A generalized study of placing a demand for water supply of four million gallons per day (more water than is anticipated to be needed in the future) on the reservoir shows that a maximum drawdown of 6.3 feet or 3,094 acre-feet would have resulted by the end of this dry year. This represents a decrease in surface area from 585 acres to 409 acres. Lesser extremes in drawdown would have been experienced during the fall months of other dry years.

The seasonal fall and winter drawdown of the reservoir would have only minor impacts on recreational use of the reservoir. This drawdown would occur after the seasonal peak use for recreation. The Texas Outdoor Recreation Plan indicates that participation in water based and water related outdoor recreational activities, such as are to be provided by the facility, would be greatest in the summer and the spring seasons. The following tabulation summarizes percent participation by season by groups of activities:

Percent Participation By Seasons (Texas)

Recreational Activities	Spring	Summer	Fall	Winter
Water Contact Sports (Skiing and Swimming)	13%	75%	11%	1%
Water Related Sports (Picnicking, Boating, Camping, and Fishing)	21%	56%	17%	6%
Other Sports (Hunting)	9%	12%	48%	31%

Hunting is the only rural outdoor recreational activitiy which increases in the fall and winter season. Fish and wildlife management plans for the reservoir are to make late summer drawdowns for habitat improvement. This planned drawdown coincides with the expected reduced seasonal inflow and the expected drawdown if the reservoir is used for municipal water supply.

Investigations for determining future water needs, costs for development, and financing must be made and coordinated by the municipal and community water systems of northern Nacogdoches County before any actions can be taken to allocate water from the multiple-purpose structure for municipal use. Future allocation of water for municipal use would also require detailed studies of the structure, the recreation facilities, and the operation of the reservoir to insure conformance to current design criteria and state law.

Review of the present criteria for muncipal use of the multiple-purpose structure indicates that major structure modifications would not be required. The preliminary reviews also indicate that future water needs could be met

without changing the pool elevations. Modifications to recreational facilities would be minor and no additional landrights appear to be needed due to a change in allocation of water from recreational use to municipal use.

The cost of making modification to the structure and the recreational facilities would be a municipal water supply cost. In addition, the allocation of water from the recreation pool to municipal use would require repayment to the federal government of the appropriate portion of the federal cost-share funds used to construct the structure and to buy the land for the recreation pool. Repayment would be made after the municipalities complete their plans and take the necessary actions for becoming official sponsors and participates in the project.

The sponsors have not officially requested the allocation or inclusion of any water storage for municipal water use. Official action on such a request would require detailed planning and coordination before any viable plans could be developed. The sponsors are anxious to move forward with installation of this project now. They have sufficient funds to install the structure and recreational facilties. Delays along with inflating land costs will jeopardize their ability to finance and install this project. The sponsors are aware that water for municipal use has a higher state priority than recreational use.

SHORT-TERM VS. LONG-TERM PRODUCTIVITY

There will be some short-term losses to the environment as well as gains. The flood protection provided will increase agricultural production and farm income from 4,600 acres of flood plain lands. Most of the flood plain cropland has been converted to pastureland and is expected to remain in this use. No conversion of pastureland or existing forest land to more intensive type of land use is expected to occur under the level of flood protection that will be provided.

Long-term losses of 294 acres of wetlands and 565 acres of woody wildlife habitat (which includes the 220 acres of Type 1 wetlands) will occur with the installation of the floodwater retarding structure and the multiple-purpose structure. There will also be some short-term effects in the periodic inundation of the 429 acres of the floodwater pool above the sediment pools and recreation pool. Vegetation not tolerant to inundation could be affected and replaced by more water tolerant species.

The use of this site for recreational storage will not prevent its future use as a water supply for local communities and municipalities. Municipal use of the water would have a higher state priority of use and could be accomplished without any major modifications to the structure or the recreational facilities and without any drastic changes in the operation of the reservoir.

The long-term effects, in most cases, will soon overcome the short-term effects. The implementation of the proposed action will help maintain and enhance the long-term quality and productivity of the human environment in

the area. It is possible that most of the wetland values lost at the structures will be recovered around the edges of the recreational reservoir, and in and around the edges of the sediment pools as they become filled with sediment. The provision of flood prevention and the opportunity for water-based recreation will allow the citizens of the area to use the soil, water and related resources productively and wisely for the short-term and the long-term uses.

The action of installing the planned measures will require the dedication of only a small percentage of the existing resources in the watershed. The quality of the human environment will be improved over the quality of the environment that exists without project conditions.

COMMITMENT OF RESOURCES

The installation of the remaining planned measures will require the commitment of 63 acres of pastureland, 565 acres of woodland, 74 acres of Types 3, 6 and 7 wetlands and 3 acres of roads for installation of the dams (including the dam at the greentree reservoir), emergency spillways, recreation and sediment pool water areas and park areas. The production of agricultural and forest products will be foregone from these areas as well as from the greentree reservoir downstream from the watershed. Minor adjustments will need to be made on another 429 acres of land in the structure flood pools which will be restricted to pastureland and woodland uses in the future.

The installation of these structural measures will require the commitment of labor, materials, energy, and capital expenditures for construction and the operation, maintenance and replacement of short-lived portions of the project.

CONSULTATION AND REVIEW WITH APPROPRIATE AGENCIES AND OTHERS

Development of the project plans for the Attoyac Bayou watershed in May 1964 was accomplished through an orderly process consisting of application for assistance by the sponsors, field examinations, public hearings, public meetings during the planning process and a field level review of the completed plan. The project was approved for operations July 14, 1965.

In early 1970, after the sponsors had obtained all landrights needed for the channel work but before start of construction, the channel work was again reviewed because of changing concerns about fish and wildlife resources. Beginning with a field tour and a review with the Texas Parks and Wildlife Department and the Fish and Wildlife Service, a series of meetings and field studies were made. These reviews were concentrated on the channel work as there was no special concern about the floodwater retarding structures. The findings of these reviews were presented to the sponsors who agreed on October 1, 1970 to make further studies for possible modifications for the channel work. Reevaluations were made of the channel work, as requested by the sponsors. These studies resulted in the deletion of the planned channel work and modification of the structures for two-stage outlets.

On March 7-10, 1977, environmental assessments were initiated for the multiple-purpose structure and the other remaining structures with representatives of the Texas Parks and Wildlife Department and the Fish and Wildlife Service. The identification of existing wetlands at the multiple-purpose structure site and reviews for compliance with Executive Order 11990, Protection of Wetlands, resulted in additional planning and environmental evaluations for this structure. On September 13, 1978, the Fish and Wildlife Service provided a planning aid letter for working with the sponsors. These recommendations were reviewed with the sponsors and used for additional investigations and planning for compensating wetland losses.

On February 12, 1979 a meeting was held with the U.S. Forest Service concerning planning of a greentree reservoir for wetland preservation and improvement on Forest Service administered land. A followup meeting was held on February 13, 1979 with the Texas Parks and Wildlife Department, the Fish and Wildlife Service, and the sponsors concerning all remaining project measures. A continuing contact was maintained with the U.S. Forest Service for planning of the greentree reservoir and for review of the completed plans.

On February 14, 1979, a public meeting was held to discuss the environmental evaluations for selection of the remaining project measures. A revised planning aid letter was provided by the Fish and Wildlife Service on March 5, 1979 and a similar letter was provided by the Texas Parks and Wildlife Department on March 21, 1979. These recommendations and the actions taken are summarized below.

1. All landrights provide that existing hardwood timber remain in place with a clear understanding that this timber goes with the land.

Action: The 1,100 acres of land that are to be acquired for multiple-purpose structure No. 23 will be fenced. The hardwood timber will be preserved and managed for benefit of wildlife species.

2. Vegetation clearing be limited to the minimum allowable by SCS policy and regulations and all remaining timber be retained within the sediment pools. At site 23 we would stress the development of a clearing plan which would consider general recreation as well as fish and wildlife needs. Such a plan should be jointly developed through a coordination meeting with all concerned parties.

Action: As much of the woody vegetation as possible will be left in the sediment pools. However, a minimum area must be cleared 400 feet upstream from the principal spillway to assure proper functioning. Approximately 365 acres of the woody vegetation will be left in the recreation pool of site 23 primarily in the upper reaches.

3. Where standing timber would severely limit fisherman access by boat, 10 to 15 foot wide boat lanes should be provided.

Action: Standing timber will be left in the upper ends of the recreation pool. However to provide access a 20-foot wide boat lane needs to be cleared.

4. To allow for vegetative improvement and partially offset vegetative losses through inundation, an area immediately surrounding the permanent water of all the remaining structures should be fenced to preclude grazing. We recommend the improvement (fencing) of two acres of terrestrial habitat for each acre inundated. This will only partially offset inundation induced losses as our habitat analysis indicates that full habitat unit compensation (out-of-kind) could be accomplished by improving 2.7 acres for each acre inundated. The extent of such an area would be determined by the size of the permanent water. The smaller the permanent water can be and still receive benefits, for the landowner, the smaller the area to be fenced need be.

Action: All of the 1,100 acres of land which is to be purchased for installation of the multiple-purpose structure No. 23 will be fenced to protect the area from grazing or other unauthorized uses. This area includes 442 acres of wildlife land which will not be used for the recreation pool, the recreational facilities, or the dam and emergency spillway.

Approximately 7 acres of land including the dam, emergency spillway and adjoining odd area at the floodwater retarding structure will be fenced for vegetative protection. This structure does not include provisions for storage of permanent water or fencing of water area. Initially, up to 17 acres of surface water will be impounded in the sediment pool. This water area will diminish as sediment accumulations gradually fill this pool.

5. Areas denuded by construction should be revegetated to plants with recognized wildlife values. Further, the use of nonseed producing grasses for erosion control purposes should be restricted to the face of structures only.

Action: Odd areas behind the dam and between the dam and emergency spillway will be revegetated to forbs, shrubs, and trees beneficial to wildlife. A band of vegetation consisting of common reedgrass and switchgrass will be planted along the waterline on the front slope of the floodwater retarding structure. Only areas subject to erosion will be planted to bermudagrass for erosion control and will be overseeded to bahiagrass or some other seed-producing grasses. These areas will be fenced.

6. At site 23 a fluctuation plan should be developed to control undesirable aquatic vegetation and benefit fisheries, waterfowl and shorebird potentials. Such a plan should:

   a. Provide for a water level drawdown in late summer.

   b. Return to near or above normal levels in the fall-winter period.

   c. Have a second drawdown in late winter.

d. Return to near normal recreation pool levels in early spring with stable or slightly increasing water levels during mid-late spring.

Action: The sponsors will implement a fluctuation plan to control undesirable aquatic vegetation and benefit fish and wildlife. The first drawdown will be done in late summer to a minimum of four feet. This drawdown will expose mud flats for seeding and growth of plants that have wildlife value. The pool will be allowed to begin refilling by October 1 and to reach normal level by early winter. The second drawdown will be done in late winter to expose undesirable vegetation to winter freezes. The pool will be allowed to return to normal level by early spring.

7. Plant Japanese millet or smartweed on open wet edges.

Action: The areas exposed during the late summer drawdown of the recreation structure will be seeded to plants beneficial to waterfowl.

8. Seek to prevent damage to fragile wet soils by excluding all forms of mechanical equipment and off-road vehicles.

Action: The sponsors will take all necessary measures for confining motorized vehicles to the improved roads to prevent unnecessary damage.

9. Establish and provide for maintenance of the "greentree" reservoir as previously described to offset wetland losses. In lieu of this, other alternatives must be sought which would adequately compensate for these losses. Public access must be provided to such a "greentree" reservoir.

Action: The sponsors will construct a 315 acre greentree reservoir with a detention pool consisting of 202 acres on public land administered by the Forest Service. A road will be constructed to provide public access to this area.

10. Restrict road construction and development facilities to that essential for recreational access. This will avoid additional wildlife habitat losses.

Action: The sponsors will construct a road for public access to the recreation site. The new road will follow the existing road but will have to be widened to accommodate two-way traffic.

11. Establish management policies which will provide for an orderly and equitable opportunity for all outdoor recreational activities. Such policies should:

a. Prohibit access from private developments unless such access is made available to the general public.

b. Prohibit all grazing of livestock within the area bounded by the shoreline of site 23 and the upper boundary of the 100 foot county owned buffer zone surrounding site 23.

Action: The sponsors will restrict private development within the fee simple title area around Site 23. The detention pool and buffer zone will be protected from livestock use by construction of fences needed to exclude grazing.

On May 18, 1979, a public hearing was held to review the results of the environmental assessment for the remaining project measures and to obtain oral and written statements from the public concerning the remaining project measures. Statements obtained concerned landrights at the structural measures, questions on the quality of sewage effluent from the Garrison treatment plant, concerns about water quality and recharge at the multiple-purpose structure, water uses and purpose at the multiple-purpose structure and in the sediment pools, flood plain land use conversions and economic evaluation. One response stated that the structures are located in an area identified as having too much flatwater for recreational demands and that all reservoirs constructed be of a dry pool type. Another response expressed concern about the wetlands involved and suggested that alternative 2 be considered for implementation.

Consultation on the possibility of occurrence of local historical sites of importance at the structure locations were made with the following:

Rusk County Historical Commission
Cecil Williams, Chairman
Structure Site Nos. 1 and 4

Shelby County Historical Society
John Reagan Harris, President
Structure Site Nos. 6, 10, 13, and 14

Nacogdoches County Historical Commission
Jere Jackson, Chairman
Structure Site Nos. 17, 19, 22, and 23

No local historical sites were identified.

Consultation of the National Register of Historic Places indicates that no historic sites listed on the register will be affected.

The State Historic Preservation Officer has been consulted concerning the archeologic resources in the watershed and for concurrence with the archeological surveys that were being made for the project.

Consultation with the Fish and Wildlife Service was made June 7, 1979, on endangered species in accordance with Section 7 of the Endangered Species Act. It was concluded August 30, 1979, with no findings of impact on any listed or proposed species to critical habitat.

Review and Comments

The federal agencies which responded to the request for review of the Draft EIS and which submitted comments and recommendations are listed below:

- Department of the Army
- Department of the Interior
- Department of Transportation
- Environmental Protection Agency
- Office of Equal Opportunity
- Department of Commerce
- Department of Health, Education, and Welfare
- Federal Energy Regulatory Commission

The state and local agencies which responded to the request for review of the Draft EIS and submitted comments and recommendations are listed below:

- Budget and Planning Office (State agency designated by Governor and State Clearinghouse)
- East Texas Council of Governments
- Deep East Texas Council of Governments

Interested individuals and organizations who provided comments are listed below:

- Stephen F. Austin State University (Elroy S. Nixon for Texas Organization for Endangered Species)
- Wildlife Management Institute (Southcentral Representative)
- Dan W. Lay

Copies of the letters and comments received are contained in Appendix E.

Discussion and Disposition of Comments Received on Draft Environmental Impact Statement (EIS)

The Draft EIS was transmitted to 39 separate offices of federal and state agencies for review and comment. In addition informational copies of the draft were sent to 22 interested groups and individuals. Informational copies were also sent to appropriate USDA agencies and the sponsors of the project.

Responses to the Draft EIS were received from 19 federal and state agencies. Three responses were received from groups and individuals. Some additional planning considerations were received from the U.S. Forest Service and from the Sponsors.

The sponsors again reviewed the remaining planned project measures to be installed. Rusk County and Shelby County made the decision to stop any further actions for acquiring the required landrights for installation of remaining planned measures within their respective areas of responsibility. Nacogdoches County will obtain the required landrights for installation of the planned multiple-purpose reservoir (No. 23) and one floodwater retarding structure (No. 22). Both of these structures are located in Nacogdoches County within the Naconiche Creek subwatershed of the Attoyac Bayou watershed and will complete the installation of all remaining planned measures in this hydrologic and economic unit. Nacogdoches County is the sponsor primarily responsible for installation of these structures and along with Rusk and Shelby Counties, is responsible for operating and maintaining the 12 structures previously installed in the watershed.

The U.S. Forest Service provided additional comments for consideration concerning the greentree reservoir.

The Final EIS has been modified to reflect the installation of the remaining two structures (multiple-purpose structure No. 23 and one floodwater retarding structure No. 22) and to make changes needed in response to comments received.

The responding agencies' comments and disposition of each are as follows:

FEDERAL AGENCIES

Environmental Protection Agency

In their initial review of the Draft EIS, the EPA assigned the classification of ER-2, stating a lack of information supporting the need for the multiple-purpose reservoir and installation of the greentree reservoir.

A joint EPA and SCS field inspection of the project area and meeting with representatives of the sponsoring organizations was held in Nacogdoches, Texas on April 30, 1980. The needs for the project and environmental concerns were reviewed at this meeting. An agreement was reached for developing and supplying EPA with the additional information for the project.

Additional information on recreational needs in the area, management of the lands involved in the multiple-purpose structure and greentree reservoir, research uses of these areas by Stephen F. Austin University, future needs for surface water sources, and potentials for surface water supply were developed. This information was reviewed by EPA and a letter classifying the Draft EIS as LO-2 was received.

Comment: The EPA stated that the additional information developed be included in the Final EIS.

Response: The additional information has been added to the Planned Project section and under Recreational Resources and Municipal, Industrial, and Domestic Water Supplies in the Environmental Conditions and

Impacts section. Letters supporting these concerns have been added under Appendix C.

Comment: The EPA stated that a vicinity map which was prepared for the Recreational Resources section include all reservoirs having more than 50 surface acres.

Response: These reservoirs have been added to the vicinity map and a table has been added to indicate type of recreational facilities that are available at these reservoirs.

Department of the Army

Comment: The Department commented that there was an apparent entry error in the Summary section for the 2-year flood plain.

Response: The entry error for the 2-year flood plain was noted.

Comment: The Department commented that the project will be constructed above the headwaters of any affected streams.

Response: Noted.

Department of the Interior

Comment: The Department commented that they were pleased with the fish and wildlife considerations provided to reduce impacts to these resources.

Response: Noted.

Comment: The Department stated that "In the absence of any information on the dimensions of the structures, it appears unwarranted to form any assumptions about their safety. The final statement should address these omissions."

Response: Additional information has been included under the Planned Project section.

Comment: The Department stated that good quality drinking water should be available to the visiting public at the recreational park.

Response: Potable drinking water will be supplied to the recreation area by the Appleby Water Supply Corporation.

Comment: The Department commented that the section under Wetlands should be assessed for compliance with Executive Orders 11988, Flood Plain Management and 11990, Protection of Wetlands.

Response: The project was assessed for compliance with these respective Executive Orders.

Comment: The Department stated that if the entire 213,440 acres of watershed were closed to mineral entry, the long-term impact that the loss of such minerals would have on the economy could be substantial and should be explained in the final EIS.

Response: Only the 1,100 acres involved with the multiple-purpose structure and park would be closed.

Comment: The Department stated that the local sponsors' decision to not fence the detention pool are unwarranted and that fencing to provide the habitat and provisions for livestock watering could also be accomplished.

Response: The Sponsors stated that they do not want to fence the detention areas and it would provide an unreasonable hardship on the landowners because these areas will not be permanently affected. This adds unnecessary burdens to the problem of acquiring required landrights. We believe that with the land purchased around the multiple-purpose structure, and with the greentree reservoir installed there is no additional need for further mitigation.

Comment: The Department commented that the multiple-purpose structure should be built concurrently with the greentree reservoir and the access road, or not at all.

Response: A statement has been added to the EIS stating that the greentree reservoir will be constructed and access route acquired at the same time that the multiple-purpose structure is built.

Comment: The Department provided suggestions for possible additional actions if plans for the greentree reservoir are not implemented.

Response: Noted.

Department of Commerce

Comment: The Department commented on the poor quality of the maps in Figure 1 and Appendix B and D.

Response: Quality of reproduction will be checked for Final EIS.

Comment: The Department commented that a history of specific floods that may have caused specific damages would help justify the projects' flood prevention goals.

Response: A history of specific floods is contained in the original project plan but was left out of the draft EIS. The history of specific floods has been added to the Final EIS.

Comment: The Department called attention to a possible reference error to Gould, 1962.

Response: This error has been corrected.

Comment: The Department (NOS) stated that disturbance of any Geodetic control survey monuments by the planned project would require a 90-day advance notification.

Response: No known survey monuments will be involved.

Department of Health, Education, and Welfare - Public Health Service

Comment: The Department stated that they believe more information on the expected water quality of the proposed impoundments and their short and long-term trophic status is necessary. Consideration should be given to the effect of waterfowl enhancement upon nutrient levels, water quality, and trophic levels. Explanation as to whether applicable water quality standards in and below the impoundments will be satisfactorily maintained or attained.

Response: Additional discussion has been added in the Final EIS.

Comment: The Department stated that further information should be provided on the quality and source of the potable water for lake facilities including campgrounds.

Response: Quality potable water will be supplied to the park by the Appleby Water Supply Corporation. They presently serve households in this vicinity.

Comment: The Department raised the question as to potential use of the reservoir for future water supply.

Response: A section titled "Municipal, Industrial, and Domestic Water Supply" has been added to the Final EIS to discuss potential future water supply.

Comment: The Department stated that the type and adequacy of sewage treatment and solid waste disposal to be provided should be described.

Response: Nacogdoches County operates a solid waste disposal site within a few miles of the structure that will be used for solid waste disposal. The soils at the park site are suitable for sewage treatment and disposal with septic tanks.

Comment: The Department recommended that a statement for control of vector populations should be included in the Operations and Maintenance section.

Response: A statement has been added which states "Prevention and control measures will be implemented, as needed, to control proliferation of noxious vectors such as aquatic insects, terrestrial arthropods, and rodents in cooperation with the Nacogdoches County Health Department and appropriate federal and state agencies."

Comment: The Department suggested that a description of the factors being taken into consideration during design and operation of the reservoir and appurtenant facilities to prevent health and safety hazards should be provided in the EIS.

Response: A paragraph on accessibility for the handicapped and safety features has been added in a paragraph under a new section titled Recreational Facilities.

Comment: The Department stated that it should be explained why project benefits are assigned to more intensive land uses (Appendix A) when the text (page 52) indicates no conversion of flood plain land to a more intensive land use is expected.

Response: The benefits from more intensive land use shown in Appendix A is misinterpreted. These benefits refer to land already in agricultural uses such as existing cropland and pastureland. The level of flood protection that will be provided to the flood plain is not intended to convert pasture and woodland to cropland.

Comment: The Department commented that it appears that the project's flood prevention benefits are not sufficient by themselves to justify the project economically (Appendix A). With most of the flood plain in pasture or forest, the importance of reducing flooding for these types of land uses to increase their productivity is not understood and should be further explained.

Response: Benefits are received from increased flood protection to existing land uses to allow timely harvest of the hay and timber resources. Appendix A in the Final EIS reflects benefits with the amended plan.

Comment: The Department suggested that the feasibility of incorporating a small hydroelectric power plant into any of the proposed dam works should be examined.

Response: The Crops of Engineers was contacted concerning feasibility of installing small hydroelectric power plants. This is not feasible. The Federal Energy Regulatory Commission also commented that there was no potential for hydroelectric projects.

Federal Energy Regulatory Commission

Comment: The Commission stated that there are no existing or potential hydroelectric projects in the project area.

Response: Noted.

Comment: The Commission stated that an examination of available information indicates possible conflicts with interstate natural gas pipelines in the general area of the proposed projects. To assure that the

construction involved in the proposed projects would not significantly affect the operation of the pipelines, it is recommended that contacting the two owners (Natural Gas Pipeline Co. of America and United Gas Pipeline Company) to determine the exact location of the pipelines.

Response: When pipelines are involved, procedures for obtaining landrights provide for contacting the pipeline owners and all other affected property owners. All necessary landrights must be obtained by the sponsors before any structure is installed.

Comment: The Commission commented that the report does not adequately address the extensive oil and gas activities in the East Texas area.

Response: This information has been added. Much of this activity has developed since completion of field work for the assessment. This activity has not been intensive near the remaining planned measures.

Advisory Council on Historic Preservation

Comment: The Council suggested that the Final EIS contain the Texas State Historic Preservation Officer's concurrence in the SCS's determination of no effect.

Response: A copy of the letter has been enclosed in the Final EIS.

USDA - Office of Equal Opportunity

Comment: The Office recommended that the Final EIS include some assurance that the recreational facilities will be fully accessible to the handicapped.

Response: The recreational facilities include design features to make them accessible for use by the handicapped.

STATE AGENCIES

Budget and Planning Office - (State Agency Designated by the Governor and State Clearinghouse)

The Budget and Planning Office reviewed the Draft EIS and transmitted the review comments of the following state agencies:

Texas Department of Agriculture
Texas Forest Service
Texas Air Control Board
Texas Department of Health
Texas Department of Water Resources
State Department of Highways and Public Transportation
Texas State Soil and Water Conservation Board

These agencies did not have any comments requiring further consideration for the project.

Texas Parks and Wildlife Department

Comment: The Department stated that they still believe that fencing of areas above the floodwater retarding structures would protect additional valuable wildlife habitat.

Response: Odd areas between the dam and spillway will have wildlife plantings and will be fenced to eliminate livestock grazing. Proper grazing and other conservation practices are applied to watershed lands by interested cooperators to protect their plant, soil and water resources.

Comment: The Department stated that this document would also be strengthened by the inclusion of specific plans, including a timetable, to assure that the planned mitigation measures will be promptly implemented.

Response: The greentree reservoir will be constructed concurrently with the installation of the other planned project measures.

Comment: The Department stated that it was pleased with the cooperation and coordination in planning of the remaining project measures.

Response: Noted.

GROUPS AND INDIVIDUALS

Stephen F. Austin University (Representative for Texas Organization for Endangered Species)

Comment: The representative commented that the general description of the vegetation in the draft EIS was very superficial and stated that there are many interesting habitat types and plant communities.

Response: It is agreed that there are many interesting plant communities in the watershed. However, the assessment did not indicate that a detailed description of plant communities was needed for identifying project impacts or for the decisionmaking process. Therefore, only a general description is contained in the EIS.

Comment: The representative commented that Notice of Review species should be considered in environmental planning. Also several species under Notice of Review are in the east Texas area.

Response: There are no endangered or threatened plant species or Notice of Review species that are listed in the Federal Register that occur in the project area.

Wildlife Management Institute

Comment: The Institute commented that a project of this nature in a watershed with only two percent cropland (43 percent pastureland and 55 percent woodland) appears to be highly questionable. Also, the amount of cropland in the watershed is not sufficient to justify the proposed expenditure and damage to fish and wildlife resources due to loss of 800 acres of woodlands and 416 acres of wetlands.

Response: The project has a favorable benefit-to-cost ratio due to floodwater protection to cropland, pastureland, and woodland along with benefits afforded from the multipurpose structure. Damages to wildlife resources are moderate and fishery and waterfowl resources are increased.

Comment: The Institute stated that woodland and pastureland in the project area can easily endure short duration flooding, however, page 24 indicates that the duration of flooding will be increased and mistakenly assigns a reduction in flood damages to this action.

Response: The increased duration of flooding would occur from the release rate from the two stage principal spillway. This is shallow flooding that spills onto the flood plain from stream breakout points in the natural levees and flood wooded sloughs and low lying woodlands (Type 1 wetland areas). The pastureland and remaining cropland are on the higher lying soils of the flood plain not affected by this flow.

Comment: The Institute commented that economic justification which relies heavily on recreation benefits is erroneous. Also that Appendix A shows over one-half of total project benefits ($220,500 annually) are attributed to recreation at multiple-purpose structure No. 23 and page 49 indicates the TORP demonstrates a need for 1,313 acres of more surface water in the project area (Regions 14 and 15) in the near future. A review of TORP reveals that the needs for surface water in Region 14 and 15 are all within urban areas.

The recreation benefits claimed for the project appear to be grossly excessive, and we request a detailed explanation of how recreation benefits were derived.

Response: The section on Recreational Resources has been modified to better portray the local needs. It is agreed that the TORP data is not sensitive to local needs. Appendix A has been corrected to reflect the revised plan.

Comment: The Institute commented that the greentree reservoir recommended as mitigation of wetland losses may have merit, however, we question the use of National Forest Lands for this purpose. This land is already being managed for production of wildlife. Furthermore, who will provide for operation and maintenance costs?

Response: The Forest Service land is managed primarily for timber with wildlife as a secondary use. The use of this land as a greentree reservoir will enhance the area for wildlife resources by improving the overall productivity of the area through controlled temporary inundation. Additionally the timber will be preserved for wildlife resources where under normal management the trees would be harvested. The Forest Service will provide for the operation and maintenance of the reservoir.

Comment: The Institute recommended that no further structural work be undertaken in the watershed.

Response: Noted.

Dan Lay (Individual)

Comment: Lay stated that basic environmental impacts are not assessed. Questions were raised on how the ecosystem will be affected, nutrient cycling, bottomland productivity, productivity of the catfish in Attoyac Bayou, etc. It was also asked if there are similar projects where biological monitoring has been carried on to appraise the effects, and what has happened to resident duck populations where wooded streams are converted to lakes?

Response: The section on Water Quality contained information on downstream biological impacts (see Bibliography, Robinette, et al., 1978). Additional information has been prepared for this section based on biological studies made on floodwater retarding structures in the southern states and other sources. Summaries of past studies made by SCS are contained in STSC Technical Note 802, "Water Quality Effects of Impoundments", 1979. Studies of use of these reservoirs have been and are in progress in Texas (see Bibliography, Hobaugh, 1977). Only a small portion of the wooded streams are to be converted to lakes and the existing woods around the multiple-purpose reservoir are to be enhanced for wildlife resources by management.

A section on Research and a letter included in Appendix C indicates an interest by the Wildlife Research Group at Stephen F. Austin University in Nacogdoches for conducting research programs on the effects of impoundments.

Comment: Lay commented that he applauded the concept for a greentree reservoir but was not sure that this would be accomplished and that this appears to be left to the sponsors. A contingency plan is offered if plans for the greentree reservoir fail.

Response: The greentree reservoir will be installed in conjunction with the multiple-purpose reservoir. The sponsors (Nacogdoches County) must obtain the necessary landrights and agreements for both before construction is started. If plans for the greentree reservoir should become unfeasible, other plans will be developed in cooperation with responsible state and federal agencies and the sponsors.

Comment: Lay states that there is no plan for operation and maintenance.

Response: This is not correct. The sponsors have signed a project agreement to operate and maintain all structural measures constructed in the project. Specific site operation and maintenance agreements are prepared for each site at the time of completion of design for construction. The Forest Service will operate and maintain the greentree reservoir within their guidelines.

Comment: The recreational benefits for the multiple-purpose reservoir are questioned by Lay.

Response: The local needs for the recreational facilities at proposed Lake Naconiche have been reviewed and the data added to the section on Recreational Resources.

Comment: Lay provided a number of opinions concerning the project. These include the belief that $1.575 per day for recreation is not a fair exchange for the ecological losses, that the money to be expended by the sponsors could be better spent for tax reduction or road improvement, that federal expenditures for flood prevention in the Attoyac system adds to rising inflation without adequate justification and that the owners of the bottomlands acquired their flooding problems willingly and some don't want changes in the present environment.

Response: Opinions noted.

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LIST OF PREPARERS

The principal preparers of this document are listed below. This list does not include the area and district conservationists who provided existing SCS data concerning the watershed and also excludes technical specialists who reviewed the supporting data and provided expertise in the fields of fish and wildlife science, water quality, hydrology, geology, plant science, soil science, engineering, recreation, landscape resources, and economics.

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Biologist - 5 Years

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B.S. Agricultural Education
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Goerdel, Lemund E., Environmental Assessment Team Leader
B.S. Agronomy
Post graduate - Geology
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Soil Scientist - 8 Years
Geologist (Watershed Planning) - 12 Years
Watershed Planning Specialist - 1 Year
Environmental Assessment Team Leader - 5 Years

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Rugh, Ronald E., Soil Conservationist
B.S. Range Management
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District Conservationist - 5 Years
RC&D Coordinator - 3 Years
Soil Conservationist - 1 Year

Wagner, Keith S, Cartographic Technician
Experience: Map Compilation - 3 Years

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B.S. Agricultural Economics
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Agricultural Economist 24 Years

LIST OF PREPARERS CONTINUED

Others providing specific inputs for the document:

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Ray Janek

Nunley Multimedia Productions (Archeological Studies)

Parker Nunley, PhD, Consulting Archeologist

Texas Parks and Wildlife Department (Wildlife Resources)

Dan W. Lay

U.S. Fish and Wildlife Service (Wildlife Resources)

Ronel Finley, John Pulliam, and Ron Wiley, Biologists, Ecological Services, Field Office

Randy McNutt, Biologist, Riparian Assessment Team, Regional Office

USDA, Forest Service (Greentree Reservoir)

LIST OF APPENDICES

Appendix A - Comparison Of Benefits And Costs For Structural Measures

Appendix B - Project Map

Appendix C - Letters Concerning Need for Recreational Facilities, Future Surface Water Supply, and Research Use of Project Measures

Appendix D - Map of Potential Lignite Resources

Appendix E - Structural Data

Appendix F - Letters of Response and Comment Received On Draft EIS

COMPARISON OF BENEFITS AND COSTS FOR STRUCTURAL MEASURES

Attoyac Bayou Watershed, Texas

(Dollars)

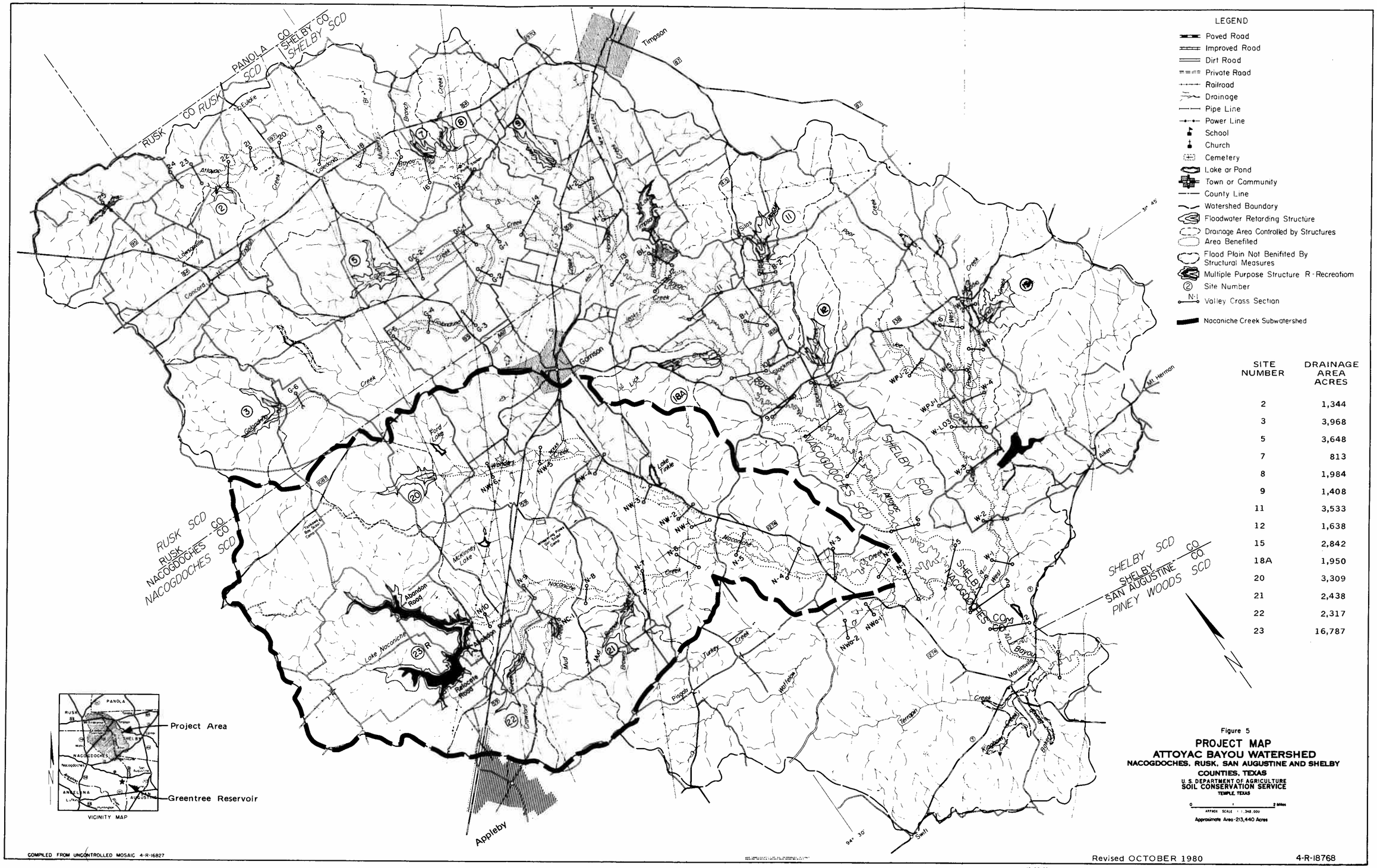
Evaluation Unit	AVERAGE ANNUAL BENEFITS 1/				Average Annual Cost 3/	Benefit-Cost Ratio
	Flood Prevention					
	Damage Reduction 2/	More Intensive Land Use	Recreation	Total		
Floodwater Retarding Structure and Multiple-Purpose Structure No. 23, including Basic Recreational Facilities	39,500	25,860	220,500	285,860	166,580	1.7:1.0
Project Administration					10,160	
GRAND TOTAL	39,500	25,860	220,500	285,860	176,740	1.6:1.0

1/ Price base: Current Normalized Prices (September 1979) for Crop and Pasture damages and Current (1979) Prices for Non-Agricultural damages for structural measures remaining and the appropriate price base in effect at the time of construction for structural measures that are built.

2/ From Table 5

3/ From Table 4

August 1980



SITE NUMBER	DRAINAGE AREA ACRES
2	1,344
3	3,968
5	3,648
7	813
8	1,984
9	1,408
11	3,533
12	1,638
15	2,842
18A	1,950
20	3,309
21	2,438
22	2,317
23	16,787

Figure 5

PROJECT MAP
ATTOYAC BAYOU WATERSHED
NACOGDOCHES, RUSK, SAN AUGUSTINE AND SHELBY COUNTIES, TEXAS
U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
TEMPLE, TEXAS

Revised OCTOBER 1980 4-R-18768

USDA-SCS-FORT WORTH, TEXAS 1980 12-28-62 Rev. 5-64 4-R-11693

APPENDIX C

Letters concerning need for recreational facilities in northern Nacogdoches County area, future water supply source for northern Nacogdoches County area, and research use of the proposed Lake Naconiche impoundment and the proposed greentree reservoir.

RECREATIONAL FACILITIES

Letter from Joan H. Cason, County Commissioner, Nacogdoches County
Letter from Superintendent of Garrison Public Schools
Letter from Mayor of City of Garrison

FUTURE WATER SUPPLY NEEDS

Letter from Mayor City of Garrison
Letter from Appleby Water Supply Corporation
Letter from Griffin Engineering and Surveying, Inc.
Letter from Caro Water Supply Corporation
Letter from Lilly Grove Water Supply Corporation

RESEARCH OPPORTUNITIES

Letter from Stephen F. Austin State University

May 14, 1980

Mr. Joe Daniel
Soil Conservation Service
117 South Street
Nacogdoches, Texas 75961

Dear Mr. Daniel:

I would like to substantiate some of the needs for recreation in the Lake Naconiche area.

In conformity to regulations for an application for a Community Development Block Grant in 1975, the Commissioners Court held public hearings in four areas of the county to consider the needs and desires of our citizens.

At the hearing held on April 15, 1975 in Cushing, Texas, the following needs were expressed:

1. Housing
2. Parks and summer recreation programs
3. Industrial development
4. Building for the ambulance.

At the hearing held on April 16, 1975 in Garrison, Texas, the following needs were expressed:

1. Improved county roads
2. Solid waste disposal
3. Combination family park and recreation
4. Housing.

There was no mention of recreational needs at either the Chireno or Nacogdoches public hearings. However, in my opinion, a recreational facility in the Lake Naconiche area would also be greatly used by the residents in and around the city of Nacogdoches. There is a university here with approximately 10,000 students. Many of these students would flock to a recreational area of such beauty and uniqueness.

Because of the energy shortage and continuing need to conserve our resources, the proximity would enhance its usage. The cool, clear water definite appeal.

I realize that many things must be considered in planning such a structure. Along with the flood retention and recreational value, the continued growth of our county population and the apparent water needs for the future are indeed factors which must be considered.

Sincerely,

Joan H. Cason

Joan H. Cason
County Commissioner
Nacogdoches County

TROY JOHNSON, PRINCIPAL, HIGH SCHOOL

VERNIS ROGERS, PRINCIPAL, ELEMENTARY SCHOOL

HORACE FRANCIS, SUPERINTENDENT

Garrison Public Schools

Garrison, Texas 75946

May 13, 1980

Attoyac Watershed Authority
C/O Glen Adams
P.O. Box 162
Garrison, Texas 75946

Subject: Recreational Needs of Area

Gentlemen:

Since I work with young people, I am made increasingly aware of the recreational needs in the Garrison area and, for that matter, of all the East Texas locale.

We have no state parks in our vicinity. Fishing and swimming opportunities are very limited without driving to the Toledo Bend Reservoir or to Sam Rayburn. The cost of operating an automobile makes these options very expensive.

We need a recreational site in the immediate vicinity to be used by both young and old alike. In my opinion, Lake Naconiche would be an outstanding facility that would add much to the quality of life for a great many people. The water is of an unusual quality. Picnicking, boating, swimming, fishing and skiing could provide a great deal of pleasure to many who are now deprived of such an opportunity.

Your further consideration of this matter will be appreciated by many citizens of Deep East Texas.

Sincerely,

Horace Francis

Horace Francis, Superintendent
Garrison Public Schools
P.O. Box 510
Garrison, Texas 75946

WALTER HEARNSBERGER, MAYOR
MRS. FANNIE JEAN PAYNE, SECRETARY
M. H. STODDARD, CHIEF OF FIRE DEPT.

COUNCILMEN
J. P. DOBBS, JR.
T. D. COLLINS, JR.
TOMMIE GARRETT
CLYDE BARR
LEO STRONG

CITY OF GARRISON

"The Biggest Little Town In East Texas"

GARRISON, TEXAS 75946

May 15, 1980

Attoyac Bayou Watershed Authority:

We, the people of Garrison would be located about 6 or 7 miles from the proposed Lake Naconichi. At this time, we serve 540 families with water. We have three wells and plans are to drill the fourth well this year. We have to go 350 to 400 feet for an ample water sand with the many wells in the area-farms and rural water systems. We are concerned as to how long this source of water will last.

Our area is increasing in population, due to the continued move of people from the cities to the rural areas, causing us concern for our future water needs. We think it is important to have a surface water system.

Since our people have to go 40 to 50 miles for recreational facilities, a site for swimming and pleasures of water sports would be a big drawing card for this area.

We think it would be most foolish to pass up the opportunity of Lake Naconichi with the best and purest water, plus benefits so badly needed.

We would also like to note the proposed lake area is owned by individuals, there is no control over this land ~~and~~ present and if this lake is not built, all timbers will be cut by owners and this beautiful property would be lost as a natural habitat for the future.

Walter Hearnsberger

Water Hearnsberger, Mayor
City of Garrison, Texas

APPLEBY WATER SUPPLY CORPORATION
Nacogdoches, Texas

May 24, 1979

Mr. George C. Marks, State Conservationist
USDA Soil Conservation Service
P.O. Box 648
Temple, Texas 76501

Dear Sir:

The Board of Directors of the Appleby Water Supply Corporation commends the efforts of those organizations involved in the planning of the proposed 585 surface-acres (approx.) multipurpose lake on the Naconiche Creek, Site 23, Attoyac Bayou Watershed, Nacogdoches County, Texas. We offer our support in this endeavor. We are concerned, however, that construction of this facility will result in increased demands upon the services of our water system.

The Appleby Water Supply Corporation is a non-profit, rural water supply system supported by loans made through the Farmers Home Administration. The system currently serves 650 members and its service area, as approved by the Public Utility Commission of Texas, includes the area in which the multipurpose reservoir is to be constructed. Our membership includes residences on three sides of this proposed lake. Many of our members are poultry producers and dairy farmers who depend upon our system for their water supply. Our membership is increasing rapidly. We depend upon wells for our water supply and we are hard-pressed to keep the supply ahead of the demand.

Since one purpose of the planned lake is public recreation, including camping and picnic areas, there will be demand for an approved water supply and it will be the responsibility of the Appleby Water Supply Corporation to provide this service. Also, there will be extensive housing development in the vicinity of the lake and these will depend upon the Appleby Water Supply Corporation for water.

In order to assure full utilization of the proposed lake by the public and to meet the increased water demand which will occur after the lake is completed, the Appleby Water Supply Corporation is requesting permission to take two million (2,000,000) gallons of water per day from the Naconiche Lake to supplement the existing supply available to the system.

We will appreciate your consideration of this request and representatives of the Appleby Water Supply Corporation will be pleased to meet with you to discuss this matter.

Yours truly,

Walter V. Robertson, President
Appleby Water Supply Corporation
Rt. 7, Box 476
Nacogdoches, Tx 75961

John W. Aiken, Vice President

Walter Ray Haney, Secretary

Herbert B. Hancock, Member
Board of Directors

Billy G. Reneau, Member
Board of Directors

A. Wayne Williams, Member
Board of Directors

Ben F. Wright, Member
Board of Directors

Copies to:

George C. Marks, State Conservationist
Nacogdoches Soil and Water Conservation District
Rusk Soil and Water Conservation District
Piney Woods Soil and Water Conservation District
Attoyac Bayou Watershed Authority
Nacogdoches County Commissioners Court
Rusk County Commissioners Court
Shelby County Commissioners Court
Shelby Soil and Water Conservation District

APPLEBY WATER SUPPLY CORPORATION
Nacogdoches, Texas 75961

June 26, 1980

Mr. Joe Daniel
Nacogdoches Soil and Water Conservation District
U. S. Department of Agriculture
Soil Conservation Service
1714 South Street
Nacogdoches, Texas 75961

Dear Mr. Daniel:

The Board of Directors of the Appleby Water Supply Corporation has followed with interest, the reports and briefings relating to the proposal for construction of the multipurpose lake on the Naconiche Creek, Site 23, Attoyac Bayou Watershed, Nacogdoches County, Texas. We commend the efforts of the Soil Conservation Service in this endeavor.

In our letter of January 26, 1980 we referred to future water requirements of the Appleby Water Supply Corporation. At this time we would like to be more specific regarding our present status and anticipated needs.

The Appleby Water Supply Corporation, a non-profit corporation financed through loans from the Farmers Home Administration, has been in existence for approximately seventeen years and has recently completed its third major expansion. The system currently serves 720 meters. Each meter, with few exceptions, serves a residence or residence and farm operation. While the system does serve some housing developments, a majority of the customers are rural residents. Included in the service of the system are 164 farmer-owned poultry operations having a combined yearly capacity of approximately 14,000,000 broiler chickens. These operations consist mostly of two to four houses per farmer and in most cases represent the major source of income.

The system has over seventy-five miles of distribution lines and the average water usage is approximately 10,000,000 gal./mo. with some daily demands in excess of 500,000 gallons.

During the past seventeen years the system has grown from approximately 100 members and one well, to the present 720 members and three wells. The area of service has increased several fold as the system has strived to meet its obligation of service. Of significance in this regard, is the rate of growth of the system within the past few years. Currently, the rate of growth is approximately sixty meters per year. It is anticipated that this rate of growth will continue or accelerate during the next ten years. Additionally, there

has been a rapid increase in poultry operations within the service area of the system. Forty-four poultry houses were added during the past year and eleven more are under construction. The additions will increase the annual capacity to more than 15,000,000 birds.

Based upon our present rate of growth, the daily demand upon the Appleby Water System by 1990 will exceed 1,000,000 gallons per day as the system serves 1,500 families. These figures are likely to double again by the year 2000.

Our projections, based upon engineering advice, indicate that a surface reservoir will be highly desirable, if not required, to dependably meet the water needs of the community beyond the next ten years. The Naconiche Creek, being a continuous flowing stream of unusually high quality water, has been considered as the logical site for such a reservoir since a major part of the drainage basin of this stream lies within the service area of the Appleby Water Supply Corporation. If this lake can be constructed as a multipurpose facility to include domestic water supply, flood control, and recreation, it will be a major asset, both economically and esthetically, to this area.

Again, we appreciate your efforts in this undertaking and we will be happy to assist in any way that we can.

Yours truly,

Walter V. Robertson, President
Appleby Water Supply Corporation
Route 7, Box 476
Nacogdoches, Texas 75961

Robert L. Free, Vice President

Walter Ray Haney, Secretary

GRIFFITH
ENGINEERING
& SURVEYING, INC.

118 East Hospital
Nacogdoches Savings and Loan Building, Suite 308
Nacogdoches, Texas 75961
713/560-3080

May 20, 1980

Soil Conservation Service
1714 South Street
Nacogdoches, Texas 75961

Attention: Mr. Joe Daniel, District Conservationist

Dear Mr. Daniel:

We support the development of Lake Naconiche and any other reservoir in this area for potential water supply. We are currently involved in the design and supervision of construction of various water systems in this area and know the problems very well. We are currently involved in improving the D & M Water Supply Corporation, Caro Water Supply Corporation, Lilly Grove Water Supply Corporation and the City of Garrison's water system.

All of these water producers share the same problems. The most severe being the development and production of ground water supplys. Most of the water in this area is pumped from the Carrizo Sand and the Wilcox Group. These sands are becoming more unreliable as ground water sources as time passes. Some areas have always been very high in iron concentration.

In the last two years we have experienced a change in some of the wells quality. Caro Water Supply Corporation's Well No. Two operated for several years with almost perfect water conditions. Two years ago the well suddenly became high in coloring of an organic nature. Caro had to have an expensive filter system installed to clear up the water. I don't know if this is an isolated case or if a trend may be developing.

As more people move into this area the water tables are continueing to "draw-down" necessitating the lowering of pumps. The wells in this area will average producing about 130 gallons per minute. This is not an econmical way to produce water.

I feel that water supply alone would be justification enough for Lake Naconiche with out considering the recreational benefits.

Yours truly,

Jerry M. Clark

Jerry M. Clark
Vice President and General Manager

JMC/bc

CARO WATER SUPPLY CORPORATION
ROUTE 6 BOX 301 CC
NACOGDOCHES, TEXAS 75961

May 20, 1980

Soil Conservation Service
1714 South Street
Nacogdoches, Texas 75961

Attention: Mr. Joe Daniel, District Conservationist

Dear Mr. Daniel:

The Caro Water Supply Corporation currently has two water wells in production and one currently being developed. Out of the two that are currently producing, one has a severe color problem. A filter system was installed to make the water useable. The new well that is currently being developed appears to be a fairly successful well. This is our second location for this well as we have drilled one dry hole. This is a very difficult area to develope as a suitable water supply.

We support the Lake Naconiche Reservoir. Not only would it serve as a water supply, but, as a recreational outlet for the young people in our area. It would serve as a swimming, fishing and boating outlet for our people in the area who need it the most. Other lakes in this area are in-accessable to many and are already over-crowded.

If we can assist you in any way in the development of this reservoir, please let us know.

Yours truly,

A. E. Wilburn, President

LILLY GROVE
WATER SUPPLY CORPORATION
ROUTE 1 BOX 136
CUSHING, TEXAS 75760

May 20, 1980

Soil Conservation Service
1714 South Street
Nacogdoches, Texas 75961

Attention: Mr. Joe Daniel, District Conservationist

Dear Mr. Daniel:

The Lilly Grove Water Supply Corporation has experienced a very high growth rate in the last few years which is closly tied in to the City of Nacogdoches Industrial Development. This growth must be met as far as water supply is concerned. There are no adequate shallow water wells for our water supply corporation due to the poor water quality.

We are currently involved in an expansion program which is requiring purchase of water from the City of Nacogdoches. Their water comes from Lake Nacogdoches. Our contract with the City of Nacogdoches has a limitation in it that they have the right to reduce the quantity of water that they will sell us. The amount of water that we can purchase from the City of Nacogdoches could very well be reduced just when we are experiencing a greater need.

We support the development of Lake Naconiche as a potential source of water supply for our area. The sooner this lake can be developed the better it would be for all concerned in this area. This lake and any other reservoirs in this area would be very benefical to the people of the area as a recreational outlet. The only lake close-in at this time is Lake Nacogdoches and it is already overcrowded.

Please let me know if we can be of any help in the support of this proposed Reservoir.

Yours truly,

Jimmy W. Parmley

Jimmy W. Parmley, President

STEPHEN F. AUSTIN STATE UNIVERSITY
NACOGDOCHES, TEXAS 75962

SCHOOL OF FORESTRY

P. O. Box 6109
713/ 569-3301

9 June, 1980

Mr. Joe C. Daniel
District Conservationist
Soil Conservation Service
1714 South Street
Nacogdoches, TX 75961

Dear Mr. Daniel:

This is to confirm the interest of the Wildlife Research Group in possible research cooperation in the planned greentree reservoir and post-reservoir construction of the Lake Naconiche site. As I noted in our previous conversation, there has been a general lack of information on the actual impact of reservoir construction on natural ecosystems. Therefore, we would be interested in establishing a cooperative project which would document the pre- and post-construction differences for the site. In addition, we would be interested in a study which examines the effects of greentree reservoirs on the distribution of waterfowl and wading birds in the East Texas region.

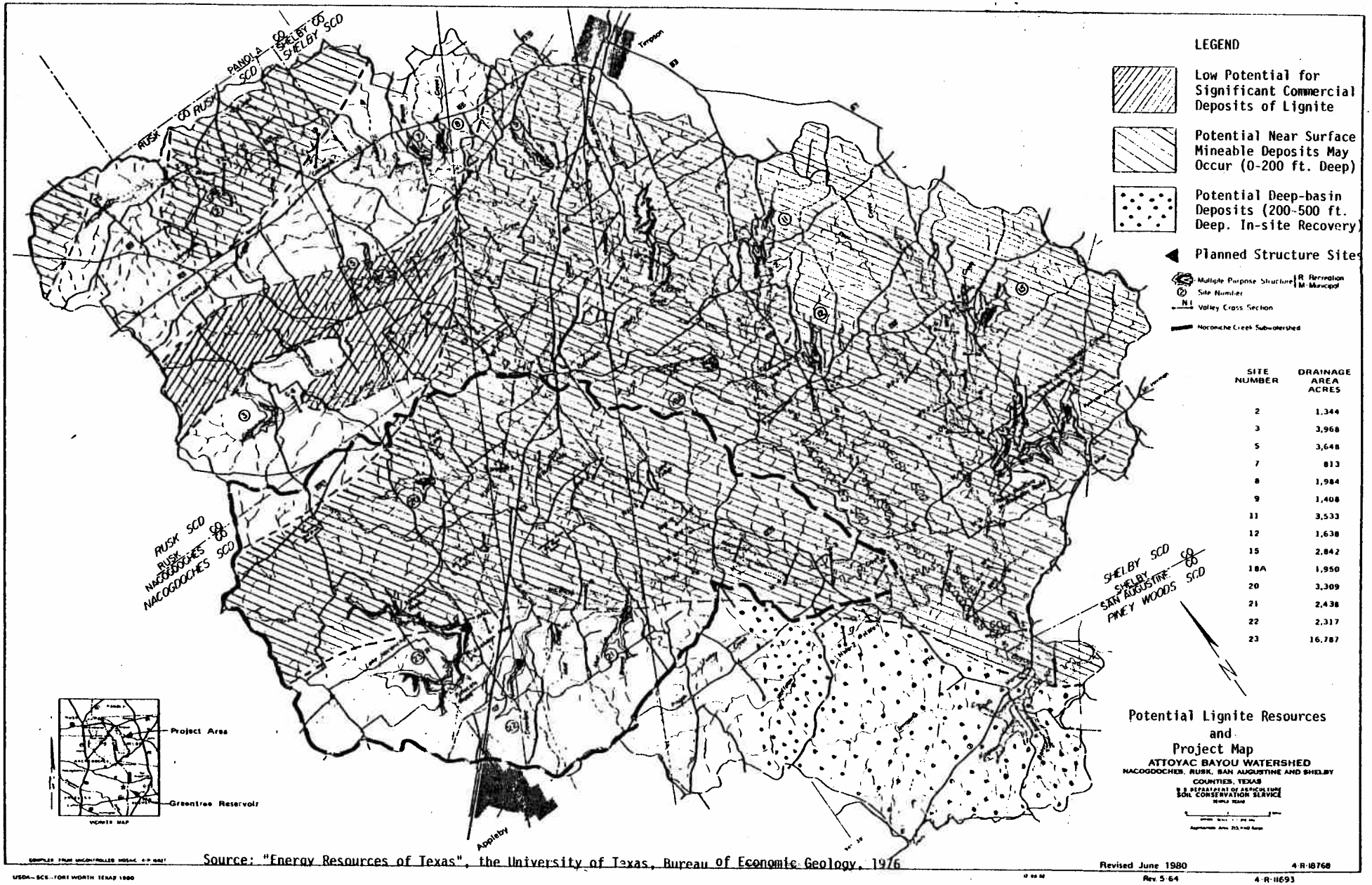
We appreciate the opportunity to cooperate with the Soil Conservation Service on the two proposed projects. I would suggest that we seek possible funding for these projects directly from the Environmental Protection Agency, as they are the regulatory authority involved. Baseline information on ecological impacts of water related construction projects is certainly important to future decision-making in regard to such projects.

I appreciate the professional manner in which you and your staff have handled the planning of the Lake Naconiche project, and look forward to working with you in the future.

Sincerely,

James C. Kroll Ph.D.
Associate Professor of Forest Wildlife

JCK/sm



SITE NUMBER	DRAINAGE AREA ACRES
2	1,344
3	3,968
5	3,648
7	813
8	1,984
9	1,408
11	3,533
12	1,638
15	2,842
18A	1,950
20	3,309
21	2,438
22	2,317
23	16,787

Potential Lignite Resources and Project Map
ATTOYAC BAYOU WATERSHED
NACOGDOCHES, RUSK, SAN AUGUSTINE AND SHELBY COUNTIES, TEXAS
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
TEMPLE, TEXAS

Source: "Energy Resources of Texas", the University of Texas, Bureau of Economic Geology, 1976

Revised June 1980

4-R-18768

Rev. 5-64

4-R-11693

USDA—SCS—FORT WORTH, TEXAS 1980

APPENDIX D

STRUCTURAL DATA
Attoyac Bayou Watershed

Item	Unit	Structure No. 22	Structure No. 23
Drainage Area	Sq.Mi.	3.62	26.23
Storage Capacity			
50-Yr. Sediment Pool	Ac.Ft.	60	196
Sediment Reserve (Below Riser)	Ac.Ft.	66	--
Sediment in Recreation Pool	Ac.Ft.	--	196
Sediment in Detention Pool	Ac.Ft.	23	70
Recreation Pool	Ac.Ft.	--	6,617
Floodwater Pool	Ac.Ft.	1,241	4,994
TOTAL	Ac.Ft.	1,390	12,073
Surface Area			
50-Year Sediment Pool	Acre	17	--
Sediment Pool (Top of Riser)	Acre	27	--
Recreation Pool	Acre	--	585
Floodwater Pool	Acre	148	883
Volume of Fill	Cu.Yd.	55,000	230,000
Elevation Top of Dam 1/	Foot	345.8	357.5
Maximum Height of Dam 2/	Foot	30	42
Emergency Spillway			
Crest Elevation	Foot	353.0	355.0
Bottom Width	Foot	80	200
Type		Veg.	Veg.
Percent Chance of Use 3/		3.0	2.1
Average Curve No. - Condition II		70	48
Emergency Spillway Hydrograph			
Storm Rainfall (6-hour) 4/	Inch	7.7	7.1
Storm Runoff	Inch	4.20	1.60
Velocity of Flow (Vc)	Ft/Sec.	0.0	0.0
Discharge Rate	C.F.S.	0.0	0.0
Maximum Water Surface Elevation	Foot	--	--
Freeboard Hydrograph			
Storm Rainfall (6-hour) 5/	Inch	16.8	14.6
Storm Runoff	Inch	12.6	6.6
Velocity of Flow (Vc) 6/	Ft/Sec.	8.0	6.3
Discharge Rate 1/	C.F.S.	1,304	1,552
Maximum Water Surface Elevation 1/	Foot	356.8	357.5
Principal Spillway			
Capacity (Maximum)	C.F.S.	40	419
Capacity Equivalents			
Sediment Volume	Inch	.31	.14
Sediment Reserve Volume (Below Riser)	Inch	.34	--
Sediment in Recreation Pool	Inch	--	.14
Sediment in Detention Pool	Inch	.12	.05
Recreation Pool	Inch	--	4.73
Detention Volume	Inch	6.43	3.57
Spillway Storage 8/	Inch	3.40	1.67
Class of Structure		A	A

1/ Values obtained from routing.
2/ Difference in elevation between the top of the settled dam and the valley floor.
3/ Is the average number of times the emergency spillway will be expected to function in 100 years based on a regional analysis of gaged runoff.
4/ Design storm 6-hour rainfall as shown on E.S. Drawing 1020 attached to Advisory Notice 667.
5/ For Class A*structures, 1.23 x P for 6-hour rainfall shown on figure 3.21-1, NEH, Section 4, Supplement A, and 1.73 x P for Class B structures, and in all cases the rainfall exceeds the minimum requirement shown in Washington Engineering Memorandum SCS-27.
6/ Obtained from curves drawn from Figure 4-R-11472 revised 3-59 and ES 98 dated 4-27-55, based on flows obtained from graphical routing of the Freeboard Hydrograph.
7/ Includes allowance for base flow.
8/ Watershed inches stored between the emergency spillway crest and top of dam.

APPENDIX F

Letters of Comment Received on the Draft EIS

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VI
1201 ELM STREET
DALLAS, TEXAS 75270

April 4, 1979

Mr. George C. Marks
State Conservationist
Soil Conservation Service
P.O. Box 648
Temple, Texas 76501

Dear Mr. Marks:

We have reviewed your Draft Environmental Impact Statement (EIS) for the Attoyac Bayou Watershed. The project is located in portions of Rusk, Shellby, Nacogdoches and San Augustine Counties involving 213,440 acres. The project provides assistance for application of land treatment, the installation of 21 floodwater retarding structures, and one multiple-purpose structure for water-based recreation. Eight floodwater retarding structures and the multiple-purpose structure, which remain to be installed, are covered by this EIS.

The wetland types encountered in this watershed were Type 1 (seasonally flooded hardwood basin or flats), Type 3 (inland shallow fresh marshes), Type 5 (inland open freshwater), Type 6 (shrub swamp), and Type 7 (wooded swamp). The construction of the remaining structures will result in the loss of 341 acres of Type 1, 5 acres of Type 3, 27 acres of Type 6 and 43 acres of Type 7.

We offer the following comments for your consideration:

1. The chosen alternative will result in the conversion of 416 acres of wetlands to surface water, the permanent loss of 16 miles of streams, and the inundation of 517 acres of bottomlands for the construction of a greentree reservoir.

2. Of major concern is the apparent lack of alternative analysis by the SCS to minimize the loss to wetlands. Alternatives that deem further analysis are: Alternative 2 - foregoing the installation of the remaining project measures and changing current land uses; and Alternative 3 - foregoing the installation of the multiple-purpose structures and installing a single purpose structure.

We classify your Draft Environmental Impact Statement as ER-2. Specifically, it is our recommendation that the Draft EIS be rated with environmental reservations and the SCS be required to further evaluate more environmentally sound alternatives. If no other alternatives are found feasible, we would suggest that they pursue Alternative #2 (page 12). If that is unacceptable to the local supporters, we suggest they pursue Alternative #3 (page 12). Our classification will be published in the Federal Register according to our responsibility to inform the public of our views on proposed Federal actions, under Section 309 of the Clean Air Act.

Definitions of the categories are provided on the enclosure. Our procedure is to categorize the EIS on both the environmental consequences of the proposed action and on the adequacy of the Impact Statement at the draft stage, whenever possible.

We appreciated the opportunity to review the Draft Environmental Impact Statement. Please send our office five (5) copies of the Final Environmental Impact Statement at the same time it is sent to the Office of Environmental Review, U.S. Environmental Protection Agency, Washington, D.C.

Sincerely,

Francis E. Phillips, Jr.

Adlene Harrison
Regional Administrator (6A)

Enclosure

ENVIRONMENTAL IMPACT OF THE ACTION

LO - Lack of Objections

EPA has no objections to the proposed action as described in the draft impact statement; or suggests only minor changes in the proposed action.

ER - Environmental Reservations

EPA has reservations concerning the environmental effects of certain aspects of the proposed action. EPA believes that further study of suggested alternatives or modifications is required and has asked the originating Federal agency to re-assess these aspects.

EU - Environmentally Unsatisfactory

EPA believes that the proposed action is unsatisfactory because of its potentially harmful effect on the environment. Furthermore, the Agency believes that the potential safeguards which might be utilized may not adequately protect the environment from hazards arising from this action. The Agency recommends that alternatives to the action be analyzed further (including the possibility of no action at all).

ADEQUACY OF THE IMPACT STATEMENT

Category 1 - Adequate

The draft impact statement adequately sets forth the environmental impact of the proposed project or action as well as alternatives reasonably available to the project or action.

Category 2 - Insufficient Information

EPA believes the draft impact statement does not contain sufficient information to assess fully the environmental impact of the proposed project or action. However, from the information submitted, the Agency is able to make a preliminary determination of the impact on the environment. EPA has requested that the originator provide the information that was not included in the draft statement.

Category 3 - Inadequate

EPA believes that the draft impact statement does not adequately assess the environmental impact of the proposed project or action, or that the statement inadequately analyzes reasonably available alternatives. The Agency has requested more information and analysis concerning the potential environmental hazards and has asked that substantial revision be made to the impact statement. If a draft statement is assigned a Category 3, no rating will be made of the project or action, since a basis does not generally exist on which to make a determination.

DEPARTMENT OF THE ARMY
FORT WORTH DISTRICT, CORPS OF ENGINEERS
P. O. BOX 17300
FORT WORTH, TEXAS 76102

REPLY TO
ATTENTION OF:

SWFED-PR

1 April 1980

Mr. George C. Marks
State Conservationist
Soil Conservation Service, USDA
P.O. Box 648
Temple, Texas 76501

Dear Mr. Marks:

We have reviewed the Draft Environmental Impact Statement concerning the Attoyac Bayou Watershed in Nacogdoches, Rusk, Shelby, and San Augustine Counties, and have the following comments:

a. On page ii of the DEIS, in the table showing the area eliminated from flooding, there is an apparent error in the entry for the 2-year flood plain.

b. The U. S. Army Corps of Engineers regulates the discharge of dredged and fill material into the waters of the United States including their adjacent wetlands under Section 404 of the Clean Water Act (33 USC 1344). It appears that the project will be constructed above the headwaters of any affected streams and is, therefore, authorized by a nationwide general permit provided it meets the conditions listed in the inclosure. If you have any questions concerning our regulatory program, please contact Mr. David Barrows at 817-334-2681.

Thank you for the opportunity to present our comments.

Sincerely,

Jimmy D. Baggett

JIMMY D. BAGGETT
Acting Chief
Engineering Division

1 Incl
As stated

DISCHARGES INTO CERTAIN WATERS OF THE UNITED STATES

The Corps of Engineers regulates the discharge of dredged and fill material into the waters of the United States under authority of Section 404 of the Clean Water Act (Public Law 95-217, dated 27 December 1977). A general permit has been issued on a nationwide basis for the placement of dredged and fill material into certain waters of the United States. These include: non-tidal rivers, streams, and their impoundments, including their adjacent wetlands all of which are located above the headwaters of the stream; natural lakes less than 10 acres including their adjacent wetlands; and other wetlands not associated with a tributary system. Headwaters is defined as that point on a non-tidal stream above which the average annual flow is less than five cubic feet per second. Activities authorized under the nationwide permit are subject to the following conditions:

(1) That the discharge will not destroy a threatened or endangered species as identified under the Endangered Species Act, or endanger the critical habitat of such species;

(2) That the discharge will consist of suitable material free from toxic pollutants in other than trace quantities;

(3) That the fill created by the discharge will be properly maintained to prevent erosion and other non-point sources of pollution; and

(4) That the discharge will not occur in a component of the National Wild and Scenic Rivers System or in a component of a State wild and scenic river system.

If your project is to be constructed within the terms of these criteria no further administrative action is necessary. If the project does not fit the criteria you should make application for an individual permit. Application should be made to the District Engineer; ATTN: Chief, Operations Division, SWFOD-O; P. O. Box 17300; Fort Worth, Texas 76102. If you have any further questions you may contact the Permit Section at 817-334-2681.

Allie J. Majors

ALLIE J. MAJORS
Chief, Operations Division

SWF FL 857
6 Aug 79

SUGGESTED MANAGEMENT PRACTICES

In addition to the conditions specified in the nationwide permit, the management practices listed below should be followed to the maximum extent practicable, in the discharge of dredged or fill material allowed under the permit. These practices will minimize the adverse effects of the discharges on the aquatic environment.

(1) Discharges of dredged or fill material into the waters of the United States should be avoided or minimized through the use of other practical alternatives.

(2) Discharges in spawning areas during the spawning season should be avoided.

(3) Discharges should not restrict or impede the movement of aquatic species indigenous to the waters or the passage of normal or expected high flows or cause the relocation of the waters (unless the primary purpose of the fill is to impound waters).

(4) If the discharge creates an impoundment water, adverse impacts on the aquatic system caused by the accelerated passage of water and/or the restriction of its flow should be minimized.

(5) Discharges in wetlands areas should be avoided.

(6) Heavy equipment working in wetlands should be placed on mats.

(7) Discharges into breeding and nesting areas for migratory waterfowl should be avoided.

(8) All temporary fills should be removed in their entirety.

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

ER 80/129

APR 14 1980

Mr. George C. Marks
State Conservationist
Soil Conservation Service
Department of Agriculture
Post Office Box 648
Temple, Texas 76501

Dear Mr. Marks:

Thank you for the letter of February 5, 1980, requesting our views and comments on the draft environmental statement for Attoyac Bayou Watershed, Nacogdoches, Rusk, Shelby and San Augustine Counties, Texas. In reviewing the document we have noticed several areas of discussion which we feel merit comment.

General Comments

We are pleased with the fish and wildlife considerations provided and the measures proposed which will reduce or ameliorate impacts to fish and wildlife resources. Those features proposed to benefit fish and wildlife include the following:

1. Odd areas such as between the dam and emergency spillway (that will be cleared) are to be revegetated with plants beneficial to wildlife.

2. Dams, spillways and the odd areas will be fenced to protect the plantings and to facilitate proper management. Grazing will be prohibited on the odd areas.

3. A greentree reservoir for seasonal inundation of 315 acres of hardwoods will be created. An additional 202 acres surrounding the greentree reservoir will be inundated occasionally. These lands are administered by the U.S. Forest Service. A public access road will be constructed and maintained by the local sponsors.

4. The sponsors will manage 442 acres of buffer zone land at the multiple-purpose structure for wildlife. Grazing and timber harvest will be excluded. Wildlife plantings will be made to replace 57 acres of existing improved pastures.

5. Clearing of the pool area of the multiple-purpose structure will be limited to approximately 50 percent of the existing woody vegetation.

Specific Comments

Planned Project, pages 14-21 - Nowhere in the draft statement did we find specific information on the dimensions (length and maximum height) of any of the nine proposed dams, on the volume of embankment material required, or on the proposed sources or typed of material from which the dams will be constructed. It is noted that one structure "will have a higher potential hazard from failure (Class B) since it is located immediately upstream from U.S. Highway No. 84" (p. 20, par. 2). In the absence of any information on the dimensions of the structures, it appears unwarranted to form any assumptions about their safety. The final statement should address these omissions.

The final statement should also indicate precautions planned in the construction of wells and development of springs and in the maintenance of wells and springs for recreational areas to ensure that drinking water of good quality will be available to the visiting public.

Wetlands, page 35 - It should be clarified as to whether the proposed project has been assessed for compliance with Executive Orders 11988, Floodplain Management, and 11990, Protection of Wetlands.

Mineral Resources, page 43 - Mineral resources within the watershed include clays, glauconite, gravel, sand, lignite, oil and gas, and a geothermal potential. Oil and gas pipelines crisscross the area.

Overall, the statement acknowledges the impacts, real and potential, that the project would have on the mineral sector of the economy. The document mentions clay, glauconite, lignite, and oil and gas and gives acreages of strippable lignite that would be inundated by the impounded water. Access to other acreages would be restricted, owing to recreation, wildlife, and buffer zones.

Lignite deposits of the Wilcox Formation that would be inundated by impounded water are among the most important and highest-grade resources of this type in eastern Texas. The small portions of land that the project itself would exclude from mineral entry would have relatively little impact on mineral resources. If, however, the entire 213,440 acres of watershed were closed to mineral entry, the long-term impact that the loss of such

minerals would have on the economy could be substantial and should be explained in the final environmental statement.

Consultation, pages 56 and 57 - We believe the concerns of the local sponsors regarding detention pool fencing are unwarranted. Their reason is that fencing would prevent access for their livestock to water at the structures. Fencing to protect the habitat and also to provide avenues for livestock watering could be accomplished. This would not be incompatible with the sponsor's desires. There is no doubt that fencing to control grazing would further reduce impacts to terrestrial wildlife.

Finally, because there appears to be some concern on the part of the U.S. Forest Service concerning the agreement to allow use of lands (administered by them) for the greentree reservoir, additional plans should be made.

The multiple-purpose structure should be built concurrently with the greentree reservoir and the access road, or, not at all. If the agreement with the U.S. Forest Service and the local sponsors cannot be worked out and if the access road is not completed, the watershed plan should be reformulated to include additional fish and wildlife mitigating features.

Concluding Comment

Overall, the fish and wildlife measures proposed are acceptable to partially compensate for fish and wildlife losses associated with the project. Fencing of detention pools could further mitigate losses. If the greentree reservoir is not constructed concurrently with the multiple-purpose structure, the plan will not be acceptable and should be reformulated.

We appreciate the opportunity to comment on this statement.

Sincerely,

LARRY E. MEIEROTTO

Assistant SECRETARY

UNITED STATES DEPARTMENT OF COMMERCE
The Assistant Secretary for Science and Technology
Washington, D.C. 20230
(202) 377-XXX 4335

April 3, 1980

Mr. George C. Marks
State Conservationist
USDA Soil Conservation Service
P. O. Box 648
Temple, Texas 76501

Dear Mr. Marks:

The Department of Commerce has received the draft environmental impact statement, "Attoyac Bayou Watershed - Nacodoches, Rusk, Shelby, and San Augustine Counties, Texas" which accompanied your letter of February 5, 1980 to the Deputy Assistant Secretary for Environmental Affairs. The statement has been reviewed and the following comments, including the enclosed comments from the National Oceanic and Atmospheric Administration (NOAA) National Ocean Survey (NOS), are offered for your consideration.

The maps offered for reference in Fig. 1 and Appendixes B and D are illegible and make it impossible to locate structures, water-courses, and lignite deposits referred to in the text. The final environmental statement should contain clear maps to facilitate evaluation of the proposed project.

Flood prevention is listed as a principal project goal. Reference is made to flooding on 17,200 acres of flood plain, the mean annual rainfall is given as 48 inches, and tables describe the degree of expected flood reduction in terms of area (at pages ii, 23, and 24) and dollars (Appendix A). However, there is no history of specific floods that may have caused damages that might justify the project's flood prevention goals. The statement would benefit from a tabulation of specific floods and flooding damages suffered by the community.

Reference is made to Gould (1962) at pages 6 and 36. The Bibliography at page 64 lists Gould (1969) but not (1962). Is this a typographic error, or has a reference been omitted?

Thank you for giving us the opportunity to provide these comments, which we hope will be of assistance to you. We would appreciate five copies of the final environmental statement.

Sincerely,

Bruce R. Barrett

Bruce R. Barrett
Acting Director
Office of Environmental Affairs

Enclosure: Memo from Robert B. Rollins, NOAA/NOS

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY
Rockville, Md. 20852

MAR 2 9 1980

OA/C52x6:JLR

TO: PP/EC - Joyce M. Wood

FROM: OA/C5 - Robert B. Rollins

SUBJECT: DEIS #8002.11 - "Attoyac Bayou Watershed: Nacogdoches, Rusk, Shelby, and San Augustine Counties, Texas"

The subject statement has been reviewed within the areas of the National Ocean Survey's (NOS) responsibility and expertise, and in terms of the impact of the proposed action on NOS activities and projects.

Geodetic control survey monuments may be located in the proposed project area. The map in Appendix A is not large enough to be easily read; it is very difficult to pinpoint monuments that might be affected by watershed construction. If there is any planned activity which will disturb or destroy these monuments, NOS requires not less than 90 days' notification in advance of such activity in order to plan for their relocation. NOS recommends that funding for this project includes the cost of any relocation required for NOS monuments.

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
CENTER FOR DISEASE CONTROL
ATLANTA, GEORGIA 30333

March 28, 1980

Geo. C. Marks

U.S. Department of Agriculture
Soil Conservation Service
Temple, Texas 76501

Gentlemen:

We have reviewed the Draft Environmental Impact Statement (EIS) for the Attoyac Bayou Watershed in Nacogdoches, Rusk, Shelby, and San Augustine Counties, Texas. We are responding on behalf of the Public Health Service and are offering the following comments for your consideration.

We believe more information on the expected water quality of the proposed impoundments and their short- and long-term trophic status is necessary. In discussing the expected water quality of the proposed impoundments, consideration should also be given to the effect of waterfowl enhancement upon nutrient levels, water quality, and trophic levels. It should be explained whether applicable water quality standards in and below the impoundments will be satisfactorily maintained and/or attained.

Further information should be provided on the quality and source of the potable water for lake facilities including campgrounds. Will any of the proposed impoundments have any potential future use as a water supply for agricultural or community needs? The type and adequacy of sewage treatment and solid waste disposal to be provided should also be described.

In our review of the EIS for potential vector-borne disease impacts, we recognize that efforts will be made to avoid creating conditions which will increase populations of noxious vectors. However, we did not observe any references to either beneficial or adverse impacts upon vector populations which could result from the construction of the impoundments. A statement for control should be included in the Operations and Maintenance Section.

Since recreational benefits play a major role in the project's justification, it is important that the health and welfare of swimmers, boaters, and other lake users be taken into consideration particularly during the design of lifeguard stations, swimming beach areas, boat launching facilities, fishing piers, etc. A description of the factors being taken into consideration during design and operation of the reservoirs and appurtenant facilities to prevent health and safety hazards should be provided in the EIS.

It should be explained why project benefits are assigned to more intensive land uses (Appendix A) when the text (page 52) indicates no conversion of flood-plain land to a more intensive land use is expected.

It appears that the project's flood prevention benefits are not sufficient by themselves to justify the project economically (Appendix A). With most of the flood plain in pasture or forest, the importance of reducing flooding for these types of land uses to increase their productivity is not understood and should be further explained. Such land uses are usually quite compatible in a flood plain and can often be benefited by periodic flooding.

The feasibility of incorporating a small hydroelectric power plant into any of the proposed dam works should be examined. The Corps of Engineers can be contacted for a feasibility assessment.

We appreciate the opportunity to review this EIS. Please send us a copy of the final EIS when it becomes available.

Sincerely yours,

Frank S. Lisella

Frank S. Lisella, Ph.D.
Chief, Environmental Affairs Group
Environmental Health Services Division
Bureau of State Services

FEDERAL ENERGY REGULATORY COMMISSION

WASHINGTON 20426

In Reply Refer To:

OEPR-DRB
Cooperative Studies
Attoyac Bayou Watershed
Draft Environmental Statement

APR 8 1980

Mr. George C. Marks
Soil Conservation Service
U.S. Department of Agriculture
P.O. Box 648
Temple, Texas 76501

Dear Mr. Marks:

This is in response to your letter of February 5, 1980, requesting comments on the draft environmental impact statement on Attoyac Bayou watershed, Texas.

According to the material furnished, the Attoyac Bayou watershed project consists of technical assistance for application of land treatment and construction of one multi-purpose and 21 floodwater retarding structures. The report covers eight proposed floodwater retarding structures and one multi-purpose structure.

We have reviewed the draft report to determine the effects of the recommended projects on the Commission's responsibilities under the Federal Power Act, Natural Gas Act, and other authorities. Such responsibilities relate to the licensing of non-Federal hydroelectric power projects, participation in the planning of Federal water and power resources projects, and the regulation of construction and operation of natural gas pipeline facilities.

Our review indicates that there are no existing or potential hydroelectric projects in the proposed project area. Further, none of the currently proposed projects appear to afford economic hydropower potential. It does not appear that effects on the downstream Sam Rayburn multi-purpose project would be significant.

An examination of available information indicates possible conflicts with interstate natural gas pipelines in the general area of the proposed projects. These pipelines are under Federal Energy Regulatory Commission (FERC) jurisdiction. Natural Gas Pipeline Company of America operates two 30-inch diameter pipelines that may be within the proposed project areas of sites 4, 5, 20, and 22. United Gas Pipeline Company owns a 22-inch diameter pipeline that may be within the proposed project areas of sites 10 and 17B. To assure that the construction involved in these proposed projects would not significantly affect the operation of the pipelines, it is recommended that you contact the two owners to determine the exact locations of the pipelines.

The report does not adequately address the extensive oil and gas activities in the east Texas area. For example, overall drilling activity during 1978 increased 37 percent from 1977, resulting in one of the most active years in the east Texas area since the mid-1960's. Exploratory drilling also increased by 18.9 percent from 1977 to 1978. The successes included 6 oil and 24 gas well completions, representing a continuation of gas-oriented exploration. Developmental drilling also continued to shift toward gas development, with two of every three completions producing gas. During 1978, a significant new field discovery established additional gas production along Naconiche Creek, which is in the general area of sites 21, 22, and 23. Recognizing the need to develop additional energy supplies, we believe that construction of any of these proposed projects should not be allowed to preclude locating natural gas or oil production facilities and pipeline rights-of-way in these areas. These matters should be fully discussed in the final environmental impact statement.

We hope that our comments will be helpful to you in the preparation of the final environmental impact statement.

Sincerely,

Robert E. Cochowski

for William W. Lindsay, Director
Office of Electric Power Regulation

Advisory Council On Historic Preservation

1522 K Street NW.
Washington D.C.
20005

ADVISORY COUNCIL ON HISTORIC PRESERVATION
LAKE PLAZA-SOUTH
SUITE 616
44 UNION BLVD.
LAKEWOOD, COLORADO 80228

This response does not constitute Council comment pursuant to Section 106 of the National Historic Preservation Act, nor Section 2(b) of Executive Order 11593.

April 4, 1980

Mr. George C. Marks
State Conservationist
Soil Conservation Service
P. O. Box 648
Temple, Texas 76501

Dear Mr. Marks:

This is in response to your request of February 5, 1980, received in our office on February 19, 1980, for comments on the draft environmental statement (DES) for the Attoyca Bayou Watershed, Texas.

The Council has reviewed the DES and notes that the Soil Conservation Service has determined that the proposed undertaking will not affect properties included in or eligible for inclusion in the National Register of Historic Places. Accordingly, the Council has no further comment to make at this time. It is suggested, however, that the final environmental statement contain the Texas State Historic Preservation Officer's concurrence in the SCS's determination of no effect.

Should you have any questions or require additional information regarding this matter, please contact Jane King of the Council staff at (303) 234-4946, an FTS number.

Sincerely,

Louis S. Wall
Chief, Western Division
of Project Review

UNITED STATES DEPARTMENT OF AGRICULTURE
OFFICE OF EQUAL OPPORTUNITY
WASHINGTON, D.C. 20250

FEB 22 1980

IN REPLY
REFER TO: 8140 Supplement 8

SUBJECT: Draft Environmental Impact Statement, Attoyac Bayou Watershed, Texas

TO: George C. Marks
State Conservationist

THRU: Verne M. Bathurst
Deputy Administrator
for Administration
Soil Conservation Service

We have reviewed the Draft Statement and are pleased to note that you have identified the expected impacts of the project upon minority persons at pp.46-47.

We recommend that the Final Statement include some assurance that the recreational facilities associated with the project will be fully accessible to handicapped persons.

Thank you for this opportunity to review the Draft Statement.

JAMES FRAZIER
Director

WILLIAM P. CLEMENTS, JR.
GOVERNOR

OFFICE OF THE GOVERNOR
STATE CAPITOL
AUSTIN, TEXAS 78711

March 26, 1980

Mr. George C. Marks, State Conservationist
Soil Conservation Service
U. S. Department of Agriculture
P. O. Box 648
Temple, Texas 76501

Dear Mr. Marks:

The draft Environmental Impact Statement pertaining to Attoyac Bayou, prepared by the Soil Conservation Service, has been reviewed by the Budget and Planning Office and interested state agencies. Copies of the review comments are enclosed for your information and use. The State Environmental Impact Statement Identifier Number assigned to the project is 0-02-50-094.

The Budget and Planning Office appreciates the opportunity to review this project. If we can be of any further assistance during the environmental review process, please do not hesitate to call.

Sincerely,

Donald E. Harley

Donald E. Harley, Manager
General Government Section
Budget and Planning Office

epg

Enclosures Comments by Texas Department of Agriculture
Texas Forest Service
Texas Air Control Board
Texas Department of Health
Texas Department of Water Resources
State Department of Highways and Public Transportation
Texas State Soil and Water Conservation Board

OFFICE OF THE GOVERNOR

WILLIAM P. CLEMENTS, JR.
GOVERNOR

February 12, 1980

TRANSMITTAL MEMORANDUM

TO: Review Participants

DATE COMMENTS DUE TO BUDGET AND PLANNING OFFICE: 3/21/80

_ Aeronautics Commission
X Air Control Board
_ Animal Health Commission
_ Bureau of Economic Geology
_ Coastal and Marine Council
X Department of Agriculture
X Department of Health
X Department of Highways and Public Transportation
X Department of Water Resources
X Texas Forest Service
X General Land Office
X Historical Commission

_ Industrial Commission
X Parks and Wildlife Department
_ Public Utilities Commission
X Railroad Commission
X Soil and Water Conservation Board
_ Texas Energy and Natural Resources Advisory Council
_ Governor's Office of Regional Development
X Deep East Texas Council of Governments
X East Texas Council of Governments
_
_

[X] Draft EIS [ ] Other _____ EIS Number 0-02-50-094

Project Title Attoyac Bayou Watershed Draft EIS - Nacogdoches, Rusk, Shelby, and San Augustine Counties, Texas

Originating Agency U.S. Department of Agriculture, Soil Conservation Service

Pursuant to the National Environmental Policy Act of 1969, Office of Management and Budget Circular A-95, and the Texas Policy for the Environment (1975), the Governor's Budget and Planning Office is responsible for securing the comments and views of local and State agencies during the environmental impact statement review process.

Enclosed for your review and comment is a copy of the above cited document. This Office solicits your comments and asks that they be returned on or before the above due date. You may find the questions, listed on the reverse side, useful in formulating your comments.

For questions on this project, contact Ward Goessling at (512) 475-6021.

Please address your agency's formal comments to: Mr. Paul T. Wrotenbery, Director
Governor's Budget and Planning Office
Attention: General Government Section
411 W. 13th Street
Austin, Texas 78701

Suggested Questions to be Considered by Reviewing Agencies:

1. Does the proposed project impact upon and is it consistent with the plans, programs and statutory responsibilities of your agency?

2. What additional specific effects should be assessed?

3. What additional alternatives should be considered?

4. What better or more appropriate measures and standards should be used to evaluate environmental effects?

5. What additional control measures should be applied to reduce adverse environmental effects or to avoid or minimize the irreversible or irretrievable commitment of resources?

6. How serious would the environmental damage from this project be, using the best alternative and control measures?

7. What specific issues require further discussion or resolution?

8. Does your agency concur with the implementation of this project?

As a part of the environmental impact statement review process, the Budget and Planning Office forwards to the originating agency all substantive comments which are formally submitted. If, after analyzing this document, you conclude that substantive comments are unnecessary, you may wish to so indicate by checking the box below and forwarding the form to this office. This type of response will indicate receipt of this document by your agency and that no formal response will be prepared.

☐ No Comment.

Name and Title of Reviewing Official

Agency

This Department concurs with the proposed project 0-02-50-094

TEXAS FOREST SERVICE

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Budget/Planning

File 5.7

College Station, Texas 77843
February 19, 1980

Mr. Paul T. Wrotenbery, Director
Governor's Budget and Planning Office
Attention: General Government Section
411 W. 13th Street
Austin, Texas 78701

Dear Mr. Wrotenbery:

This is in response to your letter of February 12, 1980... w/copy of Draft Environmental Impact Statement for the Attoyac Bayou Watershed.

We concur in the implementation of the project.

Sincerely,

Mason C. Cloud

Mason C. Cloud
Head, Forest Environment Dept.

MC/jc
cc: George Marks, SCS

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February 26, 1980

Mr. Paul T. Wrotenbery, Director
Governor's Budget and Planning Office
Attention: General Government Section
411 West 13th Street
Austin, Texas 78701

Dear Mr. Wrotenbery:

The Draft Environmental Impact Statement for Attoyac Bayou Watershed, Nacogdoches, Rusk, Shelby, and San Augustine Counties, Texas has been reviewed and is consistent with the State Implementation Plan.

Sincerely,

Roger R. Wallis, Deputy Director
Standards and Regulations Program

Texas Department of Health

Robert Bernstein, M.D., F.A.C.P.
Commissioner

A. M. Donnell, Jr., M.D., M.P.H., F.A.C.P.
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February 26, 1980

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Budget/Planning

Mr. Paul T. Wrotenbery, Director
Governor's Budget and Planning Office
Executive Office Building
411 West 13th Street
Austin, Texas 78701

ATTENTION: General Government Section

SUBJECT: Attoyac Bayou Watershed
Nacogdoches, Rusk, Shelby and
San Augustine Counties
Draft Environmental Impact Statement
U.S. Department of Agriculture, Soil
Conservation Service

Dear Mr. Wrotenbery:

The Draft Environmental Impact Statement for the Attoyac Bayou Watershed project has been reviewed for its public and environmental health implications. The report was prepared by the U.S. Department of Agriculture, Soil Conservation Service and is dated January, 1980.

The report includes a description of the project which involves structural measures for the alleviation of flooding conditions and other watershed problems. No references to the project's possible effects on public and environmental health were found in the report. Therefore, this Department offers no objection to the statement in its present form.

We appreciate the opportunity to review and comment on the Attoyac Bayou Watershed Draft Environmental Impact Statement.

Sincerely,

G. R. Herzik, Jr., P.E.
Deputy Commissioner for Environmental
and Consumer Health Protection

DLH/dbs
ccs: Bureau of State Health Planning
and Resource Development, TDH
Public Health Region 7, TDH
Public Health Region 10, TDH

TEXAS DEPARTMENT OF WATER RESOURCES
1700 N. Congress Avenue
Austin, Texas

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March 10, 1980

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MAR 1[illegible]
Budget/Planning

Mr. Paul T. Wrotenbery, Director
Governor's Budget & Planning Office
411 West 13th Street
Austin, Texas 78701

Dear Mr. Wrotenbery:

Re: U.S. Department of Agriculture, Soil Conservation Service (SCS) -- Draft Environmental Impact Statement (DEIS) -- Attoyac Bayou Watershed, Nacogdoches, Rusk, Shelby, and San Augustine Counties, Texas (January 1980). EIS No. 0-02-50-094.

In response to your February 12 memorandum, the Texas Department of Water Resources (TDWR) has reviewed the referenced DEIS pertaining to a segment of a watershed protection and flood prevention project under P.L. 83-566, consisting of 21 floodwater-retarding structures, one multiple-purpose lake for water-based recreation and park, and land treatment measures. The referenced DEIS pertains to eight of the 21 floodwater-retarding structures and the multiple-purpose lake project, at an estimated cost of $7,046,520 (Federal: $5,781,550; non-federal: $1,264,000), and benefit-cost ratio of 1.4 to 1.0.

TDWR concurs with the basic project evaluation made in the DEIS that the overall project and the project segment covered by the DEIS "will permit flood plain users to use their natural resources more productively and efficiently and will provide greater income stability." (DEIS, p. ii). TDWR notes that the total project will result in only a minor reduction of approximately 0.17 percent in Attoyac Bayou watershed yield to Sam Rayburn Reservoir (DEIS, pp. 22, 33-34), and have only a minor impact on existing water quality (DEIS, pp. 22, 28, 29, 31-33, 62).

We appreciated the opportunity to review the referenced DEIS. Please advise if we can be of further assistance.

Sincerely yours,

Harvey Davis
Executive Director

P.O. Box 13087 Capitol Station • Austin, Texas 78711 • Area Code 512/475-3187

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STATE DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION
AUSTIN, TEXAS 78701

ENGINEER-DIRECTOR
B. L. DEBERRY

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MAR 13 1980
Budget, Planning

March 11, 1980

IN REPLY REFER TO
FILE NO.

Draft Environmental Statement
Attoyac Bayou Watershed
Nacogdoches, Rusk, Shelby and
San Augustine Counties

Mr. Paul T. Wrotenbery, Director
Governor's Budget and Planning Office
Attention: General Government Section
411 West 13th Street
Austin, Texas 78701

Dear Sir:

Thank you for the opportunity to review the draft environmental statement covering the Attoyac Bayou watershed.

The eight floodwater retarding structures and one multiple-purpose structure which remain to be installed do not appear to have any detrimental effects as far as highways are concerned. Should any of these lakes or reservoirs result in back-water conditions within existing State highway rights of way, departmental policy requires the reservoir agency to aleviate such conditions.

Sincerely yours,

B. L. DeBerry
Engineer-Director

By: Marcus L. Yancey Jr.

Marcus L. Yancey, Jr.
Asst. Engineer-Director

TEXAS STATE SOIL AND WATER CONSERVATION BOARD
1002 First National Building
P. O. Box 658
Temple, Texas 76501
Area Code 817, 773-2250

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March 17, 1980

Mr. Paul T. Wrotenbery, Director
Governor's Budget and Planning Office
Attention: General Government Section
411 West 13th Street
Austin, Texas 78701

Dear Mr. Wrotenbery:

We have reviewed the draft Environmental Impact Statement for the Attoyac Bayou Watershed - Nacogdoches, Rusk, Shelby and San Augustine Counties, Texas, prepared by the USDA, Soil Conservation Service.

This agency received the application for assistance on this project on December 10, 1956. Since then we have worked with the sponsors on numerous occasions attempting to ensure that their control objectives would receive federal assistance. The members of the State Soil and Water Conservation Board personally inspected the project area and held an informal public hearing on June 9, 1960 prior to recommending that the Soil Conservation Service develop a work plan.

Our involvement with the sponsors and the Soil Conservation Service staff working on this project leads us to believe that the objectives of the sponsors will be satisfied by this work plan and that the project measures called for in the work plan are the best practicable solution to the watershed problems. We urge that all associated with the project from this point forward seek expedient implementation of the plan.

Sincerely,

A. C. Spencer
Executive Director

ACS/JMM/lc

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March 18, 1980

Mr. George C. Marks
State Conservationist
Soil Conservation Service
Post Office Box 648
Temple, Texas 76501

Re: Attoyac Bayou Watershed
Draft Environmental Impact Statement

Dear Mr. Marks:

The subject document has been received by this agency and the following comments are offered for your consideration.

It is noticed that previous recommendations offered by this Department were included in the document with the exception of the fencing of additional areas above the single purpose floodwater retarding structures. It is still believed that such fencing would protect additional valuable wildlife habitat. This document would also be strengthened by the inclusion of specific plans, including a timetable, to assure that the planned mitigation measures will be promptly implemented.

I appreciate the fine cooperation in early planning that has occurred for this project. It is believed that such coordination can accomplish project goals with greatly reduced adverse effects upon the natural environment. Such coordination is evident in this DEIS.

This agency appreciates the opportunity to provide comments on this document.

Sincerely,

Charles D. Travis

CHARLES D. TRAVIS
Executive Director

CDT:JDR:dsb

STEPHEN F. AUSTIN STATE UNIVERSITY
NACOGDOCHES, TEXAS 75962

DEPARTMENT OF BIOLOGY

February 21, 1980

Mr. George C. Marks, State Conservationist
United States Department of Agriculture
Soil Conservation Service
P. O. Box 648
Temple, Texas 76501

Dear Mr. Marks:

The draft Environmental Impact Statement concerning the Attoyac Bayou watershed was circulated to me. I find the draft to be very superficial in regard to vegetation. There are many interesting habitat types and plant communities in the watershed. None were described in any detail.

Although the State of Texas has not adopted an official list of endangered or threatened plant taxa, there are several references which may be used for guidance in environmental planning. Foremost would be the plant list in preparation by the Texas Organization for Endangered Species.

Approximately 110 Texas plant species were proposed in 1976 for Federal listing. While most of these species have been withdrawn, they still remain under Notice of Review. Notice of Review species should be considered in environmental planning. Several species under Notice of Review are in the east Texas area.

I am hoping, therefore, that the vegetation of the Attoyac Bayou watershed will undergo further assessment.

Sincerely,

Elray S. Nixon

Elray S. Nixon
Professor of Botany

ESN/nl

Wildlife Management Institute

709 Wire Building, 1000 Vermont Ave., N.W., Washington, D.C. 20005 • 202 / 347-1774

DANIEL A. POOLE
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L. R. JAHN
Vice-President
L. L. WILLIAMSON
Secretary
JACK S. PARKER
Board Chairman

PLEASE REPLY TO:
Murray T. Walton
Southcentral Representative
Star Route 1A, Box 30G
Dripping Springs, Texas 78620
512-825-3473

March 18, 1980

Mr. George C. Marks
State Conservationist
U.S. Soil Conservation Service
P.O. Box 648
Temple, Texas 76501

Dear Mr. Marks:

The Wildlife Management Institute has reviewed the Draft EIS for the Attoyac Bayou Watershed. A project of this nature in a watershed with only 2% cropland (43% pastureland and 55% woodland) appears to be highly questionable. Page 7 states "[T]he flood plain does not have any urban development, buildup, or threat of future urban development." Furthermore, the economic justification which relies heavily on recreation benefits is eroneous.

The amount of cropland in the watershed is not sufficient to justify the proposed expendature and damage to fish and wildlife resources due to loss of 800 acres of woodlands and 416 acres of wetlands. Woodland and pastureland in the project area can easily endure short duration flooding, however, page 24 indicates that the duration of flooding will be increased (and mistakenly assigns a reduction in flood damages to this action).

Appendix A shows over one-half of total project benefits ($220,500 anually) are attributed to recreation at multiple-purpose structure No. 23. and page 49 indicates the Texas Outdoor Recreation Plan (TORP) demonstrates a need for 1,313 acres of more surface water in the project area (Regions 14 and 15) in the near future. A review of TORP reveals that the needs for surface water in Regions 14 and 15 are all within urban areas. Region 14 with 95,470 surface acres of water available for public recreation and Region 15 with 199,840 surface acres of water available for public recreation are projected to satisfy water area needs for participation in aquatic activities well through the year 2000. While some facilities such as additional boat ramps will be needed, it is hardly necessary to construct a new reservoir to provide a boat ramp! The recreation benefits claimed for the project appear to be grossly excessive, and we request a detailed explanation of how recreation benefits were derived.

The greentree reservoir recommended as mitigation of wetland losses may have merit, however, we question the use of National Forest Lands for this purpose. This land is already being managed for production of wildlife. Furthermore, who will provide for operation and maintenance costs?

In view of the foregoing, the Institute recommends that no further structural work be undertaken for the Attoyac Bayou Watershed Project.

Thank you for allowing us to comment on this document.

Sincerely,

Murray Walton

Murray T. Walton
Southcentral Representative

MTW/ffw

DAN W. LAY
P.O. BOX 4608
SFA STATION
NACOGDOCHES, TEXAS 75962

Feb. 28, 1980

Mr. George C. Marks, State Conservationist
Soil Conservation Service
P O Box 648
Temple, Texas 76501

Dear Mr. Marks:

The Draft EIS for the final segment of the Attoyac Project has been reviewed. Your staff is to be commended for a good statement of habitats adversely impacted. These might be summarized as approximately 16 miles of streams, 300 acres of wetlands, and 1200 acres of terrestrial fields and forests.

Basic environmental impacts are not assessed. What species and processes in the ecosystem will be affected? Will changing regimes of nutrient cycling reduce productivity of the bottomlands and Lake Rayburn? Will the excellent productivity of the Attoyac for catfish be affected? The project is half finished, can you appraise the effects so far? Can you describe similar projects where biological monitoring has shown the effects of flood retarding structures? I do not refer to simple transfer of migrant ducks from one wintering location to another. What has happened to resident wood duck production where wooded streams and bottoms such as the Naconiche are converted to surface lakes?

The primary plan for mitigation of habitat losses is the construction and operation of a greentree reservoir on U S Forest Service land southeast of Chireno. I applaud the concept but am not reassured that it will happen. A cooperative agreement between the county and the Forest Service has not been signed and there is doubt about the official FS attitude. The public access road has not been located or negotiated. THe county is said to have the power to condemn land for a roadway, but will it?

It seems to me that the SCS is in the position of leaving mitigation to the sponsors without control of the outcome. There is no schedule of events which insures priority for the greentree reservoir. There is no plan for operation, maintenance and repair. There is no alternative mitigation plan should it fail.

The economic justification for the project depends on a computation of $220,500 per year value of recreation on 585 acres of surface water in Lake Naconiche. This is debatable in a location where there exists 296,000 acres of surface water within 50 miles. Without this credit, your annual costs of $310,760 could not be covered.

I do not think this use of projected recreation at $1.575 per day for a common commodity is a fair exchange when the ecological cost is irreversible losses of uncommon high quality streams and wetlands.

Thirteen flood water retarding structures have been built in the Attoyac Project without mitigation of environmental effects. These are private fishing lakes which cost the public $200,000 each. If the greetreee reservoir plan fails, a contingency plan should affect all of those yet to be built: 1) they should be opened to public recreation, 2) they should be fenced to permit shoreline vegetation to develop without cattle grazing.

Maintenance costs and responsibilities of the county should be displayed clearly item by item. This will better inform the public which may have to vote on bonds for the project.

As a local taxpayer, I shall question the county share of more than a million dollars as money better spent on tax reduction or on roads.

As a federal taxpayer, this appears to be one more cause of rising inflation and taxes without adequate justification. I don't believe the flooding in this part of the Attoyac system is such that the public truly wants to spend more than $7 million to reduce it 45 percent.

The flooding damage consists of inundation of pastures and woods, with only 2 percent in cropland. Naturally there is some damage to fences, roads, and cows confined in bottomland pastures. THere are some benefits. The owners of bottomlands acquired their flooding problems willingly and some don't want changes in the present environment.

Yours sincerely,

Daniel W. Lay

Daniel W. Lay

P. O. BOX 12276
AUSTIN TEXAS 78711

TEXAS HISTORICAL COMMISSION

TRUETT LATIMER
EXECUTIVE DIRECTOR

July 24, 1978

George C. Marks
State Conservationist
USDA-Soil Conservation Service
P.O. Box 648
Temple, TX 76501

Re: Attoyac Bayou Watershed, FR 22 and 23, Nacogdoches County

Dear Mr. Marks:

We are in receipt of the archeological evaluation concerning the above-referenced undertaking. After a review of the findings, we find that an additional survey should be performed in Structure #22 after clearing has taken place to ensure that the project will not affect sites potentially eligible for listing within the National Register of Historic Places. Should cultural resources be encountered during construction, work will cease and the State Historic Preservation Officer amd the Advisory Council on Historic Preservation will be afforded the opportunity to comment in accordance with the *Procedures for the Protection of Historic and Cultural Properties* (36 C.F.R., Part 800).

Thank you for providing the opportunity to participate in the review process in our common goal of providing the future with a past. If we may be of further assistance, please advise.

GCM

Sincerely,

Truett Latimer
State Historic Preservation Officer

By

Alton K. Briggs
Director
Cultural Resource Management

AKB: bpl

cc: Parker Nunley
Mike Bureman

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