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Upper Brushy Creek Watershed  
Escambia County, Alabama

FINAL ENVIRONMENTAL IMPACT STATEMENT

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State Conservationist  
Soil Conservation Service

Sponsoring Local Organizations

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Escambia County Commission  
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Brewton, Alabama 36426

City of Atmore  
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May 1975

Prepared By

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USDA ENVIRONMENTAL IMPACT STATEMENT  
Upper Brushy Creek Watershed  
Escambia County, Alabama  
Prepared in Accordance with  
Sec. 102(2) (C) of P. L. 91-190

Summary Sheet

- I. Final
- II. Soil Conservation Service
- III. Administrative
- IV. Project Description: A project for watershed protection, flood prevention, and drainage in Escambia County, Alabama to be implemented under authority of the Watershed Protection and Flood Prevention Act (P. L. 566, 83rd Congress, 68 stat. 666) as amended. The plan proposes that conservation land treatment measures be applied on 5600 acres of cropland, 880 acres of pastureland, and 3055 acres of forest land; and 7.2 miles of channel work. Channel work will consist of earth excavation to enlarge present channels and provide a more efficient and unrestricted streamflow. Existing channels are small and/or ineffective and are poorly defined. Streamflow within these 7.2 miles consist of 3.55 miles of ponded water, 2.75 miles of ephemeral and 0.90 miles of intermittent. A grade stabilization structure will also be installed to avoid excessive velocities. These measures are to be accomplished during a 5-year period.
- V. Summary of Environmental Impacts: Action on the project will,
  1. Reduce fertilizer losses and improve farming efficiency.
  2. Reduce erosion and sedimentation.
  3. Reduce forest fire hazard.
  4. Reduce agricultural and urban floodwater damages.
  5. Improve drainage efficiency.
  6. Reduce road and bridge maintenance.
  7. Increase real estate tax base.
  8. Improve the local economy.



9. Create employment.
10. Cause a direct loss of 75 acres of bottom land forest.
11. Increase sedimentation and stream turbidity during construction.
12. Slightly increase the depth of flooding immediately below the channel work.

VI. Alternatives Considered:

1. Conservation land treatment alone.
2. Conservation land treatment and urban zoning.
3. No project.

VII. Agencies From Which Written Comments Were Received:

1. Department of the Army
2. Department of Health, Education, and Welfare
3. Department of Housing and Urban Development
4. Department of the Interior
5. Department of Transportation
6. Environmental Protection Agency
7. Advisory Council of Historic Preservation
8. Alabama State Highway Department
9. Alabama Development Office

Alabama Soil and Water Conservation Committee

South Alabama Regional Planning Commission

VIII. Draft Statement Transmitted to CEQ on January 30, 1975.





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- B - Letters of Comment Received on the Draft Environmental Statement
- C - Project Map
- D - Typical Reinforced Concrete Drop Spillway
- E - Archaeological Data
- F - Soils Map
- G - Land Use Map

All information and data, except as otherwise noted, were collected during watershed planning investigations by the SCS and the Forest Service, U.S.D.A. References cited are listed at the end of each major section.



PROJECT IDENTIFICATION AND ENVIRONMENTAL SETTING

USDA SOIL CONSERVATION SERVICE FINAL ENVIRONMENTAL  
IMPACT STATEMENT

for

UPPER BRUSHY CREEK WATERSHED (ALABAMA)

Installation of this project constitutes  
an administrative action. Federal  
assistance will be provided under  
authority of Public Law 83-566, 83rd  
Congress, 68 stat. 666, as amended.

Sponsoring Local Organizations

Escambia County Soil and Water Conservation District

Escambia County Commission

City of Atmore



## PROJECT PURPOSES AND GOALS

### Watershed Protection (Conservation Land Treatment)

The primary goals of the project are to improve and protect watershed soils and provide both rural and urban floodwater and drainage damage reduction. Land treatment measures will enhance and protect the land while channel work will reduce floodwater damages and improve drainage on approximately 1,540 acres of agricultural land and 430 acres of urban lands. Land treatment goals are to apply conservation practices in such a manner that the land may be used as efficiently as possible while protecting it for future generations. The goals include the use of conservation practices so that treated land results in improvement of the land resource base, adds to the economy, and improves the natural environment.

Quantitative goals were set that could be accomplished during the installation period with accelerated technical assistance. These goals were established after carefully reviewing: the long range Escambia County Soil and Water Conservation District Program, the conservation needs within the watershed, the current rate of land treatment, and the ability and willingness of landowners and operators to apply conservation measures.

Cropland in the watershed is eroding at the average rate of 7.03 tons per acre per year as compared to the maximum tolerable soil loss\* of about 5 tons per acre per year. Through land treatment, it is planned that the present average erosion rate will be reduced to that which will be within the soil-loss tolerance levels.

### Flood Prevention and Drainage

The Upper Brushy Creek Watershed project proposes a means of floodwater damage reduction and drainage improvement by planned conservation land treatment measures and channel work. Land treatment measures are

---

\* "Maximum tolerable soil loss" is the maximum rate of soil erosion that will permit a high level of crop productivity to be sustained economically and indefinitely.

planned to provide soil protection, improve forest stands, and provide on-farm drainage. Channel work is planned to remove surface runoff from a 5-year, 24-hour rainfall in 24 hours\* and to provide an outlet for on-farm drainage. Channels in the vicinity of the City of Atmore are planned to provide outlets for storm sewers and remove floodwaters from flood prone areas, especially at Crow Street and Eighth Avenue.

Approximately 1,970 acres within the 3,580 acre drainage area served by the planned multiple purpose channel has a severe drainage and/or floodwater problem. This area will be benefited by channel work and has the following land use:

Area of Floodwater and/or Drainage Problems

<u>Land Use</u>	<u>Acres</u>
Cropland	850
Pastureland	135
Forest land	390
Urban land	430
Miscellaneous and Idle	<u>165</u>
TOTAL	1,970

Floodwater damages and drainage problems are caused by slow movement or no movement of storm runoff on the flat or nearly level area. Slow water movement is due primarily to the nearly level topography and lack of outlets for drainage.

Another goal is improved efficiency of farming operations as a result of reducing floodwater and drainage problems. Farming operations can be performed in a more timely manner and harvesting completed without unnecessary delays. These effects can help achieve increased incomes in this low-income area throughout the life of the project, or as long as specified operation and maintenance is performed.

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\* Upper 1.8 miles of channel work on Brushy Creek main will remove runoff from the 2-year, 24-hour storm in 24 hours.



## PLANNED PROJECT

### Land Treatment Measures

Conservation land treatment is a basic element in formulating the watershed program. It is defined as applying management, cultural, and structural practices in such a manner that the land is used within the limits of its capabilities and soil losses from erosion are held to acceptable levels. Land treatment is accomplished primarily through the development and implementation of conservation plans.

Technical assistance will be made available by the Soil Conservation Service (SCS) through the Escambia County Soil and Water Conservation District (S&WCD) and by the Forest Service in cooperation with the Alabama Forestry Commission. Technical assistance will be provided for conservation planning, implementing conservation plans, and for applying and maintaining conservation measures. 1/

Soil surveys are the basic inventories used in developing land use and treatment alternatives 2/. A soil survey has been completed for Escambia County and is available at the SCS field office in Brewton, Alabama. A report of the Escambia County, Alabama Soil Survey is scheduled for publication in 1975. The SCS will furnish the technical assistance necessary to provide soil survey maps needed in the land treatment phase of the watershed program.

Conservation plans on individual units of land are documents that guide deliberate actions to accomplish land treatment. 3/ Conservation planning involves the use of inventory data for study, evaluation, and selection of the future courses of action. Each conservation plan is tailored to fit a particular unit of land by the landowner or landuser with planning assistance of a soil conservationist with the SCS. 4/ The soil conservationist provides technical material and information on soils, water, animals, and plants which are needed by the landowner or landuser in the decision making process.

The conservation plan outlines appropriate uses for each acre of land and the conservation practices needed for sustained production and protection. 5/ The landusers make their own arrangements to install the plans and determine the rate and sequence in which practices will be applied. The SCS, upon request, provides the technical assistance necessary to install the planned conservation practices. This assistance normally involves site investigation, design, layout, and supervision of construction for the more difficult practices such as farm ponds,

terraces, diversions, grassed waterways, and other structural practices. Less complex practices, such as contour farming, usually require only minor surveys and layout work. Management and cultural practices, such as pasture planting and management, require only consultative assistance.

Conservation plans have been developed on 5,943 acres (62 percent) of the 9,610 acres of agricultural land in the watershed, representing 42 ownerships. The conservation planning goal is to develop plans on as much of the remaining 3,667 acres as possible within the five-year installation period.

Conservation land treatment is entirely voluntary on the part of the landowners and landusers. It is therefore proper to set planning and application goals that are conducive to the rate that decision makers are ready, willing, and able to accept. It is anticipated that during the five-year installation period 30 new plans, representing about 2,000 acres, will be prepared. In addition, an estimated 26 of the existing 42 plans will be revised. This means that conservation planning within the watershed area will be accelerated by approximately three times the present rate.

As a result of the planned conservation land treatment program, an estimated 1,024 acres of cropland, 500 acres of pastureland, and 1,600 acres of forest land will be adequately treated by the end of the installation period in addition to what is presently applied.

Adequate conservation land treatment can be obtained on any field by applying a combination of conservation practices suited to the soil properties, land use, and the landuser's desires. Conservation practices to be applied on sloping cropland will be directed toward reducing erosion and resulting soil and water losses. Measures planned for the nearly level cropland will reduce water damage and facilitate more timely field operations. Proposed measures on pastureland will result in quick protective cover, and increased grazing quality and quantity. The major practices planned for application during the five-year installation period include conservation cropping systems, field borders, grassed waterways, terraces, land smoothing, drainage field ditches, drainage mains and laterals, pasture and hayland planting, pasture and hayland management, ponds, and wildlife upland habitat.

Conservation Cropping Systems are combinations of cultural and management measures that are very effective in maintaining a good physical condition of the soil and reducing soil and water losses. Conservation cropping systems also include the use of sod crops in the crop rotation systems on soils that are subject to severe erosion.

Field Borders are strips of perennial vegetation at the edges of crop fields. They trap sediment, reduce the rate of surface runoff, facilitate more efficient use of farm equipment, and provide food, shelter, and travel lanes for wildlife.

Grassed Waterways are either natural or constructed water outlets that are established in perennial sod-forming vegetation. They provide safe disposal of concentrated runoff water from fields, diversions, terraces, etc.

Terraces are a series of constructed ridges and channels across the land slope with channel grades designed to safely remove runoff water to stable outlets. They are effective in reducing erosion on sloping cropland.

Land Smoothing is the removal of land surface irregularities. This practice is more commonly used to prepare cropland for installation of terrace systems.

Drainage Field Ditches and Drainage Mains and Laterals are open ditches constructed to designed grades and sizes. Their purposes are to dispose of excessive surface or subsurface water and to control ground water levels.

Pasture and Hayland Planting is the establishment or reestablishment of fields to long-term stands of forage plants. Their purposes are to reduce erosion and/or improve the composition of high quality pasture and hay plants.

Pasture and Hayland Management includes the combination of management and cultural measures that results in the proper treatment and use of pasture or hayland. Its purposes are to prolong life of desirable forage species, maintain or improve the quality and quantity of forage, protect the soil from erosion, and reduce water losses.

Ponds are water impoundments made by either constructing a dam or embankment, or by excavating a pit or "dugout". They are used to provide water for livestock, for fish production, and for wildlife habitat.

Wildlife Upland Habitat Management is retaining, creating, or managing wildlife habitat other than wetland. This practice includes a variety of management techniques for specific non-game as well as game animals. For example, a natural area containing a variety of trees, shrubs, vines, and other plants that provides food, protective cover, and other needs of the desired wildlife species can be retained and managed. A few other commonly used techniques are: planting of food plots for the desired wildlife species, retaining of a portion of a normal agricultural crop, and creating openings in forest land.

The forest land treatment program will consist of reducing wildfires on all forest land through a contactor program of on-the-ground contacts with landowners to inform the public of the hazards of uncontrolled

debris burning. Thirty man-months of a local fire prevention contractor will be provided during the installation period by the State Forestry Commission. An accelerated technical assistance program will identify the needs, and create treatment and management plans for 1,600 acres of forest land outside industrial and public ownership. Management plans will be directed toward forest resource management for forest products, wildlife habitat, watershed protection, and environmental enhancement.

It will be the responsibility of the individual landuser, working through the Escambia County Soil and Water Conservation District, to maintain all applied conservation land treatment measures.

### Structural Measures

Multiple purpose channels will be installed to supplement or replace presently ineffective channels. Channels are designed to provide flood damage reduction and drainage outlets.

Existing channels in Upper Brushy Creek watershed are small and/or ineffective and poorly defined.

Around the perimeter of the watershed and downstream to approximate station 69+80 on Brushy Creek (see Appendix C) there are areas of ponded water with no noticeable flow because of the lack of outlets. Some landowners have attempted to drain these areas by excavating channels (station 55+40 to station 112+00) but the channels have not functioned properly because of inadequate outlets. From approximate station 69+80 downstream to the confluence of a lateral from the City of Atmore with Brushy Creek (station 178+50) there is practically no defined channel, though there is a defined drainage pattern with flow during periods of surface runoff (ephemeral).

Intermittent streamflow occurs from the above mentioned confluence of streams downstream to Escambia County Road No. 1. Downstream from Escambia County Road No. 1, the stream is perennial with a defined, natural channel.

About 37,950 feet (7.2 miles) of channel work is planned with approximately 20,970 feet (4.0 miles) on Brushy Creek main and 16,980 feet (3.2 miles) on six tributaries, as shown on the Project Map, Appendix C. Channels will be excavated to a planned grade and spoil spread to a mowable surface, see Figure 1.

Upper Brushy Creek channel from station 112+00 downstream to the end of channel work at station 225+00 and all laterals are designed to remove

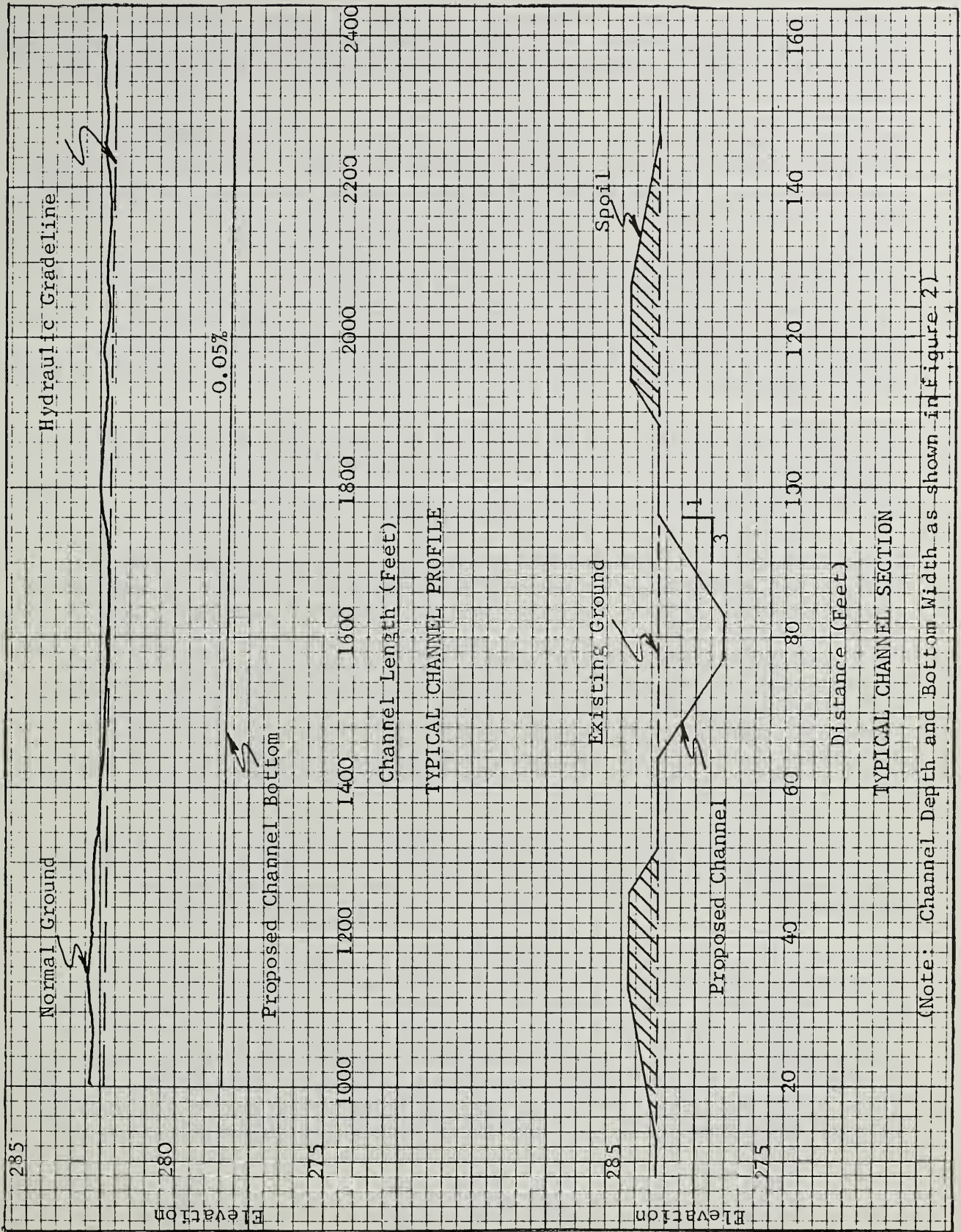


FIGURE 1

runoff from the 5-year, 24-hour (U. S. Weather Bureau Technical Paper 40) rainfall in 24 hours. The main channel from station 112+00 upstream to station 15+30 is designed to remove runoff from the 2-year, 24-hour rainfall in 24 hours.

Proposed channels will be constructed primarily through Atmore, Bibb, Escambia, and Grady soil series composed of sandy silt, clay, and sandy clay materials. These soils are poorly drained and occur in capability classes and subclasses IIw, IIIw, IVw, and Vw.

All channel work will consist of excavated channels. Channels will have 3 horizontal to 1 vertical side slopes to insure bank stability and facilitate maintenance except in the vicinity of a proposed grade stabilization structure at approximate station 176+00 on Brushy Creek (see Appendix C) where side slopes will be 2 horizontal to 1 vertical. Channel design demensions will be as shown in Figure 2.

The grade stabilization structure will be installed to avoid excessive velocities. 6/ It will be a steel reinforced concrete drop spillway with rock riprap on the channel side slopes and bottom immediately above and below the structure, see Appendix D.

Excavation will be performed by conventional earth moving equipment. Rock is not expected to be encountered during construction. Spoil will be placed 10 to 12 feet from the bank of excavated channels. Spoil excavation from wooded areas will be spread to a maximum height of 4 feet with side slopes of a maximum 3 horizontal to 1 vertical. Spoil from excavation through open land will be spread to a mowable surface with maximum height of 2 feet and side slopes of 4 horizontal to 1 vertical. Channel side slopes, berms, spoil areas, and any other disturbed areas will be vegetated to bermudagrass and Pensacola bahia-grass within a period of seven to ten days following excavation.

Lime and fertilizers will be applied immediately prior to planting. Rates and analysis will be determined by established guidelines for the plant species and soil conditions. All lime and fertilizer will be incorporated into the soil immediately following application.

Alteration of one culvert and replacement of eight others will be necessary. The culvert requiring alteration is on Alabama Highway 21, while two needing replacement are on Atmore city streets, four are on farm to market roads, and two are on farm roads. The culvert on four-lane Alabama Highway 21 consists of five 8 feet x 10 feet concrete boxes of eighty feet length. Since there is no existing channel, the culvert floor and flood plain elevations are the same. The center box will be lowered approximately 4 feet and reset with a new concrete bottom and

FIGURE 2 - STRUCTURE DATA  
CHANNELS

Upper Brushy Creek Watershed, Alabama

Channel Designation	Reach Station (ft.)		Drainage Area (sq. Mi.)	Capacity (cfs)		Water Surface Elevation (ft.)	Hydraulic Gradient (ft./ft.)	Channel Dimensions		M <sup>n</sup> Value As Built	Velocities		Excavation (Cu. Yds.)	Type of Work <sup>2/</sup>	Type of Channel Before Project <sup>5/</sup>	Flow Condition Before Project <sup>6/</sup>	
	Bottom	Depth		Side Slopes	Aged			As Aged	As Aged								
Upper Brushy	15+30	55+40	0.42	33	41	288.0	.0005	4	3.0	3:1	.045	1.05	10,124	I	0	S	
	55+40	69+80	0.65	48	49	287.2	.0005	6	3.0	3:1	.045	1.09	5,080	I	M(1966)	S	
	69+80	112+00	1.50	96	93	285.0	.0005	6	4.0	3:1	.045	1.29	17,140	I	M(1966)	E	
	112+00	123+60	1.50	130	163	282.6	.0021	4	4.0	3:1	.045	2.54	2,921	I	0	E	
	123+60	144+00	2.30	186	185	280.8	.0009	4	4.8	3:1	.040	2.09	7,467	I	0	E	
	144+00	176+00	2.75	220	260	275.1	.0018	4	4.8	3:1	.040	2.95	13,105	I	0	E	
	176+00	178+50	2.80	220	255	270.2	.0012	9	5.0	2:1	.040	2.66	2,074	I	0	E	
	178+50	193+00	3.80	283	289	268.5	.0012	7	5.0	3:1	.040	2.63	10,624	I	0	I	
	193+00	198+50	3.80	283	278	268.1	.0007	9	5.0	3:1	.040	2.30	2,852	I	0	I	
	198+50	225+00	5.13	363	353	266.5	.0006	16	5.0	3:1	.035	2.28	11,800	I 3/	0	I	
Subtotal													83,207				
Lateral 1	36+50	62+50	0.56	57	151	279.0	.0005	4	5.0	3:1	.040	1.59	10,113	I 4/	0	S	
Lateral 2	5+00	30+50	0.23	28	79	285.9	.0005	4	4.0	3:1	.040	1.24	2.23	5,693	I	0	S
	30+50	67+50	0.43	46	123	279.0	.0012	4	4.0	3:1	.045	1.92	5,863	I 4/	0	E	
Subtotal													11,556				
Lateral 4	13+00	25+00	0.28	32	79	282.6	.0005	4	4.0	3:1	.045	1.24	1,462	I	0	S	
Lateral 5	14+00	19+50	0.08	11	62	285.9	.0005	4	3.6	3:1	.045	1.17	1,437	I	0	S	
Lateral 6	2+00	23+40	0.36	40	40	288.5	.0006	6	2.6	3:1	.045	1.11	2,000	I	0	S	
	23+40	45+20	0.46	49	51	287.2	.0006	9	2.6	3:1	.045	1.16	5,701	I	0	S	
Subtotal													8,978				
Lateral 7	16+00	35+60	0.16	20	40	268.0	.0013	4	2.6	3:1	.045	1.48	4,943	I	M(1966)	S	
Grand Total													122,356				

1/ The water surface elevation shown for each reach represents the elevation of the water surface profile at the lower end of the reach.

2/ I - Establishment of new channel including necessary stabilization measures.

3/ Channel work from Station 210+60 to Station 225+00 required primarily to provide an outlet for the benefited area upstream. The hydraulic grade line is located above the flood plain allowing out-of-channel flow of the design discharge.

4/ Hydraulic grade line is located above flood plain in lower portion of reach with channel discharging into a well-defined sodded draw.

5/ 0 - Practically no defined channel.

M() - Manmade ditch or previously modified channel (approximate date of original major construction in parenthesis).

E - Ephemeral - flows only during periods of surface runoff, otherwise dry.

S - Ponded water with no noticeable flow - caused by lack of outlet or high groundwater table.

I - Intermittent - Continuous flow through some seasons of the year but little or no flow through other seasons.

July 1974

wall extensions. Rock riprap will be placed at the channel approach and exit from the culvert to protect the highway fill, and channel banks and bottom from erosion. This culvert alteration is necessary to provide an outlet for the planned channel. Concrete box culverts are planned on Brushy Creek main at the crossings of Eighth Avenue and Harris Street. Pipe culverts will be installed on tributaries at four farm to market roads and two farm road crossings.

Two parallel gas pipelines crossing Brushy Creek and laterals 1 & 2, as shown in Appendix C, will be either lowered, anchored, or left in their present position depending on existing elevation relative to channel bottom. The pipelines at laterals 1 and 2 will not need alteration.

Culverts and/or rock riprap will be placed on the larger laterals at their confluence with Brushy Creek main to serve as maintenance road crossings and to prevent degradation and erosion near the outlet of the laterals.

Planned channel work will require approximately 215 acres of right-of-way ranging in width from 210 to 300 feet. The needed rights-of-way consist of approximately 40 acres of cropland, 50 acres of pasture and idle land, and 125 acres of forest land. A 59 acre permanent easement is needed for the project. This area consists of 11 acres of cropland, 14 acres of pasture and idle land, and 34 acres of forest land. Acquisition of the needed rights-of-way and installation of the structural measures will not require any displacements of persons, businesses, or farm operations.

In order to minimize water and air pollution and control erosion during construction, the following steps will be taken.

1. Sanitary facilities will be installed according to the requirements of the Occupational Safety and Health Act (OSHA).
2. Measures will be provided at equipment storage and repair areas to prevent contaminants reaching streams and ground water.
3. Clearing prior to excavation will be held to a minimum that will not hamper construction progress.
4. Sediment basins will be constructed in the planned channel bottom approximately 500 feet above and 500 feet below Alabama Highway 21 to protect the flood plain below the planned structural measures from sediment during construction. The basins will have lengths of 200 feet, bottom widths of 8 feet, and bottoms 1.5 feet below the planned channel bottom.



A sediment basin will also be constructed between the outlet on laterals 1 and 2 and an existing farm pond located approximately 1,500 feet below Sunset Drive. This basin will have a capacity of approximately 7,500 cubic feet. These basins will be re-excavated should they fill with sediment before vegetation is established on the areas disturbed during channel construction.

5. Sprinkling will be used to control dust when needed.
6. Culverts and rock structures will be installed on laterals or side drains at their confluence with a main stream prior to proceeding with upstream excavation.
7. Immediately following completion of an excavation reach, the channel side slopes, berms, spoil areas, and other disturbed areas will be vegetated to prevent movement of soil materials downstream.

Such levels of air quality will be maintained that will protect human health and safety, and to the greatest degree practical, prevent injury to plant and animal life and to property. During construction, emissions from debris burning will be controlled as specified in "Proclamation 3", concerning approving of open fires under certain conditions and "Air Pollution Control Rules and Regulations" of the Alabama Air Pollution Control Commission. Construction equipment roads and other frequently disturbed areas will be sprinkled or otherwise treated as necessary to control dust.

According to the Department of Anthropology, University of Alabama, no archaeological sites exist within the proposed construction area, however, if sites are uncovered during construction, the Department of the Interior; Chairman, Department of Anthropology, University of Alabama; and Alabama Historical Commission will be notified. If any archaeological sites of value are identified, provisions of Public Law 86-523 will be followed. The project, as planned, will not affect any cultural resources listed in the National Register of Historic Places, nor will it affect any cultural resources eligible for nomination to the National Register of Historic Places.

### Operation and Maintenance

Land treatment measures will be maintained by landowners under the cooperative agreements with the Escambia County Soil and Water Conservation District, the Escambia County Commission, and the City of Atmore. The Soil Conservation Service will provide technical assistance through the District for operation and maintenance of land treatment measures.

The forest land treatment measures will be maintained by the landowners and operators under agreement with the Escambia County Soil and Water Conservation District. The Alabama Forestry Commission, in cooperation with the U. S. Forest Service, will furnish technical assistance necessary for operating and maintaining the forest land treatment measures under the going Cooperative Forest Management Program. The Alabama Forestry Commission will continue to furnish fire protection under the Cooperative Forest Fire Control Program.

The Escambia County Commission will be responsible for and promptly perform, or have performed, without cost to the Service, all maintenance of the structural measures as determined to be needed by either the sponsors or the Service immediately following completion of the structures by the contractor. The County Commission will be responsible for maintenance of vegetation associated with the channel work after the initial vegetation work is adequately completed, as determined by the Service, but not later than three years following completion of the channel work. The estimated average annual cost of operation and maintenance is \$2,200.

Immediately following the construction of the channel a three year establishment period will begin. During this period intensive programs for establishing vegetative cover will be implemented. The cost of any additional structural measures needed to assure stability and repair of minor damages will be shared between PL-566 and other funds by the same percentage as the construction cost, (86.25% and 13.75% respectively). Items of normal maintenance such as mowing, removal of debris, etc., will be performed by the Escambia County Commission at no cost to the Service.

The County is primarily responsible for seeing that operation and maintenance is performed in a timely, adequate, and otherwise appropriate manner to assure efficient operation and functioning of the multiple purpose channel for the life of the project. The City of Atmore will continue to administer and enforce the existing land use regulations in the flood plain areas to minimize future flood damages.

Channel maintenance includes such activities as periodic cleanouts necessary to restore channels to their planned capacities, repairing of eroded areas or washouts on channel banks, control of vegetation that will reduce channel capacities, and repair or replacement of side inlets and other structures. Maintenance of the grade stabilization structure includes painting metal parts, repairing rills around headwalls or wingwalls, and maintaining or replacing vegetation on fills. Maintenance and improvement of the general attractiveness or beauty of the channel and structure shall be considered as important features of the maintenance program.

Structure and channel operations require little or no manual manipulation. Structures affecting two or more landowners will require coordination to assure that each landowner has the opportunity to realize the intended project objective.

An annual inspection program will be carried out and documented by a responsible official of the county, preferably accompanied by a landowner actively farming in the vicinity. A copy of the findings of this annual inspection will be sent to the Soil Conservation Service. The annual inspection will be made during the dry season, soon after the end of the rainy season so as to make it possible to complete needed maintenance before the start of the next rainy season. Items to be inspected include all components of the structural works of improvement.

The Soil Conservation Service and the Escambia County Soil and Water Conservation District will participate in the inspections in the first three years and thereafter as deemed necessary. These inspections, regardless of participants, should be made soon after major storms or periods of unusually heavy rainfall so as to locate any needed maintenance caused by the event. Years with major storms early in the season may require inspections at more frequent intervals than 12 months. The intent is to accomplish needed maintenance prior to the recurring storm that might seriously aggravate the situation. Existing drainage systems, natural and improved, and particularly those downstream of project works, will receive maintenance similar to that specified for the project works.

An operation and maintenance (O&M) agreement will be entered into by the county and the Service prior to the signing of a project agreement. The O&M agreement will contain, in addition to specific sponsor responsibilities for structural measures, specific provisions for retention and disposal of real and personal property acquired in whole or in part with PL-566 funds. The O&M agreement will also contain a reference to the State Watersheds Operation and Maintenance Handbook. An O&M plan will be prepared for the channel work.

### Project Costs

The total project installation cost is estimated to be \$657,100. This cost is shared by Public Law 566 and other funds as follows:

	<u>PL-566</u>	<u>Other</u>	<u>Total</u>
Conservation Land Treatment	\$ 38,900*	\$123,300	\$162,200
Channel Work	<u>392,200</u>	<u>102,600</u>	<u>494,900</u>
	\$431,200	\$225,900	\$657,100

\* Public Law 566 cost of technical assistance provided by the SCS.

Construction cost of the channel work is shared by Public Law 566 and other funds as follows:

	<u>PL-566</u>	<u>Other</u>	<u>Total</u>
Channel Work (Construction)	\$319,100	\$ 50,900	\$370,000

Total average annual cost is estimated to be \$31,400 based on 5 7/8 percent interest for 100 years. Total average annual benefits are estimated to be \$67,400 (see Appendix A).

## REFERENCES CITED

- 1/ The Soil Conservation Service, SCS-CI-17, U. S. Government Printing Office, May 1969.
- 2/ Know Your Soil, Agricultural Information Bulletin No. 267, U. S. Government Printing Office, August 1970.
- 3/ National Handbook for Resource Conservation Planning, Soil Conservation Service, 1970.
- 4/ What is a Farm Conservation Plan?, USDA-SCS, PA-629-1965.
- 5/ America's Conservation Districts, National Association of Conservation Districts, League City, Texas.
- 6/ USDA, Soil Conservation Service, Technical Release 25, "Planning and Design of Open Channels".

## ENVIRONMENTAL SETTING

### Physical Resources

#### Physical Data

Upper Brushy Creek Watershed has a drainage area of 10,980 acres. It is situated near the southwest Alabama City of Atmore (population 8,300), in Escambia County. A portion of Atmore is located within the watershed, (see Appendix C). The watershed is located in the South Atlantic Gulf Water Resource Region and the St. Josephs-Perdido subregion. Brushy Creek flows in a southerly direction and empties into the Perdido River about 17 miles south of Atmore. The watershed is located about 50 miles northeast of Mobile, Alabama (population 190,000). About 4,200 people reside within the watershed boundary with about 95 percent being urban residents of Atmore.

The "major" soil and water resource problems exist in a drainage area of 3,580 acres located east of the St. Louis-San Francisco Railroad and immediately northeast of (and including part of) the City of Atmore. This area is relatively flat, has poor surface drainage, and is heavily row cropped. Stream channels are either small or non-existent. There are frequent floodwater and drainage problems because of the nearly level topography, lack of outlets, and insufficient stream channel capacities. Residents of Atmore suffer frequent floodwater damages and poor storm sewer drainage. About 1,970 acres is damaged by flooding and inadequate drainage.

In other areas of the watershed, especially on the steeper crop fields west of the St. Louis-San Francisco Railroad, erosion is of primary concern. Average annual erosion rates on these lands exceed the maximum soil-loss tolerance established by the SCS.

#### Soils and Land Capabilities (See Appendix F)

Major soils on the uplands are in capability classes and subclass I, IIe, and IIIe. The predominant well and moderately well drained soils are in the Benndale, Grasmere, Greenville, Bowie, Orangeburg, Poarch, Ruston, and Tifton series. Moderately to poorly drained soils are mainly sandy loams and silt loams in capability classes and subclass IIw, IIIw, IVw, and Vw. Included soil series are Atmore, Bibb, Escambia, Freemanville, Grady, Irvington, and Robertsdale.

The following is a brief series description of the aforementioned soils:

- (1) Benndale - The Benndale series consists of deep, well-drained soils of the uplands formed in thick beds of sandy loam. Typically, the surface layer is dark grayish brown fine sandy loam underlain by yellowish brown loam or fine sandy loam to a depth of about 68 inches, grading into shades of red, gray, and brown mottles. Slopes are 0 to 2 percent.
- (2) Grasmere - Grasmere series comprises dark surfaced, well drained, clayey soils with dark red subsoils. These soils occur in slight depressions or along small upland drainageways with gradients of less than 3 percent.
- (3) Greenville - The Greenville series consists of well drained, friable, moderately permeable upland soils. These soils have a dark reddish brown fine sandy loam surface layer over a dark red sandy clay to clay subsoil. Regolith is clayey marine sediments high in sand. Slopes range from 0 to 5 percent.
- (4) Bowie - The Bowie series consists of deep moderately well drained loamy upland soils with plinthite. These soils have moderately slowly permeable lower subsoils containing plinthite which perches water for short periods each year. Slopes range from 0 to 5 percent.
- (5) Orangeburg - The Orangeburg series consists of deep, well drained soils on undulating to rolling uplands of the Coastal Plain. Typically, the surface layer is dark grayish brown loamy sand about 7 inches thick. The subsoil is mainly yellowish red, friable, sandy clay loam, which extends to 64 inches or more. Slopes range from 0 to 8 percent. Gentle slopes are generally cultivated and steeper ones are wooded.
- (6) Poarch - The Poarch series consists of well drained or moderately drained, moderately coarse textured, upland soils with plinthite in the subsoils. The soils are on loamy marine deposits and occur in broad flats with gradients of less than 5 percent.
- (7) Ruston - The Ruston is a well drained, moderately permeable, acid, upland soil. It has a brown fine sandy loam surface and a red or yellowish red sandy clay loam subsoil. This soil developed from marine or alluvial sediments. It occurs on Pleistocene age or older areas of the Coastal Plain. Slopes range from 1 to 8 percent.
- (8) Tifton - The Tifton series consists of well drained, level to sloping, pebbly soils. Typically, the surface layer is a very dark grayish brown loamy sand. The subsoil is mainly yellowish brown sandy clay loam but is mottled with red in the lower part. Hard iron concretions are in the upper 30 inches of the soil profile, but soft to

firm brown concretions are in the lower part. Tifton soils are strongly acid. Slopes range from nearly level to about 8 percent.

(9) Atmore - The Atmore series consists of poorly drained, loamy upland soils with fragipans. These soils are on sandy or loamy marine deposits and occur in broad flats with gradients of less than 5 percent.

(10) Bibb - The Bibb series consists of poorly drained, level to nearly level flood plain soils subject to frequent overflow. They have brownish to grayish sandy loam surface layers over gray stratified sandy and silty subsurface layers. The water table is within 8 inches of the surface from 6 to 11 months each year.

(11) Escambia - The Escambia series consists of somewhat poorly drained, loamy, upland soils with compacted lower subsoils. These soils are on thick marine deposits and occur in broad flats with gradients of 0 to 8 percent.

(12) Freemanville - This is a well drained, friable, moderately permeable, level to gently sloping upland soil. It has a dark grayish brown fine sandy loam surface over a red clay loam or clay subsoil. Hard iron concretions occur throughout the profile. The lower subsoil contains over 5 percent soft plinthite. The regolith is loamy and clayey marine sediments. Slopes range from 0 to 12 percent.

(13) Grady - The Grady series consists of wet soils that occur mainly in small or medium sized circular or oblong depressions on smooth landscapes. Unless drained, these soils are ponded for a greater part of the year. Typically, the surface layer is black sandy loam to clay loam. The subsoil is gray clay mottle with brownish yellow, red and strong brown, and extends to 60 inches or more.

(14) Irvington - The Irvington series consists of moderately well drained soils on nearly level uplands. Typically, these soils have a grayish brown fine sandy loam surface layer. The subsoil is brownish yellow sandy clay loam. A fragipan is at depths of 25 to 30 inches. Hard iron concretions are on the surface and in the subsoil. Slopes are less than 8 percent.

(15) Robertsdale - The Robertsdale series consists of somewhat poorly drained soils on nearly level and slight depressional areas. A fragipan occurs at about 20 inches and hard iron concretions are throughout the profile. The subsoil has from 5 to 30 percent plinthite. Slopes are from 0 to 2 percent.



The capability classes and subclasses are described as follows:

- (1) Class I soils have few limitations that restrict their use.
- (2) Class II soils have some limitations that restrict the choice of plants or that require moderate conservation practices.
- (3) Class III soils have severe limitations that restrict the choice of plants, or require special conservation practices, or both.
- (4) Class IV soils have very severe limitations that restrict the choice of plants, or that require very careful management, or both.
- (5) Class V soils have little or no erosion hazard but have other limitations, impractical to remove, that confine their use largely to pasture, range, forest, or wildlife food and cover.
- (6) Subclass "e" soils are limited in use because of an erosion hazard.
- (7) Subclass "w" soils are limited in use because of wetness or drainage problems.

#### Geology and Topography 1/

Formations of Tertiary age are included in the general geologic setting. These formations are divided into four series which are in ascending order: The Eocene, Oligocene, Miocene, and the Pliocene. Recent deposits of Quaternary age are found as terrace and alluvial deposits along the rivers and streams of the area. The Tertiary Formations are underlain by rocks of Cretaceous age. The watershed is underlain by the Citronelle Formation of Pliocene age. The Citronelle dips southwestward at 5 to 8 feet per mile and is as much as 135 feet thick at Atmore. It unconformably overlies the undifferentiated deposits of Miocene age.

Upper Brushy Creek watershed lies within the Coastal Plain Physiographic Province and the Southern Pine Hills subdivision of the Province. A prominent physiographic feature in the Southern Pine Hills is the upland plain developed on the Citronelle Formation. It is characterized in this area by broad flat, table-like surfaces, in places 5 to 10 miles wide. A prominent physical feature of the uplands is the numerous, small round, or elongated depressions which occur in the interstream areas. These depressions vary from a few feet to about 100 feet in diameter. The upland plain has an altitude of about 345 feet mean sea level (MSL). Locally, the relief of the plain varies from about 5 to 15 feet.

## Climate

Upper Brushy Creek Watershed has a temperate to subtropical mild humid climate. Extremes in temperature are rare and of short duration. Precipitation is distributed fairly evenly throughout the year. 1/

Average annual rainfall is 60.64 inches. July is the wettest month with a mean precipitation of 7.79 inches; the driest month is October with a mean precipitation of 2.38 inches. The average growing season is approximately 250 days, with the last killing frost occurring in March and the first in November. The mean annual temperature is 66.0 degrees, with the monthly averages ranging from 51.7 in December and January to 82.7 in August. 2/

## Mineral and Ground Water Resources 1/

Sand and gravel as a mineral resource occurs in recent alluvial deposits along the major streams and their larger tributaries throughout Escambia County. These deposits have been mapped by the Geological Survey of Alabama in the lower portion of the watershed.

Permeable beds of sand in the Pliocene series in southwestern Escambia County yield moderate to large quantities of water. In Upper Brushy Creek Watershed, the Citronelle Formation is the principal aquifer. Wells tapping sand beds in the Citronelle at depths greater than 65 feet are the principal source of municipal, industrial, and domestic water supplies in the area. Wells less than 65 feet deep generally tap aquifers that are controlled by water table conditions and the water levels fluctuate in response to precipitation and could possibly go dry during periods of prolonged drought. A municipal well at Atmore taps sand beds in the underlying Miocene Series at depths of 208 to 261 feet. The well produced 463 gallons per minute in 1957.

## Land Use (see Appendix G)

Land use in the watershed is as follows:

	<u>Acres</u>	<u>Percent</u>
Cropland	5,600	51
Pastureland	880	8
Forest land	3,130	28
Urban land	870	8
Miscellaneous & Idle land	500	5
TOTAL	<u>10,980</u>	<u>100</u>

Land use in the area subject to flooding and impaired drainage is as follows:

	<u>Acres</u>	<u>Percent</u>
Cropland	850	43
Pastureland	135	7
Forest land	390	20
Urban land	430	22
Miscellaneous & Idle land	165	8
TOTAL	<u>1,970</u>	<u>100</u>

Soybeans is the major crop produced in the watershed. Soils and climate are especially adapted to soybean production and markets are plentiful.

The predominant pasture grass is bahia. Most pastures are scattered and in small acreages.

There are about 3,130 acres of forest land in the watershed. The major forest type is longleaf pine, followed by sweet gum-yellow poplar, loblolly pine, and pond cypress. The majority of the forest land is in the lower portion of the watershed. The only forest resource east of the St. Louis-San Francisco Railroad is along streams and in small depressed areas with little or no natural drainage. The dominant forest type is sweet gum-yellow poplar.

Approximately 1,970 acres (55 percent) of the drainage area served by channel work is mapped as having a wetness limiting factor for agricultural production. This area will be benefited by the planned channel work, see Appendix C.

### Surface Water Resources

Brushy Creek originates approximately two miles northeast of Atmore and flows in a southwesterly direction to the east city limit of Atmore, thence westerly along the northern edge of Atmore for about four miles, thence southwesterly 1.5 miles to U. S. Highway 31, and thence southerly approximately 17 miles to its confluence with the Perdido River.

There are no large man-made impoundments in the watershed, and only two farm ponds with the larger having a surface area of eight acres. Around the upper perimeter of the watershed there are areas of ponded water with no noticeable flows because of lack of outlets or due to the high water table. These natural ponds, known as "Grady ponds" due to the existence of the Grady soil series, range in size from about 0.5 to 20 acres; the deeper ponds are 3 to 4 feet deep. Most of them are dry during late summer and fall.

Landowners have attempted to drain ponded areas above station 69+80 on Brushy creek main by excavating channels in the vicinity of planned lateral 7, and along Brushy Creek from station 55+40 to station 112+00 (see Appendix C). This channel work has not functioned properly because of the inadequate outlets.

In the vicinity of Atmore, there is no stream channel though there is a more defined drainage pattern with flow during periods of surface runoff. Downstream from Escambia County Road No. 1, the stream is perennial with a defined, natural channel.

There are no stream gage records for Upper Brushy Creek Watershed. Stream-flow records are available for Brushy Creek at a U. S. Geological Survey partial-record station (Station 02376270) which is 2 ½ miles southwest of Atmore and approximately 1 ½ miles below the lower extremity of the watershed project. Based on streamflow records for 1946-63, the estimated 10-year 7-day low flow is 5.4 cfs (cubic feet per second) and the estimated median annual 7-day low flow is 10 cfs for a drainage area of 20 square miles at this station.

A water sample collected on November 20, 1963, from Brushy Creek (Station 02376270) had a pH of 7.5, a calcium-magnesium hardness of 10 mg/l (milligrams per liter), a noncarbonate hardness of 2 mg/l, and contained 4.0 mg/l chloride and 10 mg/l bicarbonate. 3/

Field investigations revealed that the upper portions of the creek are heavily polluted at several locations because of garbage dumping. These dumps are within the city limits of Atmore and consist of materials ranging from cans, mattresses, and old washing machines, to dead animals, and other organic wastes. Pollution from urban runoff is also very evident.

There are five natural, wooded shallow ponds in the drainage area served by channel work. These natural "Grady ponds", range in size from two acres to nine acres. These wetlands are type - 7 wooded swamps as described in "Wetlands of the United States". 4/

Dominant trees in these ponds include water oak, overcup oak, tupelo gum, swamp blackgum, and pond cypress. Duckweeds, smartweeds, and other aquatic plants important to waterfowl are often found in these areas. Waterfowl use of the natural ponds on the project area is low due to the small area involved and the location of these ponds near developed urban areas. These ponded areas will not be affected by the project.

#### Present and Projected Population

In 1970, the population of Escambia County was 34,906. The projected populations for the years 1990 and 2020 are 43,600 and 60,800,

respectively. 5/ Historic and projected populations of the St. Josephs-Perdido Water Resource Subregion are as follows: 6/

<u>Year</u>	<u>Population</u>
1969	709,848
1990	840,200
2020	1,116,600

In 1970, the population of the City of Atmore was 8,300. Population projections are not available for Atmore, however, it's population is expected to increase at about the same rate as the county.

### Economic Resources

All land in the watershed is privately owned except for 297 acres owned by the City of Atmore. The 297 acres is located in the lower portion of the watershed. This area is planned for industrial or municipal development. In addition, the City of Atmore owns 84 acres within the city limits which includes a 9 acre city park. A private company, manufacturing paper products, owns about 1,440 acres in the watershed.

Future urban development in flood prone areas in the City of Atmore will be governed by resolutions adopted by the City Council of the City of Atmore in December 1974; Resolution 224-B states in part 1. "The City Council of Atmore, Alabama, assures the Federal Insurance Administration that it will enact as necessary, and maintain in force for those areas having flood hazards, adequate land use and control measures with effective enforcement provisions consistent with the Criteria set forth in Section 1910 of the National Flood Insurance Program Regulations."

Resolution 225-B states that the city is enforcing Southern Standard Building Code of 1969 with 1972 supplements. The code prohibits building, improving, repairing, moving, or demolishing any structure without a building permit from the Building Inspector.

The Building Inspector shall review all building permit applications for new construction or substantial improvements to determine whether proposed building sites will be reasonably safe from flooding.

Additionally the Building Inspector shall review subdivision proposals and other proposed new developments to assure that all such proposals are consistent with the need to minimize flood damage.

The major farm enterprise within the watershed is the small family farm. SCS field office records show there are 104 farms in the watershed averaging about 83 acres per farm. Sixty of these farms, averaging 41 acres per farm, are in the drainage area served by the planned channel work. Soybeans is the major crop produced in this area and present yields average about 24-26 bushels per acre. In other portions of the watershed the average yield is about 30-32 bushels per acre.

Basically, forest lands in the watershed are in a good silvicultural condition. Basal area ranges from 90 to 160 square feet per acre, indicating many of the forest stands are overstocked. Site index\* ranges from 90 to 110 feet. These forest lands will grow from 400 to 500 board feet per acre per year.

Forest land values in the watershed range from \$150 to \$250 per acre, plus stumpage value of timber on the land. The higher valued lands are found closer to the City of Atmore. Present prices for good pine sawtimber in the area average \$100 per thousand board feet with pulpwood \$7.50 per cord. Stocking averages about 5,000 board feet in good sawtimber and 15 to 20 cords per acre in pulpwood. Hardwood pulpwood averages \$2.50 per cord with average stocking about 12 to 15 cords per acre. Very little hardwood sawtimber exists in the watershed.

The value of agricultural land in the watershed ranges from \$700 to \$1,000 per acre. Urban residential property ranges in value from \$4,000 to \$8,000 per acre.

Various local markets are readily accessible to agricultural producers. Adequate transportation routes to the area are provided by Escambia County Roads 1 and 27, State Highway 21, U. S. Highway 31, Interstate Highway 65, and the St. Louis and San Francisco and the Louisville and Nashville Railroads.

The economy of the watershed is almost entirely dependent upon agriculture. Soybean production is the major source of agricultural income. According to the 1969 census, about 46 percent of Escambia County farmers had gross sales of less than \$2,500 compared to 64 percent in 1964 7/.

The inhabitants of the watershed are primarily low income persons living under economically depressed conditions. Many attempt to supplement their incomes by farming small acreages.

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\* The height of a tree at 50 years of age.

Escambia County, as of October 1973, had a total work force of 13,870 with an unemployment rate of 4.1 percent. <sup>8/</sup> The leading sources of non-agricultural employment are as follows:

<u>Non-Agricultural Industries</u>	<u>Employment</u>
Textiles and Apparel	1,860
Wholesale and Retail Trade	1,840
Government	1,680
Services	1,070
Lumber and Wood Products	950

### Plant Resources

There are 2,570 acres of forest land in the western portion (west of county road #1) of the watershed. This portion is composed of the following forest types, in order of predominance: longleaf pine (Pinus palustris), sweet gum (Liquidambar styraciflua), yellow poplar (Liriodendron tulipifera), loblolly pine (Pinus taeda), loblolly pine - hardwood, and pond cypress (Taxodium ascendens).

There are 560 acres of forest land in the eastern portion of the watershed consisting of five forest types: sweet gum-yellow poplar, loblolly pine, cypress, slash pine, and pine-hardwood. Sweet gum-yellow poplar is the dominant type followed closely by loblolly pine and cypress. The remaining forest resource is found along streams and in small depressed areas with little or no natural drainage.

There is high diversity of woody species in both the overstory and understory. A study of small stream bottoms in the coastal plain of southwestern Alabama by Gemborys and Hodgkins <sup>9/</sup> indicates that 65 woody species were encountered in their plots. They observed 27 species in the overstory and 62 species in the understory.\*

Some of the most common substratum species include dogwood (Cornus florida), waxmyrtle (Myrica cerifera), oak (Quercus spp.), sweetgum, and gall berry (Ilex glabra).

\* Understory is defined as less than 1.5 inches diameter breast high, but greater than 1 foot tall.

Grasses and forbs are abundant on the pine sites. They are much less abundant on hardwood sites unless woodland harvest has thinned the stand and reduced canopy cover. A study of potential understory forage in woodlands in the coastal plain of Alabama has been made by the Soil Conservation Service. Principal species commonly found in the pine forest of the uplands include: pinehill bluestem (Andropogon divergens), little bluestem (A. scoparius), broomsedge (A. virginicus), three awns (Aristida spp.), plumegrass (Erianthus alopecuroides), grass leaf gold aster (Chrysopsis graminifolia), tickclovers (Desmodium spp.), and low panicums (Panicum spp.). Principal species of the wetter hardwood sites include: low panicums, sedges (Cyperus spp.), rushes (Jauncus spp., Scirpus spp.), longleaf uniola (Uniola sessiliflora), and switchcane (Panicum sp.).

The Grady ponds are dominated by tupelo (Nyssa sp.), sweetbay magnolia (Magnolia virginiana), pond cypress, sedges, rushes, and other aquatic plants. The improved pastures are almost entirely Pensacola and Argentine bahiagrass (Paspalum notatum). Some native and naturalized plants always invade the stands, the most common invaders include: dog fennel (Eupatorium capillifolium), common bermudagrass (Cynodon dactylon), carpetgrass (Axonopus affinis), little barley (Hordeum pusillum), and broomsedge. Sedges, rushes, and curley dock (Rumex crispus) are also common on wet soils. Reseeding annual clovers (Trifolium spp.) are often overseeded by the farmers to improve forage quality and extend the grazing period.

The plant communities in the croplands of the watershed are almost stable systems. The farmers desire to maintain single crop systems in the cultivated row crop fields. They use cultural, mechanical, and chemical methods to curtail the invasion of weeds, but even the most successful operations fail to control all undesirables. The diversity and number of individual species of weeds that invade crops are determined by both natural and cultural factors such as site selection, weather conditions, previous land use, timeliness of operations, and effectiveness and selectivity of chemical herbicides.

Soybeans (Glycin max) is the most extensively grown row crop in the watershed. Weeds that commonly invade soybeans include crabgrass (Digitaria sanguinalis), coffeeweed (Cassia obpusifolia), pigweed (Amaranthus spinosus, A. retroflexus), cocklebur (Xanthium pennsylvanicum), barnyardgrass (Echinochloa crusgalli), and Johnsongrass (Sorghum halepense).

Weedy plants that are common in corn (Zea mays) include crabgrass, Johnsongrass, cocklebur, and coffeeweed.



Weeds common in cotton (Gossypium hirsutum) and garden and truck crops include all of those common in soybean fields plus nutgrass (Cyperus spp.) and prickley sida (Sida spinosa).

Wheat (Triticum aestivum) does not have serious weed problems except in fields that become infested with wild mustard (Brassica spp.).

### Animal Resources

A field study of the animal resources in the Upper Brushy Creek Watershed was conducted in January, 1974, by representatives of the Alabama Department of Conservation and Natural Resources, the U. S. Fish and Wildlife Service, and the Soil Conservation Service. The study consisted of a one day field trip in which the group observed the watershed and discussed the value of the fish and wildlife resources in the area to be affected by channel work. Information on the existing animal life was drawn from outside sources.

Stream game fishery values are of low quality or non-existent within the watershed area. This low quality in game fishery is the result of the following conditions:

1. A portion of the stream has ephemeral or intermittent flow.
2. Pollution from urban drainage and trash dumping have created an unsuitable habitat for game fish species.
3. The general nature of the stream and its immediate surroundings, especially within the city limits of Atmore, causes the area to be undesirable for game fishery purposes.

None of the rare and endangered fish species listed by the Alabama Department of Conservation and Natural Resources are known to occur in the watershed area. 10/

Game wildlife resources consist of rabbit, bobwhite quail, mourning dove, gray squirrel, raccoon, opossum, and some waterfowl. Most often hunted species of the area include squirrel, rabbit, and quail. The lack of suitable bottom land hardwood limits the habitat of the squirrel as well as the raccoon. Quail and dove populations are dependent on the type of crops grown. Turkeys are not known to occur, and deer, if present, occur in numbers too low to support appreciable hunting pressure. Both turkey and deer habitats are severely limited by the lack of suitable bottom land hardwoods. According to Dr. J. L. Dusi, Professor of Zoology Entomology at Auburn University in Alabama, there are no rare and endangered mammals that would be affected by the project. 11/

Garbage dumps located on the upper portion of Brushy Creek provide food for such scavengers as opossum, raccoon, fox, and rats. Use of these unsanitary dumps by scavengers could be harmful in terms of disease carrying capabilities.

The Alabama Department of Conservation and Natural Resources uses the following definitions to describe the rare and endangered species in Alabama. 10/

1. Rare - 1: The definition for "rare - 1" is same as that used by the Bureau of Sport Fisheries and Wildlife, and is defined as: "a rare species or subspecies is one that, although not presently threatened with extinction, is in such small numbers that it may be endangered if its environment worsens."
2. Rare - 2: "a species or subspecies that may be quite abundant where it does occur but is known in only a few localities or in a restricted habitat within Alabama."
3. Endangered: "any species or subspecies occurring in Alabama threatened with extinction" by any means.
4. Status undetermined: "a species or subspecies that has been suggested as possible rare or endangered but about which there is not information to determine its status. More information is needed."

The Alabama Department of Conservation and Natural Resources lists the following reptiles and amphibians as rare and endangered species whose ranges overlap or approach Escambia County. Personal communication with Dr. Robert Mount, Professor of Zoology - Etymology at Auburn University in Alabama, provided additional detailed information on the individual species.

#### Rare and Endangered Reptiles and Amphibians:

1. Dusky Gopher Frog Rana areolata sevosa (Goin and Netting)  
The status of the Dusky Gopher Frog is rare - 1, its range being the Gulf Coastal Plain. According to Dr. Mount it is "doubtful" that the Dusky Gopher Frog occurs in the area affected.
2. Flatwoods Salamander Ambystoma cingulatum (Cope)  
Status of the Flatwoods Salamander is rare - 1, and one of the rarest salamanders in Alabama. According to Dr. Mount, it

is "highly possible" that this species occurs in the affected area although it has not been reported. Dr. Mount further stated that the "breeding sites are usually cypress ponds and that the preferred habitat is along swamp margins of small streams". Alteration of the natural waterways and wetland drainage constitutes a direct threat to the survival of this species.

3. River Frog Rana hecksheri (Wright)  
R. hecksheri has a status of rare - 2. The area to be affected does not include any River Frog habitat such as pond cypress stands, therefore, the species will not be affected by this project. The Alabama Department of Conservation and Natural Resources states that stream channelization is a potential threat to the species 10/, however, since this project does not drain any natural wetlands such as cypress ponds, no effect on this species is probable.
4. Florida Pine Snake Pituophis melanoleucus mugitis (Barbour)  
This snake is presently placed in the "endangered" category and is rapidly declining in numbers. The snake has been known to occur in the area, however, Dr. Mount states that any effect on the species would be "inconsequential" to channel work mainly because it is not dependent on flowing streams.
5. Rainbow Snake Farancia erythrogramma (Palisot de Beauvois). The status of the Rainbow Snake is undetermined, however, Dr. Mount states that there is "low probability that the species is in the area affected" due to unsuitable habitat. The Rainbow Snake inhabits streams and relies on the eel as a major food source. Dams could prevent the upstream migration of young eels and thus adversely affect the snake, however, no dams will be installed in this project. The alteration of the stream itself could destroy some Rainbow Snake habitat.

### Recreational Resources

The Atmore city park on North Eighth Avenue covers about 19 acres and offers recreational activities in the form of swimming, picnicking, and field sports. A portion of the park is fund-assisted by the Bureau of Outdoor Recreation through the U. S. Land and Water Conservation Fund for providing recreational facilities. The park provides a pool, two basketball courts, a tennis court, play fields, group shelters, and picnic tables. It is open to the general public and is the primary source of recreational activity of this type for watershed inhabitants. The potential for recreational participation will increase if the flood hazard is reduced.

In addition, about 75 acres of the city's forest land is already under management directed toward future recreational development.

There are no potential recreational water impoundment sites existing within the watershed. 12/

Brushy Creek has been classified as having a potential for a fish and wildlife resource. 13/ This potential is located primarily below the Upper Brushy Creek Watershed boundary. The fishery resource of Brushy Creek within the watershed is very poor primarily because of the ephemeral or intermittent streamflow.

### Archaeological, Historical and Unique Scenic Resources

There are no known historical sites of value existing within the watershed according to the National Register of Historic Places. Also, the Alabama Historical Commission does not list any historical sites or unique scenic areas of value within the watershed.

Recently, the University of Alabama, Department of Anthropology, studies the watershed for possible archaeological or historical sites of importance that might be affected by the proposed project. The results of the study indicate that no such sites exist within the watershed area. The University's report is attached as Appendix E.

### Soil, Water, and Plant Management Status

Land use in the watershed is fairly stable. The area is highly specialized for row crop production, especially soybeans, and has made little change in recent years. The stability in land use is mainly due to the fact that, under present conditions, most of the land is already in agricultural use that has a potential for such use. Much of the land lies idle or is in low producing forests as a result of the flooding and wetness problems.

Conservation land treatment measures are proposed for installation for water management and erosion control. The accelerated land treatment program is already being implemented. The Escambia County Soil and Water Conservation District (S&WCD) is providing technical assistance in applying these land treatment measures.

At present there are 44 cooperators with the Escambia County S&WCD within Upper Brushy Creek Watershed. Conservation farm plans have been developed with 42 of these cooperators. To date, approximately 62

percent of the watershed, less the urban area, is covered by conservation agreements. About 60 percent of the planned land treatment measures have already been applied.

A study of conservation plans and Soil Conservation Service progress reports on farms in the watershed indicates that considerable progress has been made in the land treatment program. Conservation measures planned and applied from 1968 to 1973 are:

<u>Conservation Measures</u>	<u>Unit</u>	<u>1968 to 1973</u>	
		<u>Planned</u>	<u>Applied</u>
Conservation Cropping System	Ac.	4,105	3,871
Field Border	Ft.	16,465	16,465
Grassed Waterway	Ac.	22	16
Contour Farming	Ac.	584	219
Terracing	Ft.	167,424	104,718
Pasture and Hayland Planting	Ac.	627	203
Pasture and Hayland Management	Ac.	494	143
Drainage Mains and Laterals	Ft.	29,700	19,540
Drainage Field Ditches	Ft.	40,750	16,450
Diversions	Ft.	1,300	1,300
Ponds	No.	3	2
Wildlife Upland Habitat Management	Ac.	57	28

The Escambia County Soil and Water Conservation District is active in promoting conservation measures on agricultural land. The District Supervisors publish a quarterly newsletter informing cooperators of conservation services that are available and activities that have been accomplished.

Conservation plans have been prepared on 5,943 acres in the watershed. Conservation practices have already been applied to the extent that 3,635 acres are adequately treated. This includes 3,485 acres of cropland, 136 acres of pastureland, and 14 acres for wildlife habitat. Over 1,000 additional acres have some of the planned conservation practices applied and are partially treated.

The return of cost sharing assistance through programs administered by the Agricultural Stabilization and Conservation Service - Rural Environmental Conservation Program (RECP) and Rural Environmental Assistance Program (REAP) - will stimulate increased application of planned conservation measures.

Outside the industrial ownership, the forest land is in a relatively unmanaged condition. The individual forest stands are small and scattered,

making management difficult and expensive. On the basis of economic returns, forestry cannot compete with row crops. These small stands of timber are ignored by the landowners until they are merchantable size and then, they are liquidated. Most of these stands are overstocked with good quality poletimber or sawtimber.

The hardwoods along the flood plain of Brushy Creek have been cut over, leaving low-quality trees as growing stock. The dominant species is water oak. Other overstory species are sweet gum, water tupelo, and bay. These hardwood forests are in a poor silvicultural condition. However, they do provide habitat for non-game species.

Interest in forest management is minimal. Only three forest landowners have forest management plans. These include the two industrial ownerships and the City of Atmore. These forests are well-stocked and receive intensive forest management.

The Alabama Cattlemen's Association is emphasizing better pasture programs as one of its objectives. The current president of the Association lives near the watershed and it is expected that his association with this organization will help stimulate local interest in livestock and forage programs.

#### Projects of Other Agencies

There are no water resource development projects in the area that will either affect or be affected by this project.

## REFERENCES CITED

- 1/ Geological Survey of Alabama, Geology and Ground Water Resources of Escambia County, Alabama, Bulletin No. 74, 1963.
- 2/ United States Department of Commerce, National Oceanic and Atmospheric Administration, Climatological Data, Volume 78, No. 13.
- 3/ Geological Survey of Alabama, Seven-Day Low Flows and Flow Duration of Alabama Streams, Bulletin 87, Part A, 1967.
- 4/ U. S. Department of the Interior Fish and Wildlife Service, Wetlands of the United States, Circular 39, 1956.
- 5/ Baseline Projections, Published by the Alabama Development Office, March 1973.
- 6/ OBERS Projections, Volume 3, Water Resources Regions, 1-8, 1972.
- 7/ U. S. Department of Commerce, Bureau of the Census, 1969 Census of Agriculture.
- 8/ Alabama State Employment Service, Labor Market News, November 1973.
- 9/ Gemborys, S. R. and Earl J. Hodgkins, Forests of Small Stream Bottoms in the Coastal Plain of Southwest Alabama, Ecology, Volume 52, No. 1.
- 10/ Rare and Endangered Vertebrates of Alabama, Alabama Department of Conservation and Natural Resources, Department of Game and Fish, June 1972, 92 pp.
- 11/ Personal interview by M. A. Phillippi, Soil Conservation Service, June 26, 1974.
- 12/ U.S.D.A., Soil Conservation Service, Appraisal of Potential for Outdoor Recreational Developments, Escambia County, Alabama.
- 13/ Alabama Water Improvement Commission, Water Use Classifications for Interstate and Intrastate Waters of Alabama, May 5, 1967.

## WATER AND RELATED LAND RESOURCE PROBLEMS

### Land and Water Management

The 1969 Census of Agriculture shows that 349 of the 740 farms in Escambia County had incomes and sales of less than \$2,500 per year. 1/ The Census shows the average size farm for the county was 165.3 acres. The average size farm in the watershed is about 83 acres. The average size farm in the watershed under conservation plan is 141.5 acres and the average size not under plan is only 43 acres. This indicates that larger landowners are more willing to plan and apply conservation measures.

Landusers with low economic returns are more inclined to use intensive cropping systems that exceed the capabilities of the land. Intensive cropping systems and high rates of erosion are often found on the same soils. 2/ Much of the agricultural land in the watershed is not subject to high erosion rates, however, Soil Conservation Service studies indicate that the average rate of erosion on croplands exceeds acceptable limits for adequately protected land. 3/

Most of the soils in the benefited areas have high subsurface water levels which impede crop yields. This excess water causes additional expense by hindering tillage, planting, and harvesting operations. It also interferes with the normal physiological function of the planted crops to the extent that fertilizers are inadequately utilized and yields are reduced.

Small farms with low yields are not well suited to diversification. Farmers are often restricted to monoculture systems because they have neither the land on which to expand nor the money to purchase additional equipment needed for diversified farming.

The major problems on forest lands is high fire occurrence in the western half of the watershed. Wildfires reduce tree growth, destroy timber and further reduce, already limited, suitable wildlife habitat. During the period 1968 through 1972, an average of 2 percent of the



forest land burned annually. Fire occurrence during this period was as follows:

Fire Occurrence-Upper Brushy Creek Watershed  
1968 - 1972

Year	Number of Fires	Acres Burned	Percent of Forest land
1968	1	3.2	.10
1969	7	65.0	2.08
1970	10	86.0	2.75
1971	11	92.0	2.94
1972	9	74.0	2.36

The 1,440 acres of forest land owned by forest industry is burned under controlled conditions to prevent fuel buildup, inhibit the growth of hardwood brush, and keep down the spread of brown spot needle disease in the longleaf pine stands. Wildfires throughout the watershed have contributed to a poor hydrologic condition by removing the litter from the soil surface.

Floodwater and Drainage

One thousand nine hundred and seventy acres are damaged by flooding or poor drainage. Damages occur as a result of a combination of floodwater and drainage problems caused by slow movement or no movement at all of excess rainfall from the nearly level land. Land use in the floodwater and drainage problem area is as follows:

	<u>Problem Area</u>	<u>Percent</u>
Cropland	850 acres	43
Pastureland	135 acres	7
Forest land	390 acres	20
Misc. or Idle	165 acres	8
Urban	<u>430 acres</u>	<u>22</u>
Total	1,970 acres	100

Small, frequent floods cause the majority of agricultural damages with spring being the season when most damages occur. Periods of soil inundation and saturation just prior to and during crop planting and the presence of wet areas during growing and harvesting seasons increase production costs and decrease yields. The predominant crop produced in the floodwater and drainage problem area is soybeans. Pastures are damaged from frequent and prolonged inundation and soil saturation with the result being a loss in grazing time and an inferior grazing crop.

There are approximately 60 landowners, excluding urban and city owned land, within the flood hazard area. These landowners experience crop damages and reduced incomes each year. Some landowners have attempted to reduce or eliminate their flooding and drainage problems by excavating channels. These channels have not functioned properly because of the lack of adequate outlets.

Present, future without project, and future with project yields projected to about the year 2000 are estimated as follows:

Crop	Yield Per Acre		
	Present	Future W/O Project*	Future W/Project**
Soybeans	25 bu.	36 bu.	56 bu.
Cotton	500 lb.	550 lb.	650 lb.
Bahia Pasture	6 AUM***	7.5 AUM	9 AUM

Major soil series in the area include: Atmore, Escambia, Robertsdale, Ruston, Bibb, and Grady. These are level, nearly level or gently sloping, poorly drained soils having slow runoff. They are predominately in capability classes and subclass IIw, IIIw, IVw, and Vw.

There are about 430 acres within the City of Atmore which has a water problem. The problem on the flood plain along Brushy Creek is flooding of the city park on Eighth Avenue and flooding around nine dwellings located in the vicinity of Eighth Avenue and Crow Street. The maximum depth of out-of-bank flooding in this area is about 4 feet. Debris is deposited in the park and around the dwellings. The use of the park

\* Assuming future advancement in management and technology.

\*\* Yield is with more intensive farming practices expected after project installation.

\*\*\* Animal Unit Month is the amount of grazing that it takes to satisfy the grazing needs of one mature cow for one month.



This crop field is being flooded by a 2-inch rainfall that caused Brushy Creek to overflow. Floodwater "ponds" in crop fields because of inadequate outlets.



Inadequate channel capacities and debris cause overflow from small rainfalls.





Flooding of N. 8th Avenue City Park. These playgrounds are being flooded by a 2-inch rainfall during January 1971.



Flooding of residences, such as this mobile home, causes foundation and lawn damages. Also, inadequate drainage causes septic tank malfunction.



is curtailed. Water does not get into any houses but does inundate yards, septic tanks and disposal fields, and damages personal property, etc. The problem in the remaining area is shallow standing water in a developed residential area caused by an inadequate outlet. Water does not cause any significant monetary damages but does create health problems and nuisance problems.

There is relatively minor damage to roads and bridges due to the small runoff producing areas, limited number of bridges, and slow movement of water. Average annual floodwater damages to crops and pastures are estimated to be \$31,700. Road and bridge damages are estimated to be \$1,000 annually. Indirect damages are estimated to be \$3,700 annually. Urban damages are estimated to be \$2,130 annually.

### Erosion Damage

Based on estimates using the Universal Soil-Loss Prediction Equation, <sup>4/</sup> gross erosion rates in tons per acre per year for the watershed under present conditions are as follows:

1. Cropland - 7.03 tons/acre
2. Pastureland - .30 tons/acre
3. Forest land - .15 tons/acre
4. Urban land - .42 tons/acre
5. Idle land - .36 tons/acre
6. Miscellaneous - .71 tons/acre

Gully, roadside, and streambank erosion in the watershed area is insignificant. There are no critical sediment producing areas in the watershed. Scour damages are not a problem.

At present, average gross erosion on the upland cropland is greater than the maximum soil-loss tolerance. Productivity cannot be sustained economically for an indefinite period if the present rate of erosion continues.

### Sediment Damage

Field studies revealed that sediment deposition damages were too slight to evaluate. Some sediment accumulation is evident on forest lands in the lower reaches of the watershed, but because of slow deposition, timber growth and the immature alluvial soils are not measureably damaged.

Storm runoff has a high concentration of suspended sediment, especially during periods of land preparation. Sedimentation in field drains and road ditches is caused by a combination of sediment accumulation and vegetation and can be prevented by proper maintenance.

Average annual sediment yield at the mouth of the watershed is an estimated 10,600 tons or an average annual sediment concentration of 284 milligrams per liter. At the mouth of the floodwater and drainage problem area, the average sediment yield is an estimated 4,300 tons per year, or an average sediment concentration of 352 milligrams per liter per year.

Under existing conditions, the sediment concentration level at both the above locations is fairly low, but is outside the range for a good stream fishery. 5/

### Municipal and Industrial Water

The City of Atmore obtains its water supply from drilled wells. Ground water of good quality is abundant in the area, and supplies are adequate to handle the projected future population of the area.

### Recreation

A recreational problem encountered in the area is prolonged flooding of the North Eighth Avenue City Park. This facility is available to the general public and is highly utilized by watershed occupants. Flooding limits use of the facilities, and causes physical damages to group shelters, parking areas, and playgrounds.

Population is projected to increase in Escambia County as follows: 6/

<u>1970</u>	<u>1980</u>	<u>1990</u>	<u>2000</u>	<u>2010</u>	<u>2020</u>
34,900	39,000	43,600	48,700	54,400	60,800

Historic and projected participation in selected recreational activities in the area is as follows: 7/

<u>Activity</u>	<u>Percentage of Population</u>		
	<u>1967</u>	<u>1980</u>	<u>2000</u>
Swimming	29	35	35
Picnicking	36	43	45
Fishing	25	26	28
Playing games	17	17	17
Camping	6	8	8
Hunting	11	12	15



With an increasing population and an increasing percentage of people participating in recreational activities, it is anticipated that future recreational needs in the area will far exceed the present supply.

### Water Quality

Chemicals, fertilizers, and pesticides have an insignificant effect on downstream water quality. There is a corresponding slow movement of water and low transport of materials in solution. Within the city limits of Atmore, just below Eighth Avenue, the small, ineffective channel is used as a dump for garbage and trash including dead animals. This dumping reduces downstream water quality.

### Economic and Social

The small family farm is a major source of livelihood. There are 104 farms in the watershed averaging 83 acres per farm. The drainage area served by the planned channel work is composed of 60 farms averaging about 41 acres per farm. These are low income units with many of the operators supplementing their income with off-farm employment.

Approximately 46 percent of all farms in Escambia County have annual gross sales of less than \$2,500. Sixty percent of these are part-time farms. 8/ None of the farms in the watershed utilizes as much as one man-year of hired labor annually.

Many of the landowners are farming land that is either too wet for agricultural purposes or has a severe flood hazard. The area is in immediate need of rural development to help the low-income people establish a better standard of living.

The urban portion is composed primarily of low income families with poor housing. Employment opportunities and chance of improvement for these people are low. Health and sanitation facilities are poor in this section of the city.

## REFERENCES CITED

- 1/ 1969 Census of Agriculture - Escambia County, Alabama, U. S. Department of Commerce, January 1972.
- 2/ Wischmeier, Walter H. and Dwight D. Smith, Predicting Rainfall-Erosion Losses from Cropland East of the Rocky Mountains, Agricultural Handbook No. 282, USDA Agricultural Research Service, Washington, D. C. 1965.
- 3/ "Hydrologic Group K & T Factors", USDA-SCS, Fort Worth, Texas, August 1, 1969.
- 4/ U. S. Department of Agriculture, Soil Conservation Service, Procedure for Computing Sheet and Rill Erosion on Project Areas, Technical Release No. 51, September 1972.
- 5/ European Inland Fisheries Advisory Commission as cited in the Practice of Water Pollution Biology, U. S. Department of Interior, Federal Water Pollution Control Administration, 1969, p. 33.
- 6/ Alabama Development Office, Alabama Development News, Standard Population Projections Compiled for Planning and Development Activities, March 1973.
- 7/ Auburn University, Department of Agricultural Economics and Rural Sociology, Participation in Outdoor Recreation in Alabama, October 1970.
- 8/ U. S. Department of Commerce, Bureau of the Census, County and City Data Book, 1972.

RELATIONSHIP TO LAND USE PLANS, POLICIES AND CONTROLS

There are no federal, state, or local land use plans, policies, or controls for Escambia County, Alabama.

## ENVIRONMENTAL IMPACT

### Conservation Land Treatment

The project will result in 3,124 acres being adequately treated during the installation period. This includes 1,024 acres of cropland, 500 acres of pastureland, and 1,600 acres of forest land. The entire acreage of forest land will have fire protection.

Following the installation of planned land treatment measures, the estimated average annual gross erosion rates will be reduced, based on the Universal Soil-Loss Prediction Equation, as follows:

<u>Land Use</u>	<u>Soil Loss (Tons/acre)</u>		<u>Reduction (percent)</u>
	<u>W/O Land Treatment</u>	<u>With Land Treatment</u>	
Cropland	7.03	4.63	34
Pastureland	.30	.20	33
Forest Land	.15	.11	26
Urban land	.42	.42	--
Idle land	.36	.14	61
Miscellaneous land	.71	.71	--

Following installation of land treatment measures, the erosion rates will be within the accepted soil-loss tolerance levels. Maximum productivity can then be economically sustained.

The existing, non-damaging sediment accumulation on forest lands in the lower part of the watershed will be reduced by 33 percent with land treatment in the uplands. This will enhance alluvial soil suitability.

Average annual sediment yield at the mouth of the watershed will be reduced from 10,600 tons to 7,150 tons, a reduction of 33 percent. At the mouth of the floodwater and drainage problem areas, the annual sediment yield will be reduced 30 percent, from 4,300 tons to 3,000 tons per year. Sediment concentrations will drop from 284 milligrams per liter to 217 milligrams per liter at the mouth of the watershed and from 352 to 284 milligrams per liter at the mouth of the floodwater and drainage problem areas, representing a 30 and 19 percent reduction respectively. These concentration levels remain outside the range for good stream fisheries. 1/

Crop production will be increased on lands where conservation practices are applied. Land drainage will improve soil conditions, improve the physiological functions of cultivated crops, and facilitate more efficient use of added plant nutrients. 2/ Conservation practices such as conservation cropping systems and terracing will control soil erosion, reduce sediment, and increase crop yields. 3/

The impact on wildlife and wildlife habitat is expected to be negligible because of the paucity and poor quality of these resources in the area where channel work is to be installed.

Technology does not permit making valid estimates of nutrient transfer from fertilized soils to ground or surface water. 4/ Many research projects have been conducted on the fate of fertilizers and agricultural chemicals applied to the soil.

Nitrate salts are soluble and are readily transferred by water movement. 5/ Nitrates are lost from the soil by erosion, surface runoff, and leaching. 6/

Soybeans are able to fix appreciable amounts of atmospheric nitrogen by nitrogen fixing bacteria, therefore, nitrogen fertilizer is not generally applied. Increased soybean yields and a small increase in cropland acres will result in more nitrogen being fixed by the plants. Nitrogen fertilizers are used on the other important crops grown in the watershed. Phosphorus losses are associated almost entirely with soil erosion. 4/ Conservation practices will reduce soil erosion, therefore, the mode of transportation for nitrogen and phosphorus losses will be reduced. 7/

The planned land treatment measures will improve moisture and soil physical conditions to the extent that cultivated and sod crops will produce more vegetation. This will result in more efficient use of plant nutrients.

Chemical pesticides escape into the environment by movement of water, soil erosion, drift, volatilization, and through plant and animal removal. 8/

The projected increase in cropland in the watershed from 5,600 acres to 5,700 acres will result in a small increase in potential use of pesticides. The installation of conservation practices that reduce soil losses and runoff water will have a significant effect on reducing the loss of agricultural chemicals into streams. 9/

The expected changes in land use after project installation is as follows:

<u>Land Use</u>	<u>Present (Ac.)</u>	<u>Future with Project (Ac.)</u>
Cropland	5,600	5,700
Pastureland	880	955
Forest land	3,130	2,925
Urban	870	900
Misc. and Idle	500	500

Improved farming efficiency is expected after the removal of excess water and elimination of wet areas. Conservation land treatment will improve the water intake rate and water holding capacity of the soil. Storm runoff and related floodwater damages will be reduced.

There will be no appreciable change in area or depth of flooding immediately below the outlet of channel work. The reduction in storm runoff from improved farming operations will be offset by increased stream discharges after drainage outlets are provided by channel work.

Based on hydrologic calculations, the direct runoff will be reduced by approximately 4 percent as a result of conservation land treatment. This 4 percent runoff reduction is expected over the entire watershed and although land treatment will not be performed on each acre, an approximate 4-percent increase in ground water storage is expected during periods of wet weather. This increased storage will be temporary and water will return to the streams throughout their entire lengths. Since the ground water system is presently in equilibrium, the temporary rise in the water table will be slowly reduced to normal by draining to streams during periods of low flow.

### Structural Measures

Planned channel work will provide flood protection and drainage outlets for general farm crops. The upper end of Brushy Creek main channel (Station 15+30 to Station 112+00) will remove runoff from a 2-year, 24-hour storm in 24 hours. <sup>10/</sup> All other channels will remove runoff from a 5-year, 24-hour storm in 24 hours.

The multiple purpose channel work will reduce floodwater damages by 77 percent and will provide efficient drainage outlets on approximately 1,540 acres of agricultural land. The project will reduce flood damages

on 430 acres of urban land by 65 percent. Sixty landusers will be directly benefited in terms of increased yields and subsequent incomes. Nine urban dwellings will be directly benefited in terms of reduced flood depth and duration. An indefinite number of urban dwellings will be benefited by improved storm sewer drainage.

Efficiency in farming operations will be improved producing a trend toward larger farm machinery. This is expected as a result of having larger continuous fields and a reduction or elimination of wet areas. The removal of excess water will allow farming operations to be performed in a more timely and economical manner and harvesting can be completed without unnecessary delays. Yields will increase as farmers will apply more efficient managerial practices after protection is realized. More intensive farming practices can be expected on about 800 acres in soybean production. These effects can be expected to prevail throughout the life of the project because adequate maintenance of the structural measures will be performed as stated in the operation and maintenance agreement.

Due to the nearly level topography necessitating the use of flatland procedures for watershed evaluation, acres flooded by storm frequency is not available. However, a comparison of peak discharges and depths of flooding for future condition without project and future condition with project were made at four locations in the downstream or more defined portion of the benefited area. Locations selected were at Eighth Avenue in Atmore (Station 161+00), a location approximately 1,000 feet above State Highway 21 (Station 200+00), a location approximately 100 feet below the St. Louis and San Francisco Railroad (Station 225+60), and a location approximately 2,100 feet below the lower end of planned channel work (Station 245+60), see Appendix C. Comparisons were made for a 2-year, 10-year, and 100-year storms. Results of the comparisons are shown below.

Storm Frequency	Station No.	Peak Discharge (cfs)		Percent Increase In Peak Discharge	Depth of Flooding (feet)		Change in Depth of Flooding
		Without Project	With Project		Without Project	With Project	
100-year 24-hour	161+00	1181	1204	2	3.4	2.1	-1.3
	200+00	2454	2579	5	6.4	5.0	-1.4
	225+60	2656	2805	5	5.4	5.5	+0.1
	245+60	2772	2936	6	4.4	4.5	+0.1
10-year 24-hour	161+00	728	747	3	2.8	1.2	-1.6
	200+00	1496	1592	6	5.2	3.7	-1.5
	225+60	1609	1727	7	4.3	4.4	+0.1
	245+60	1674	1804	8	3.5	3.6	+0.1
2-year 24-hour	161+00	401	415	4	2.2	0.2	-2.0
	200+00	817	878	7	4.0	2.4	-1.6
	225+60	867	949	9	3.1	3.2	+0.1
	245+60	896	989	10	2.7	2.8	+0.1

The above table indicates that flooding produced by the above frequency storms will not be entirely eliminated but depth of flooding will be reduced in areas of high damageable values, especially urban areas in the vicinity of station 161+00. The percent reduction, in depth of flooding, produced by the 100-year, 10-year, and 2-year storms is 38 percent, 57 percent, and 90 percent respectively. The table also indicates an insignificant increase in depth of flooding on the wooded flood plain immediately below the lower end of planned channel work on Brushy Creek Main (Stations 245+60 and 225+60).

The planned channel work will necessitate the direct loss of about 75 acres of bottomland forest composed mostly of sweet gum and yellow poplar. This forest land is poor quality game animal habitat but does have some value for non-consumptive species of wildlife, especially birds. Of this 75 acres, 11 acres is committed to the channel, the remainder can be used for other purposes after project installation. It is estimated that an additional 100 acres of poor quality slash pine forest will be cleared for agricultural production as a result of the drainage provided by the project.

The entire project area, except that portion within the city limits, is available for upland game hunting with the permission of the landowner. The project is not expected to have a significant impact on game resources because most of the watershed is presently in cropland or open land and the land to be cleared has low value for game animal habitat.

Two small farm ponds provide some warm water fishing. Stream fishing is practically nonexistent in the watershed. The project will have no effect on the fishery resource.

Since the watershed was not evaluated using the frequency method, depth-acres flooded data are not available regarding degree of flooding on various land uses for particular frequency floods. Damages were estimated in terms of reduced yields caused by drainage and floodwater problems. Channels will remove excess rainfall from a particular frequency storm in 24 hours rather than contain the peak discharge produced by a storm.

Erosion of the existing channel is not a major problem, but will increase during and immediately after construction with a decline and stabilization following the first year.

Streambank erosion will occur on about 24 acres as a result of channel work. For a period of one year following construction, an estimated average of 50 tons per acre of sediment will be produced from the 24 affected acres. This could result in an increase of 1200 tons of



sediment at the mouth of the watershed. However, sediment traps excavated near the lower end of planned channel work during channel construction will trap an estimated 70 percent of this additional sediment during the first year.

A grade stabilization structure will be installed as part of the channel work to minimize degrading and reduce velocities, see Appendix D.

Flattened side slopes (3:1) and the establishment of vegetation will stabilize channel bank erosion at an estimated 6 tons per acre per year after the first year. Predicted future erosion after installation of the channel work and land treatment, will yield 3,100 tons (257 mg/l) of sediment annually at the mouth of the major soil and water problems area and 7,250 tons (193 mg/l) at the mouth of the watershed. This total sediment represents a net reduction, from present, of 27 to 32 percent respectively, leaving the major floodwater and drainage problems area and total watershed.

Nutrient losses from stabilization efforts will be minimum because vegetative cover will be established in a very short time. Research shows that plant nutrient losses are very low on well established sods. 11/ Therefore, fertilization effects on downstream waters will be insignificant.

The channel work planned for this project will not have a significant impact on plant communities. About 75 acres of forest land will be changed to grassland and 100 acres will change to cropland. There should be no change in species compositions of the major plant communities.

There is only one impoundment located on the streams designated for channel work. This is a small fish pond (approximately 1.5 acres) about 1,000 feet below the outlet of laterals 1 and 2, see Appendix C. A sediment trap with brush dam filter will be excavated below the laterals to protect the pond from sediment produced during and following construction of the new channels.

Streamflow where channel work is planned is either ephemeral or intermittent. There is base flow from the vicinity of Escambia County Road No. 1 to the watershed outlet though there are no stream gage records. The only records are from U.S.G.S. partial-record station on Brushy Creek about 1 1/2 miles below the watershed outlet.

The proposed channel work may slightly lower the water table by providing drainage to the poorly drained areas near the channel. Channel work will have a negligible effect on lowering water levels in nearby wells.

There are no effective channels in the area planned for channel work. Isolated segments of the flood plain have a trace of well aligned channels, but they are ineffective due to their small size and lack of outlets. The planned channel work will increase the size and capacity of existing channels.

The project will increase the real estate tax base of the area. The tax base will especially increase on the 175 acres of low quality forest and idle land that will change to cropland or pastureland. This greater tax base will provide additional funds for a higher standard of living throughout the area.

### Economic and Social

The flood damage reduction and improved drainage efficiency provided by the proposed project will increase per capita agricultural incomes by an estimated average of \$850 on each farm within the benefited area. Yields will increase, especially soybeans, when flooding and drainage problems are reduced. It is expected that, after project installation, farmers will farm more intensively and on a more timely basis. Fertilizers and agricultural chemicals can also be used more efficiently. It is estimated that the total effect of the project will increase soybean yields by about 55 percent.

The channel construction will create an estimated 14 man-years of employment for local labor during the two years of channel construction. Operation and maintenance of the channel will provide an additional 0.5 man-year employment annually during the 100 year life of the project.

The quality of living will be enhanced, especially within the urban sector. Storm sewers and urban drainage ditches will function more effectively. Septic tanks and field lines will operate more efficiently, especially along Crow Street, thereby improving sanitary conditions.

This project will help develop the rural area by providing drainage outlets for mains and laterals that have already been installed and do not have an adequate outlet. Also further development of the rural community can be accomplished once the project is installed.

### Favorable Environmental Impacts

The favorable environmental impacts are summarized as follows:

- (1) The project will result in an estimated 3,124 acres of land being treated during the installation period. This includes 1,024 acres of cropland, 500 acres of pastureland, and 1,600 acres of forest land.

- (2) The conservation land treatment practices used to control erosion will reduce the mode of transportation for nitrogen, phosphorus, and other agricultural chemicals into the streams.
- (3) Conservation land treatment will reduce erosion rates to a level within the soil-loss tolerance, thus allowing maximum productivity.
- (4) Conservation land treatment will reduce the annual sediment yield by 32 percent at the mouth of the watershed and 27 percent at the mouth of the floodwater and drainage problem area.
- (5) The fire control program will reduce forest fires.
- (6) The project will reduce floodwater damages by 77 percent on 1,540 acres of agricultural land and by 65 percent on 430 urban acres, and improve drainage efficiency on the same land.
- (7) The project will remove excess water and improve farming efficiency.
- (8) The project will reduce road and bridge damages.
- (9) The project will increase the tax base on the 1,970 benefited acres and provide a higher standard of living.
- (10) The project will improve the economy of the watershed by increasing per capita annual incomes in the benefited area.
- (11) The project will create an estimated 14 man-years of employment during the 2 years of channel construction and 0.5 man-year of employment during the project life (100 years) for operation and maintenance.

#### Adverse Environmental Impacts

The adverse environmental impacts are summarized as follows:

- (1) The channel work will result in a direct loss of approximately 75 acres of bottom land forest, 11 acres of which will be occupied by the new channel.
- (2) There will be increased sedimentation and stream turbidity during and immediately after construction.
- (3) There will be a slight increase in depth of flooding immediately below the planned channel work.

## REFERENCES CITED

- 1/ European Inland Fisheries Advisory Commission as cited in the Practice of Water Pollution Biology, U. S. Department of Interior, Federal Water Pollution Control Administration, 1969, p.61.
- 2/ Improved Drainage Systems for Agricultural Lands, Soil and Water Research, USDA-Agricultural Research Service.
- 3/ Elking, C. B., Frank Lowry and Jordan Langford, "Alleviation of Mechanical Impedance to Cotton Rotting in a Dense Subsoil by Use of a Sod", Report at Annual Meeting of Am. Soc. of Agron, Las Vegas, Nevada, November 1973.
- 4/ Stanford, G., C. B. England, and A. W. Taylor, Fertilizer Use and Water Quality, ARS-41-168, U. S. Department of Agriculture, Washington, D. C., 1970.
- 5/ Smith, G. E., Contamination of Water by Nitrates, Fertilizer Solutions, Volume 11, No. 3, May-June 1967.
- 6/ Viets, F. G., and R. H. Hagerman, Factors Affecting the Accumulation of Nitrates in Soil, Water, and Plants, ARS Agriculture Handbook No. 413, Washington, D.C., November 1971.
- 7/ Klausner, S. D., P. J. Zwerman, and D. F. Ellis, "Surface Runoff Losses of Soluble Nitrogen Under Two Systems of Soil Management", Journal of Environmental Quality, Volume 3, No. 1, January-March 1974.
- 8/ Foy, C. L., Plants and Pollution In Agronomy and Health, Special Publication No. 16, American Society of Agronomy, Madison, Wisconsin, 1970.
- 9/ Bailey, G. W., A. P. Barnett, W. R. Payne, Jr., and C. N. Smith, "Runoff of Atrazine and Dichlobenil From Four Coastal Plains Soil Types With Simulated Rainfall", Paper presented to Annual Meeting of American Society of Agronomy, Miami Beach, Florida, 1972.
- 10/ U. S. Weather Bureau Technical Paper 40, "Rainfall Frequency Atlas of the United States".
- 11/ Kilmer, Victor J., Nutrient Losses from Grasslands Through Leaching and Runoff., In-Forage Fertilization. American Society of Agronomy, Madison, Wisconsin, 1974.

## ALTERNATIVES

The considered alternatives to the proposed action in planning for the development, conservation, and productive use of the soil, water, and related resources are:

1. Conservation land treatment only
2. Conservation land treatment and urban zoning
3. No Project

A discussion of each alternative follows:

### (1) Conservation Land Treatment Only

The land treatment portion of the planned works of improvement, with the exception of the drainage field ditches and drainage mains and laterals, could be installed without the accompaniment of structural measures. These measures are described in the "Planned Project" section.

The alternative would reduce the average annual floodwater damages by about \$880. It would have little effect, if any, on reducing the drainage problems. Land treatment would, however, protect the soil on the steeper slopes in the lower portion of the watershed. Average annual sediment yield would be reduced by about 33 percent and average annual erosion rates would be reduced as follows:

<u>Erosion Reduction With Land Treatment</u>	
<u>Land Use</u>	<u>Percent Reduction</u>
Cropland	34
Pastureland	33
Forest land	26

Wildlife food and cover would also be improved. Floodwater and drainage damage reduction would not be sufficient for any changed land use or intensified farming practices.

The installation costs are estimated as follows:

	<u>PL-566</u>	<u>Other</u>	<u>Total</u>
Conservation Land Treatment	\$35,000	\$95,800	\$130,800

(2) Conservation Land Treatment with Urban Zoning

Conservation land treatment measures, with costs and impacts as previously described, could be installed in conjunction with urban zoning. The City of Atmore could be zoned to regulate future land use in regard to floodwater and drainage problems. This regulation of land use would restrict future developments from entering flood prone or poorly drained areas.

Urban zoning will have no effect on reducing flooding or drainage damages to urbanized properties that are presently in the area. It will, however, eliminate future damages by restricting development in areas subject to damage. Urban flood damages to present developments are not a serious problem in terms of monetary losses. These damages occur primarily as a nuisance to the community. The estimated total installation cost of this alternative is \$145,000.

(3) No Project

Under this alternative the ongoing land treatment program would continue but there would be no accelerated land treatment program or structural measures to provide flood protection and drainage outlets.

This alternative would result in a lower priority of technical assistance to watershed land users in the application of land treatment measures. This would delay the rate at which measures would be applied and delay the effects of the land treatment measures on erosion reduction, flood prevention and conservation of soil, water, plant, and related resources.

Without the proposed channel work, drainage problems will continue to worsen as the present channel fills with sediment. On farm drainage mains and laterals, as a land treatment measure, could not be installed without the project since outlets would not be available.

Agricultural damages in monetary terms would continue to increase as prices for farm products rise. Average annual sediment yield at the mouth of the watershed will be reduced by 3.8 percent.

This alternative will not require any land clearing or channel excavation. All resources would be allowed to remain in their present condition. Estimated net annual benefits of \$36,000 will be forgone.

## SHORT-TERM VS. LONG-TERM USE OF RESOURCES

The present trend within the watershed is toward increasing agricultural production. The proposed watershed project will stimulate this trend by reducing damages to agricultural crops. Conservation land treatment measures will protect the soil resource and make it available to future generations.

The removal of excess water will encourage the conversion of idle land and low quality forest land to cropland or pastureland and will increase yields on agricultural land that has a drainage problem. However, no major change in land use is expected following installation of the project. There will be no reduction in the options available for long-term uses.

The trend to larger farm machinery and the consolidation of small fields into larger ones will continue in the foreseeable future. The project is compatible with this trend since planned channel work in association with on-farm drainage systems will eliminate wet areas, thus forming larger continuous fields and permitting efficient use of modern machinery.

With adequate maintenance the conservation land treatment measures and channel work will protect the land, reduce floodwater damages, and improve drainage throughout the 100-year life of the project. Maintenance of land treatment measures includes mowing, reshaping, fertilizing, and other means necessary to keep the measures functioning properly. Maintenance of the channel is described in the "Planned Project" section.

Upper Brushy Creek is in the South Atlantic Gulf Region, the St. Josephs -Perdido River Subregion and the Perdido River Subbasin, (as designated by the Water Resources Council). The watershed is the only water and land resource project under the PL-566 watershed program within this subbasin.

Pine Barren Creek Watershed, a completed PL-566 watershed project, is located southeast of and adjacent to Upper Brushy Creek Watershed. Pine Barren Creek drains into the Escambia River Subbasin, and in relationship to Upper Brushy will have no cumulative environmental effect on the long-term use of resources.

Future condition without project and future condition with channel work water surface profiles were compared for a distance of approximately one and one-half miles immediately below the lower end of channel work to determine if there would be induced damages. This comparison was made for the 100-year, 25-year, 10-year, and 2-year storms and the results indicated no significant increase in depth of inundation due to the proposed channel work. The maximum increase in depth of inundation on this forest land flood plain would be 0.10 foot.

Following installation of the project, sediment delivered at the mouth of the watershed will be reduced by 32 percent. Since Upper Brushy is the only project in the area of influence, it is therefore anticipated that its completion will have no cumulative impact on the environment.



IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Twenty-eight acres of land will be committed for the actual installation of the channel work. This land is included as part of the approximately 215 acres right-of-way, and the 59 acre permanent easement needed for the project. Land use of the land committed to channel work is as follows:

<u>Land Committed to Channel Work:</u>	
<u>Land Use</u>	<u>Acres</u>
Existing Channel	8
Cropland	4
Pastureland or Idle	5
Forest land	<u>11</u>
TOTAL	<u>28</u>

This land will be occupied by the multiple purpose channel in order that increased yields can be realized on remaining acreage. Increased agricultural production of the surrounding areas (benefited area) will more than offset any production lost on areas committed to the project.

## CONSULTATION AND REVIEW WITH APPROPRIATE AGENCIES AND OTHERS

### General

The sponsors of the Upper Brushy Creek Watershed Project made application to the State Soil and Water Conservation Committee for watershed planning assistance by letter dated December 20, 1965. Approval with high priority was granted by the committee in August 1970. Preliminary watershed investigations commenced in February 1971.

A field examination was held April 20, 1971, to study the proposed project and its possible effects on the environment. Those attending were representatives of the: U. S. Fish and Wildlife Service, Alabama Department of Conservation and Natural Resources, Sponsoring local organizations, and Soil Conservation Service. It was the general consensus following the examination that the proposed project with associated clearing would have no significant effect on the fish and wildlife resources.

The Florida Gas Transmission Company was contacted in April 1971 concerning the possibility of channel work crossing their gas lines. The gas company required a minimum of one (1) foot of undisturbed soil over their lines. They also expressed a desire to have a representative on the site during construction.

The preliminary investigation was completed in May 1971 and was discussed at a public meeting held at the city hall of Atmore on June 10, 1971. The proposed project was discussed at this meeting and "Preliminary" benefits and costs were presented.

The meeting closed with a question and answer session concerning proposed project features. Those in attendance were: representatives of the Alabama Department of Conservation and Natural Resources, representatives of the Soil Conservation Service, local sponsors, and interested individuals. Concerned agencies were contacted and prior notice served in local newspapers before all public meetings.

Application for detail planning assistance was made to the Administrator of the Soil Conservation Service on June 23, 1971. Authorization was granted August 17, 1971 and concerned agencies were informed of detailed planning. Survey permits were obtained from landowners and a channel for reducing floodwater and drainage problems, in conjunction with conservation land treatment measures, was then designed.

A public meeting was held August 29, 1973, to discuss the proposed plan and its associated benefits and costs. The sponsors agreed to the plan as proposed on November 13, 1973.

In January 1974, a field review of the watershed was made by representatives of the Alabama Department of Conservation and Natural Resource, the U. S. Fish and Wildlife Service, and the Soil Conservation Service. The locations of planned channel work were observed and the effects on fish and wildlife resources discussed. The U. S. Fish and Wildlife Service furnished a report which indicated that channel excavation is not expected to have a significant adverse effect on fish and wildlife resources. The Alabama Department of Conservation and Natural Resources concurred in this report.

After the meeting of August 29, it became necessary to update the costs and benefits associated with the project. This necessitated another public meeting held December 18, 1973. The plan was further discussed and updated benefits and costs were presented. Also, at this meeting, it was decided that:

- (1) Escambia County Commission would cover the sponsors portion of the construction cost of the channel by "Performance of Work".
- (2) The county commission will be responsible for operation and maintenance requirements.
- (3) Sponsors will finance through Farmers Home Administration if necessary.
- (4) The county commission will act as contracting officer.

The sponsors concurred with the proposal and the updated costs and benefits. The present plan was then developed.

The U. S. Forest Service provided information concerning project environmental effects on forest land in the watershed. Forest Service comments are reflected within the statement wherever forest land is discussed.

The University of Alabama has studied the watershed for possible archaeological or historical sites of importance that might be affected by the proposed project. A report of their findings is included in this statement as Appendix E.

Discussion and Disposition of Each Comment on the Draft Environmental Statement

Comments were requested from the following:

Department of Agriculture

Office of General Council

Agricultural Stabilization and Conservation Service

Office of Equal Opportunity

Department of the Army

Corps of Engineers

Department of Commerce

Department of Health, Education and Welfare

Food and Drug Administration

Department of Housing and Urban Development

Department of the Interior

U. S. Fish and Wildlife Service

U. S. Bureau of Mines

U. S. Geological Survey

Bureau of Outdoor Recreation

National Park Service

Office of Environmental Project Review

Department of Transportation

U. S. Coast Guard

Environmental Protection Agency

Advisory Council on Historic Preservation

Federal Power Commission

Governor of Alabama

Alabama Development Office

Soil and Water Conservation Committee

Alabama Department of Conservation and Natural Resources

State Health Department

South Alabama Regional Planning Commission

Alabama Forestry Commission

Alabama State Geologist

Alabama State Highway Department

Alabama State Department of Education

Alabama Commissioner of Agriculture

Alabama Historical Commission

Alabama Water Improvement Commission

Alabama Association of Soil and Water Conservation Districts

Cooperative Extension Service, Auburn University  
Alabama Cooperative Fisheries Unit, Auburn University  
University of Alabama, Department of Anthropology  
University of Georgia, Department of Agricultural Economics  
Natural Resources Defense Council  
National Wildlife Federation  
Alabama Wildlife Federation  
Environmental Defense Fund  
Environmental Impact Assessment Project  
Friends of the Earth  
National Audubon Society  
Alabama Archaeological Society  
The Alabama Conservancy  
Sierra Club  
Alabama Sportsman Conservation Club  
Dr. H. Paul Friesema, Northwestern University  
Bradley, Arant, Rose, and White; Attorneys  
Richard K. Smith, Birmingham, Alabama  
Bob Truett, Birmingham, Alabama

Comments were received from the following:

Department of the Army  
Department of Health, Education, and Welfare  
Department of Housing and Urban Development  
Department of the Interior  
Department of Transportation  
Environmental Protection Agency  
Advisory Council of Historic Preservation  
Alabama State Highway Department  
Alabama Development Office  
Alabama Soil and Water Conservation Committee  
South Alabama Regional Planning Commission

#### Summary of Comments and Responses

Each issue, problem, or objection is summarized and a response given on the following pages. The letters of comments are attached as Appendix B.

U. S. Department of the Army

Comment Summary: The impact statement satisfies the requirements of Public Law 91-190 and the proposed project does not conflict with any projects or proposals of this Department.

Response: Noted

U. S. Department of Health, Education and Welfare

Comment Summary: The impacts of the proposed action have been adequately addressed.

Response: Noted

U. S. Department of Housing and Urban Development

Comment Summary: Recommended that SCS obtain a B.O.B. Circular A-95, "Directory of State, Metropolitan and Regional Clearinghouses" and consult with such clearinghouses as appropriate.

Response: This has been done.

U. S. Department of the Interior

Comment Summary: There is a possibility of the channel work involving the city park. If this occurs, further coordination is indicated among the Soil Conservation Service, project sponsors, and appropriate agencies regarding compliance with the terms of the Land and Water Conservation Fund Act.

Response: Construction will not involve the city park property.

Comment Summary: Suggested a change in presenting geology information in "Environmental Setting" section of the plan.

Response: The suggested change was made in the plan and statement.

Comment Summary: Suggested a change in presenting ground water information in the "Environmental Setting" section of the plan.

Response: Suggested change was made.

Comment Summary: Suggested a change in presenting water quality information in the "Environmental Setting" section of the plan.

Response: Suggested change was made.

Comment Summary: Fish and wildlife aspects of the proposal have been properly considered.

Response: Noted

Comment Summary: Channel depths in the "Planned Project" section do not agree with tabular data shown in Figure 2.

Response: Narrative was modified to eliminate conflict with Figure 2.

Comment Summary: The channel work may have a small effect on ground water recharge by providing drainage from the poorly drained part of the project and could cause minor changes in growth of vegetation and water levels.

Response: The "Impact" section was modified.

Comment Summary: The final statement should show that the city park is "Fund-assisted" and describe the park more fully.

Response: The "Environmental Setting" section was modified.

Comment Summary: The possibility of encroachment on the city park by construction activities and its effects as to accessibility, relocations, etc.

Response: Additional investigations of the physical features of the landscape reveal that the proposed channel can be installed without encroachment on park property.

Comment Summary: Impacts on the 75 acres of city property being directed toward future recreational development are not provided.

Response: The project will not affect this property.

#### U. S. Department of Transportation

Comment Summary: The Department has no comments on the impact statement and no objection to the proposed project.

Response: Noted

U. S. Environmental Protection Agency

Comment Summary: Fertilizers of unidentified amounts to be used in stabilization efforts could be excessive and could contribute to eutrophication of downstream waters, such as the Perdido River and Perdido Bay. While this may be insignificant, we feel that it should be recognized possibly to the point of monitoring water quality to document the effects of the project on water quality. We must further point out that such monitoring could also provide other benefits, such as determining optimum application rates for vegetative growth with minimum nutrient runoff and subsequent damage to water quality.

Response: The "Planned Project" and the "Impact" section was modified to show that the effect on downstream waters would be insignificant. The Soil Conservation Service has already set up monitoring systems on other watershed projects to check fertilizer loss into streams. This data will be used to document effects on water quality.

Comment Summary: Specific state and local regulations should be cited in the discussion of emissions control during construction.

Response: The "Planned Project" section was modified.

Comment Summary: Appropriate federal permits may be needed pursuant to the Federal Water Pollution Control Act Amendments of 1972 if the project is to proceed.

Response: Legal requirements will be fulfilled by the sponsoring organization at the appropriate time.

Comment Summary: Furthermore, any discharge of dredged material or of fill material such as sand, rock or suspended solids into "waters of the United States" from a source including draglines, backhoes, bulldozers or dump trucks such as to fill or block by-passed portions of the stream's natural channel will require a Section 404 permit from the U. S. Army Corps of Engineers. Discharge of pollutants other than dredged or fill material into Upper Brushy Creek may require a Section 402 (NPDES) permit from EPA.

In view of the foregoing, we recommend that the final environmental impact statement clarify the planned methods of construction of the project and indicate if construction will result in discharges of dredged or fill material or of pollutants other than fill material.



Response: Construction activities will not discharge any dredged material or other pollutants into the waters of the United States. If, however, permits are needed, they will be acquired at the appropriate time. The planned methods of construction are described in the "Planned Project" section.

Comment Summary: Utmost care should be taken to prevent spoil, etc. from washing or falling back into the stream.

Response: The "Planned Project" section discusses precautions that will be taken to prevent spoil from washing back into the stream.

#### Advisory Council on Historic Preservation

Comment Summary: The draft environmental statement appears adequate regarding our area of expertise, and we have no further comment to make.

Response: Noted

#### State of Alabama Highway Department

Comment Summary: The Highway Department should be kept informed concerning the project's crossing of State Route 21.

Response: Construction activities in the vicinity of State Route 21 will be coordinated with the State Highway Department.

Comment Summary: Any adjustment to the existing drainage structure or roadway along Alabama State Route 21 will be made without any cost to the Highway Department.

Response: Noted

#### Alabama Development Office

The Alabama Development Office is responsible for coordinating review with appropriate state agencies. State agency comments shown below were transmitted through the Alabama Development Office.

#### Alabama Soil and Water Conservation Committee

Comment Summary: The State Committee strongly supports this proposal.

Response: Noted

Comment Summary: The project will be greatly beneficial to landowners in the area and to the state as well.

Response: Noted

Comment Summary: The impact statement is an accurate reflection of pertinent facts and conditions which pertain to the project.

Response: Noted

South Alabama Regional Planning Commission

Comment Summary: The proposed project is an excellent demonstration of local and federal participation for watershed improvement.

Response: Noted

Comment Summary: The project is desirable and will benefit all residents of the area.

Response: Noted

Comment Summary: The South Alabama Regional Planning Commission recommends the project for the watershed.

Response: Noted

LIST OF APPENDIXES

Appendix A - Comparison of Benefits and Costs for Structural Measures

Appendix B - Letters of Comment Received on the Draft Environmental Statement

Appendix C - Project Map

Appendix D - Typical Reinforced Concrete Drop Spillway

Appendix E - Archaeological Data

Appendix F - Soils Map

Appendix G - Land Use Map

APPROVED BY William B. Lingle  
William B. Lingle  
State Conservationist

DATE 6/10/75



APPENDIX A - COMPARISON OF BENEFITS AND COSTS FOR STRUCTURAL MEASURES

Upper Brushy Creek Watershed  
Escambia County, Alabama  
(Dollars)

Evaluation Unit	AVERAGE ANNUAL BENEFITS 1/						Average Annual Cost 3/	Benefit-Cost Ratio	
	Flood Damage Reduction	More Intensive Land Use	Changed Agricultural Land Use	Drainage	Revel- opment	Second- ary			Total
Channel Work	28,100 2/	10,700	7,600	8,850	7,000	5,150	67,400	27,900	2.4:1.0
Project Administration									3,500
GRAND TOTAL	28,100	10,700	7,600	8,850	7,000	5,150	67,400	31,400	2.1:1.0

1/ Price base - Current normalized for agricultural benefits and 1973 prices for non-agricultural benefits.

2/ In addition, it is estimated that land treatment measures will provide flood damage reduction benefits of \$1,100 annually.

3/ Amortized for 100 years at 5 7/8 percent interest.



APPENDIX B

(Letters of Comment Received on the Draft)



DEPARTMENT OF THE ARMY  
OFFICE OF THE ASSISTANT SECRETARY  
WASHINGTON, D.C. 20310

21 M

Honorable Robert W. Long  
Assistant Secretary of Agriculture  
Washington, D. C. 20250

Dear Mr. Long:

In compliance with the provisions of Section 5 of Public Law 94-566, 83d Congress, the Acting State Conservationist of Alabama letter of 30 January 1975, requested the views of the Chief of Engineers on the work plan and draft environmental statement for the Upper Brushy Creek Watershed, Alabama.

The draft environmental statement satisfies the requirement of Public Law 91-190, 91st Congress, insofar as this Department concerned. The findings of the work plan do not conflict with projects or proposals of this Department.

Sincerely,

A handwritten signature in cursive script, reading "Charles R. Ford".

Charles R. Ford  
Deputy Assistant Secretary of the Army  
(Civil Works)





DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE,  
OFFICE OF THE SECRETARY  
WASHINGTON, D.C. 20201

MAR 31 1975

Mr. W. G. Lingle  
State Conservationist  
Soil Conservation Service  
Department of Agriculture  
P. O. Box 311  
Auburn, Alabama 36830

Dear Mr. Lingle:

We have reviewed the draft Environmental Impact Statement for the Upper Brushy Creek Watershed, Alabama. On the basis of our review, we have determined that the impacts of the proposed action have been adequately addressed within the scope of this Department's responsibilities.

Thank you for the opportunity to review this statement.

Sincerely,

Charles Custard  
Director  
Office of Environmental Affairs



DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT  
AREA OFFICE  
DANIEL BUILDING, 15 SOUTH 20TH. STREET, BIRMINGHAM, ALABAMA 35233

March 4, 1975

AREA OFFICES:  
Atlanta, Georgia  
Birmingham, Alabama  
Columbia, South Carolina  
Greensboro, North Carolina  
Jackson, Mississippi  
Jacksonville, Florida  
Knoxville, Tennessee  
Louisville, Kentucky

REGION IV  
REGIONAL OFFICE  
ATLANTA, GEORGIA

IN REPLY REFER TO:

4.2PP

Mr. W. B. Lingle  
Acting State Conservationist  
U. S. Dept. of Agriculture  
Soil Conservation Service  
Post Office Box 311  
Auburn, Alabama 36830

RE: Upper Brushy Creek Watershed  
Escambia County, Alabama

Dear Mr. Lingle:

SUBJECT: Request for HUD Comments on Draft Environmental Impact Statement

We are pleased to acknowledge receipt of the above referenced request for HUD comments under the requirements of the National Environmental Policy Act of 1969 (PL 91-190).

We have reviewed the information submitted along with your referral and, to the extent of our available staff resources, have investigated the environmental impact, adverse effects, alternatives, short-term uses of the local environmental and long-term productivity and irreversible and irretrievable commitment of resources which the project involves. From the information available to us, we find no basis for formal comment because of special HUD interest or expertise. However, we would call your attention to the areas indicated on the attached "HUD Comments on Draft Environmental Impact Statement" which we feel would assist your agency in the evaluation and execution of this project.

Should further clarification of our review be deemed necessary, please contact Mr. Robert Lunsford, Director, Operations Division, #15 South 20th Street, (Daniel Building - Sixth Floor), Birmingham, Alabama 35233 at 205-325-3697.

Sincerely,

Environmental Clearance Officer

Since this project raises issues involving radiation safety, we recommend consultation with: Dr. Joseph Lieberman, Radiation Office, E.P.A., 5600 Fishers Lane, Parklawn Building, Rockville, Maryland 20852.

We recommend that you write or call the Office of Management and Budget for a copy of "Directory of State, Metropolitan and Regional Clearinghouses under B.O.B. Circular A-95," and consult with such clearinghouses as appropriate.

Feb. 25 1975  
DATE

Hugh ...  
PREPARED BY  
(FIELD REPRESENTATIVE)

Feb 26 1975  
DATE

John ...  
CONCURRED IN  
(PROGRAM MANAGER)





# United States Department of the Interior

OFFICE OF THE SECRETARY  
WASHINGTON, D.C. 20240

PEP ER-75/112

Dear Mr. Lingle:

Thank you for your letter of January 30, 1975, requesting our views and comments on the draft environmental statement and work plan for the Upper Brushy Creek Watershed Project, Escambia County, Alabama. Comments on both documents are presented below.

## Work Plan

Our review of the subject work plan (pages 30, 48, and figure 1) has revealed that channel construction in North Eighth Avenue Park in the City of Atmore is a distinct possibility. This park received a grant from the Land and Water Conservation Fund in November 1970 for the purposes of acquiring additional land for the park and for developing additional recreational facilities on the existing and newly acquired parcels. The park, therefore, falls under the provisions of Section 6(f) of the Land and Water Conservation Fund Act of 1965, as amended. This section stipulates that no property acquired or developed with Fund assistance shall be converted to other than public outdoor recreation use without approval of the Secretary of the Interior. Such approval will be given only upon such conditions deemed necessary to assure the substitution of other outdoor recreation properties of at least equal fair market value and of reasonably equivalent usefulness, quality, and location.

Further coordination is indicated among the Soil Conservation Service, the project sponsor, the City of Atmore, and the State Liaison Officer to the Bureau of Outdoor Recreation--Mr. Claude D. Kelley, Commissioner, Alabama Department of Conservation and Natural Resources--regarding compliance with the terms of the Land and Water Conservation Fund Act.



*Save Energy and You Serve America!*

Geologic and hydrologic investigations, being made throughout Alabama by the U.S. Geological Survey in cooperation with the Geological Survey of Alabama, indicate that construction of the proposed project probably will not adversely affect the hydrologic system. However, several changes are offered for your consideration: We suggest that lines 3-7 on page 11 be revised to read:

"The watershed is underlain by the Citronelle Formation of Pliocene age. The Citronelle dips southwestward at 5 to 8 feet per mile and is as much as 135 feet thick at Atmore. It unconformably overlies the undifferentiated deposits of Miocene age."

Lines 2-3, page 13, could be rewritten to read; "Wells tapping sand beds in the Citronelle at depths greater than 65 feet are the principal source of municipal, industrial, and domestic water supplies in the area. In addition we suggest adding, after line 6, page 13 of the Work Plan; "A municipal well at Atmore taps sand beds in the underlying Miocene Series at depths of 208 to 261 feet. The well produced 463 gallons per minute in 1957."

Lines 11-19, page 16 of the Work Plan, and page 37 of the Environmental Statement should be rewritten to read; "Streamflow records are available for Brushy Creek at a U.S. Geological Survey partial-record station (Station 02376270) which is 2-1/2 miles southwest of Atmore and approximately 1-1/2 miles below the lower extremity of the watershed project. Based on streamflow records for 1946-63, the estimated 10-year 7-day low flow is 5.4 cfs (cubic feet per second) and the estimated median annual 7-day low flow is 10 cfs for a drainage area of 20 square miles at this station."

"A water sample collected on November 20, 1963, from Brushy Creek (Station 02376270) had a pH of 7.5, a calcium-magnesium hardness of 10 mg/l (milligrams per liter), a noncarbonate hardness of 2 mg/l, and contained 4.0 mg/l chloride and 10 mg/l bicarbonate."

Draft Environmental Statement

We believe the fish and wildlife aspects of the proposal have been properly considered.

Potential adverse environmental impacts related to geologic conditions have also been given adequate consideration in the draft environmental statement. The following comments relating to the hydrologic aspects of the project are submitted for your consideration.

- a) It is stated on page 14 (paragraph 4) that channel depth will range from 2.5 feet to 9.0 feet. Evidently the latter figure should be 5.0 feet, judging from the tabular data presented in the environmental statement (figure 2, page 15) and work plan (table 3, page 102).
- b) We tend to disagree with the statement (page 79, paragraph 3) which states that the proposed channel work will not effect ground water recharge. The proposed channel work may have a small effect on ground water recharge by providing drainage from the poorly drained part of the project. If channel cuts, during excavation, should intersect the shallow water table, there may be minor changes in the growth of vegetation and in water levels in nearby wells.

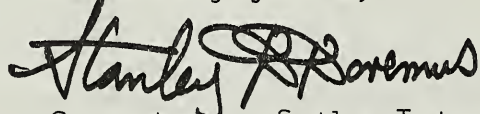
The draft environmental statement does not discuss the Atmore city park involvement other than to indicate that flooding conditions in the park will be ameliorated. While this stage of project planning prevents the accumulation of full detail regarding park impact, the final statement should nevertheless include coverage of the presently anticipated involvement to the extent possible. The final statement should indicate that the park is Fund-assisted and describe the park more fully in terms of its physical characteristics, activities available, and present usage. The impact section should discuss the possibility of encroachment and the presently estimated nature and extent of that encroachment; e.g., permanent and temporary land requirements, the present and planned recreational use of that land, recreation facilities affected, vegetation losses, and air, noise, and visual pollution resulting from construction activities. The impact section should also discuss any possible interruptions of park user accessibility to the park due to the planned placement of larger capacity culverts under North Eighth Avenue.

Based on the estimated nature and extent of encroachment, the final statement should also include a discussion of measures that would be included in the project to minimize the identified impacts of the project on the park and its users; e.g., hauling away spoil, special grading, landscaping, temporary fencing to limit ingress into the park by construction vehicles and, for safety reasons, to prohibit park user access to the project area, limiting construction to other than the summer months to minimize environmental intrusions on park users, replacement of land, relocation of affected facilities, and maintaining auto and pedestrian accessibility to the park at all times. Alternative project actions that would eliminate or alleviate estimated detrimental impacts should also be identified and discussed in the final statement.

In addition to the park involvement, the draft environmental statement references 75 acres of city forest land "under management directed toward future recreational development . . ." (page 51). The draft statement does not contain information as to whether or not the project would affect these lands. If the project would affect these lands, the final statement should include information on the city's plans and the estimated nature and extent of project impact on these plans. The statement should also identify those measures that would be incorporated into the project to minimize the estimated detrimental impacts if they cannot be eliminated through alternative project actions. A beneficial effect that may occur is the opportunity for trail development along the channel. Special grading and landscaping may be in order.

We hope these comments will be of assistance to you in preparing your final documents.

Sincerely yours,



Deputy Assistant

Secretary of the Interior

Mr. W. B. Lingle  
Acting State Conservationist  
Soil Conservation Service  
Post Office Box 311  
Auburn, Alabama 36830





DEPARTMENT OF TRANSPORTATION  
UNITED STATES COAST GUARD

MAILING ADDRESS: (G-WS/73)  
U.S. COAST GUARD  
400 SEVENTH STREET SW.  
WASHINGTON, D.C. 20590  
PHONE: (202) 426-2262

20 MAR 1975

Mr. W. B. Lingle  
State Conservationist  
Soil Conservation Service  
P. O. Box 311  
Auburn, Alabama 36830

Dear Mr. Lingle:

This is in response to your letter of 30 January 1975 addressed to the Commandant, U. S. Coast Guard concerning a draft environmental impact statement for the Upper Brushy Creek Watershed, Escambia County, Alabama.

The Department of Transportation has reviewed the material submitted. We have no comments to offer nor do we have any objection to this project.

The opportunity to review this draft statement is appreciated.

Sincerely,

*W. E. Caldwell*

W. E. CALDWELL  
Captain, U.S. Coast Guard  
Deputy Chief, Office of Marine  
Environment and Safety  
By direction of the Commandant



# UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

## REGION IV

1421 PEACHTREE ST., N. E.  
ATLANTA, GEORGIA 30309

April 3, 1975

Mr. W. B. Lingle  
Acting State Conservationist  
U. S. Soil Conservation Service  
P. O. Box 311  
Auburn, Alabama 36830

Dear Mr. Lingle:

We have reviewed the Draft Environmental Impact Statement for Upper Brushy Creek Watershed in Escambia County, Alabama, and find that, while adequate consideration is given to most areas of our concern, there are several points that need clarification and for which additional information should be provided. We therefore have assigned a rating of LO (lack of objection) to the project and 2 (insufficient information) to the environmental impact statement.

Fertilizers of unidentified amounts to be used in stabilization efforts could be excessive and could contribute to eutrophication of downstream waters, such as the Perdido River and Perdido Bay. While this may be insignificant, we feel that it should be recognized possibly to the point of monitoring water quality to document the effects of the project on water quality. We must further point out that such monitoring could also provide other benefits, such as determining optimum application rates for vegetative growth with minimum nutrient runoff and subsequent damage to water quality.

We also recommend that specific State and local regulations be cited in the discussion (Page 79) of steps to contain emissions during construction activities.

In addition, we must point out that if the project is to proceed, appropriate Federal permits may be needed pursuant to the Federal Water Pollution Control Act Amendments of 1972 (FWPCA.) Upper Bushy Creek is "waters of the United States" into which "...the discharge of a pollutant by any person shall be unlawful" under Section 301(a) of FWPCA. A violation of Section 301(a) of the FWPCA will occur unless a Federal permit is obtained for the discharge of pollutants into Upper Brushy Creek itself.


Furthermore, any discharge of dredged material or of fill material such as sand, rock or suspended solids into "waters of the United States" from a source including draglines, backhoes, bulldozers or dump trucks such as to fill or block bypassed portions of the stream's natural channel will require a Section 404 permit from the U. S. Army Corps of Engineers. Discharge of pollutants other than dredged or fill material into Upper Brushy Creek may require a Section 402 (NPDES) permit from EPA.

In view of the foregoing, we recommend that the final environmental impact statement clarify the planned methods of construction of the project and indicate if construction will result in discharges of dredged or fill material or of pollutants other than fill material.

Finally, utmost care should be taken to prevent spoil, etc., deposited on stream banks from washing or falling back into the stream since this may result in violation of Federal laws.

Please send us five copies of the final environmental impact statement when it is available. If we can be of further assistance in any way, please let us know.

Sincerely,

  
David R. Hopkins  
Chief, EIS Branch

**Advisory Council  
On Historic Preservation**  
1522 K Street N.W. Suite 430  
Washington D.C. 20005

April 3, 1975

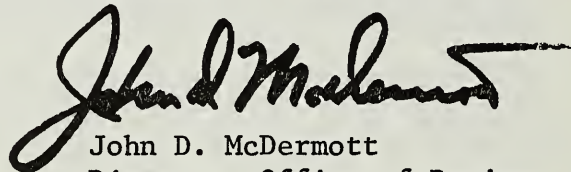
Mr. W. B. Lingle  
State Conservationist  
Soil Conservation Service  
U. S. Department of Agriculture  
P.O. Box 311  
Auburn, Alabama 36830

Dear Mr. Lingle:

This is in response to your request of January 30, 1975 for comments on the environmental statement for the Upper Brushy Creek Watershed, Escambia County, Alabama.

Pursuant to its responsibilities under Section 102(2)(C) of the National Environmental Policy Act of 1969, the Advisory Council on Historic Preservation has determined that your draft environmental statement appears adequate regarding our area of expertise, and we have no further comment to make.

Sincerely yours,



John D. McDermott  
Director, Office of Review  
and Compliance



STATE OF ALABAMA  
HIGHWAY DEPARTMENT

MONTGOMERY, ALABAMA 36104

RAY D. BASS  
HIGHWAY DIRECTOR

U.S. Department of Agriculture  
Soil Conservation Service  
P.O. Box 311  
Auburn, AL 36830

February 7, 1975

Gentlemen:

SUBJECT: DRAFT ENVIRONMENTAL IMPACT STATEMENT ON UPPER BRUSHY  
CREEK WATERSHED, ESCAMBIA COUNTY

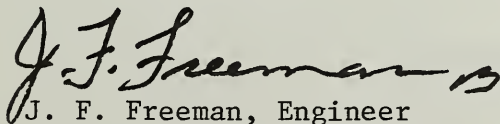
We appreciate the opportunity to comment on this proposed project for watershed protection, flood prevention, and drainage.

After reviewing the proposed action, the only area about which the Highway Department should be kept informed is on that part of the Brushy Creek project that will cross Alabama State Route 21 precipitating alteration on the existing culvert. Any necessary alteration to this culvert should be brought to my attention and to the attention of Mr. C. H. Cook, Bridge Engineer, Bridge Bureau, Alabama Highway Department.

Any adjustment to the existing drainage structure or roadway along Alabama State Route 21 will be made without any cost to the Alabama Highway Agency.

If we can be of any further assistance, please notify this office.

Very truly yours,



J. F. Freeman, Engineer  
Bureau of Surveys and Plans

JFF/jmb/dk

cc Environmental Technical Section  
Mr. C. H. Cook



STATE OF ALABAMA

ALABAMA DEVELOPMENT OFFICE

George C. Wallace  
Governor

R.C. "Red" Bamberg  
Director

W.M. "Bill" Rushton  
Assistant Director

April 18, 1975

TO: Mr. W. B. Lingle  
Acting State Conservationist  
U. S. Department of Agriculture  
Soil Conservation Service  
P. O. Box 311  
Auburn, Alabama 36830

*Michael R. Amos*  
FROM: Michael R. Amos  
State Clearinghouse  
State Planning Division

SUBJECT: DRAFT ENVIRONMENTAL IMPACT STATEMENT

Applicant: U. S. Department of Agriculture  
(Soil Conservation Service)

Project: Draft Environmental Impact Statement for the  
Upper Brushy Creek Watershed in Escambia Co.

State Clearinghouse Control Number: ADO-001-75

The Draft Environmental Impact Statement for the above project has been reviewed by the appropriate State agencies in accordance with Office of Management and Budget Circular A-95, Revised.

The comments received from the reviewing agencies are attached.

Please contact us if we may be of further assistance. Correspondence regarding this proposal should refer to the assigned Clearinghouse Number.

A-95/05

Attachments

Agencies contacted for comment:  
South Alabama Regional Planning Commission  
Conservation and Natural Resources  
Soil and Water Conservation  
ADO - Wallace

(G-WS/73)

(202) 426-2262

20 MAR 1975

Mr. W. B. Lingle  
State Conservationist  
Soil Conservation Service  
P. O. Box 311  
Auburn, Alabama 36830

Dear Mr. Lingle:

This is in response to your letter of 30 January 1975 addressed to the Commandant, U. S. Coast Guard concerning a draft environmental impact statement for the Upper Brushy Creek Watershed, Escambia County, Alabama.

The Department of Transportation has reviewed the material submitted. We have no comments to offer nor do we have any objection to this project.

The opportunity to review this draft statement is appreciated.

Sincerely,

W. E. CANNWELL  
Captain, U.S. Coast Guard  
Deputy Chief, Office of  
Environment and Safety  
By direction of the Commandant



ALABAMA STATE SOIL AND WATER CONSERVATION COMMITTEE

ROOM 203 RICHARD BEARD BUILDING  
1445 FEDERAL DRIVE  
P. O. BOX 3336  
MONTGOMERY, ALABAMA 36109

STATE COMMITTEE MEMBERS

A. D. HOLMES, JR.  
DISTRICT SUPERVISOR

JOE HAMILTON  
DISTRICT SUPERVISOR

JOE TRAYLOR  
DISTRICT SUPERVISOR

E. P. GRANT, JR.  
DISTRICT SUPERVISOR

LEWEL SELLERS  
DISTRICT SUPERVISOR

RAY VANDIVER  
DISTRICT SUPERVISOR

HOWARD W. GREEN  
STATE SUPERVISOR  
VOCATIONAL AGRICULTURE

DR. R. DENNIS ROUSE  
DEAN OF AGRICULTURE

RALPH R. JONES  
DIRECTOR  
EXTENSION SERVICE

March 4, 1975

WILBUR B. NOLEN, JR.  
EXECUTIVE SECRETARY

*Mr. W. B. Lingle, State Conservationist  
Soil Conservation Service  
P. O. Box 311  
Auburn, Alabama 36830*

*Dear Mr. Lingle:*

*On behalf of Governor George C. Wallace, the State Soil and Water Conservation Committee has reviewed the "Upper Brushy Creek Watershed" work plan, Escambia County, Alabama, and the "Draft Environmental Impact Statement" pertaining to this proposed project. We find both documents to be in proper order.*

*The State Committee strongly supports this proposal, which is being planned under authority of Public Law 566, the Watershed Protection and Flood Prevention Act, as amended.*

*It is our collective judgement that this small Watershed Development would be greatly beneficial to landowners affected by the project, and to the State of Alabama as well. We also believe that the "Environmental Impact Statement" is an accurate reflection of the pertinent facts and conditions which pertain to this watershed.*

*Very truly yours,*

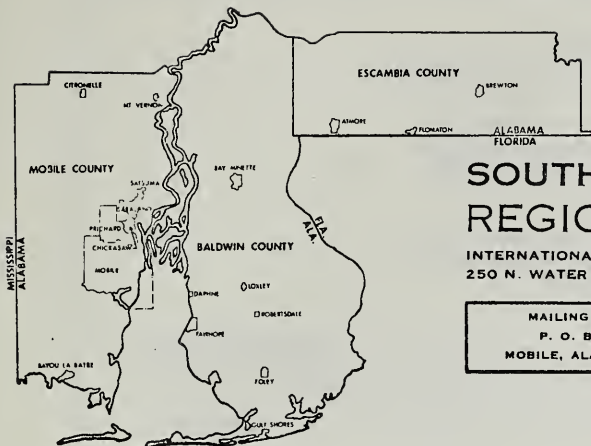
ALABAMA SOIL AND WATER  
CONSERVATION COMMITTEE

  
WILBUR B. NOLEN, JR., EXECUTIVE SECRETARY

WBN:msh

cc: *Honorable George C. Wallace, Governor of Alabama  
Honorable Kenneth E. Grant, Administrator, Soil Conservation Service  
Allen W. Moye, Chairman, Escambia County Soil and Water  
Conservation District Supervisors*





# SOUTH ALABAMA REGIONAL PLANNING COMMISSION

INTERNATIONAL TRADE CENTER  
250 N. WATER STREET

TEL. 433-6541  
AREA CODE 205

RICHARD D. PRUITT  
EXECUTIVE DIRECTOR

MAILING ADDRESS  
P. O. BOX 1665  
MOBILE, ALABAMA 36601

NORMAN J. WALTON, CHAIRMAN  
J. D. SELLARS, GENERAL VICE-CHAIRMAN  
J. C. DAVIS, JR., PROJECT REVIEW VICE-CHAIRMAN  
W. M. MCGOUGH, SECRETARY  
OBED A. MONK, TREASURER

March 4, 1975

Mr. Michael R. Amos  
Alabama Development Office  
State Clearinghouse  
State Office Building  
Montgomery, Alabama 36104

Re: U. S. Department of Agriculture - Soil Conservation Service;  
Draft Environmental Impact Statement for Upper Brushy Creek  
Watershed in Escambia County - CH No. ADO-001-75

Dear Mr. Amos:

The South Alabama Regional Planning Commission has considered your recent request for review of the above mentioned project.

Enclosed you will find four (4) copies of the resolution adopted by the Planning Commission which shows our recommendations as an area-wide review agency for projects requiring federal funds.

If you have any questions concerning this, or if we can be of further service, please call the Commission office.

Sincerely,

Douglas Capps  
Regional Planner

DC/cf

Enclosure

cc: Mayor, City of Atmore  
Escambia County Commission  
State Conservationist  
Soil Conservation Service-Atmore  
Soil Conservation Service-Brewton  
Southwest Alabama Health Planning  
Council



SOUTH ALABAMA  
REGIONAL PLANNING COMMISSION

**RESOLUTION**

CH. No. ADO-001-75  
Concerning Watershed Protection and  
Flood Prevention for the Brushy Creek Area.  
Escambia County

**WHEREAS**, the Department of Agriculture (Soil Conservation Service) Escambia County, is making application for assistance in conducting a study and implementing a program to provide watershed protection and flood prevention in a portion of Atmore and the surrounding area, and

**WHEREAS**, regulations under the provisions of Bureau of the Budget Circular A-95 require that this Commission review and comment on the above mentioned application, and

**WHEREAS**, after careful review the members and staff of the Commission have found the following:

1. The proposed project would be an excellent demonstration of both local and Federal participation in the overall improvement of the watershed and its flood hazard area.
2. The project is desirable and in the public interest as it will benefit all residents of the area.
3. The proposed project will benefit the residents of Atmore, the governing bodies of Atmore and Escambia County, a group of farmers and the general public; now

**THEREFORE**, It is Resolved by the South Alabama Regional Planning Commission this 26th day of February, 1975 that the same does and hereby recommend the watershed and flood prevention program for the above mentioned area.

ATTESTED: \_\_\_\_\_

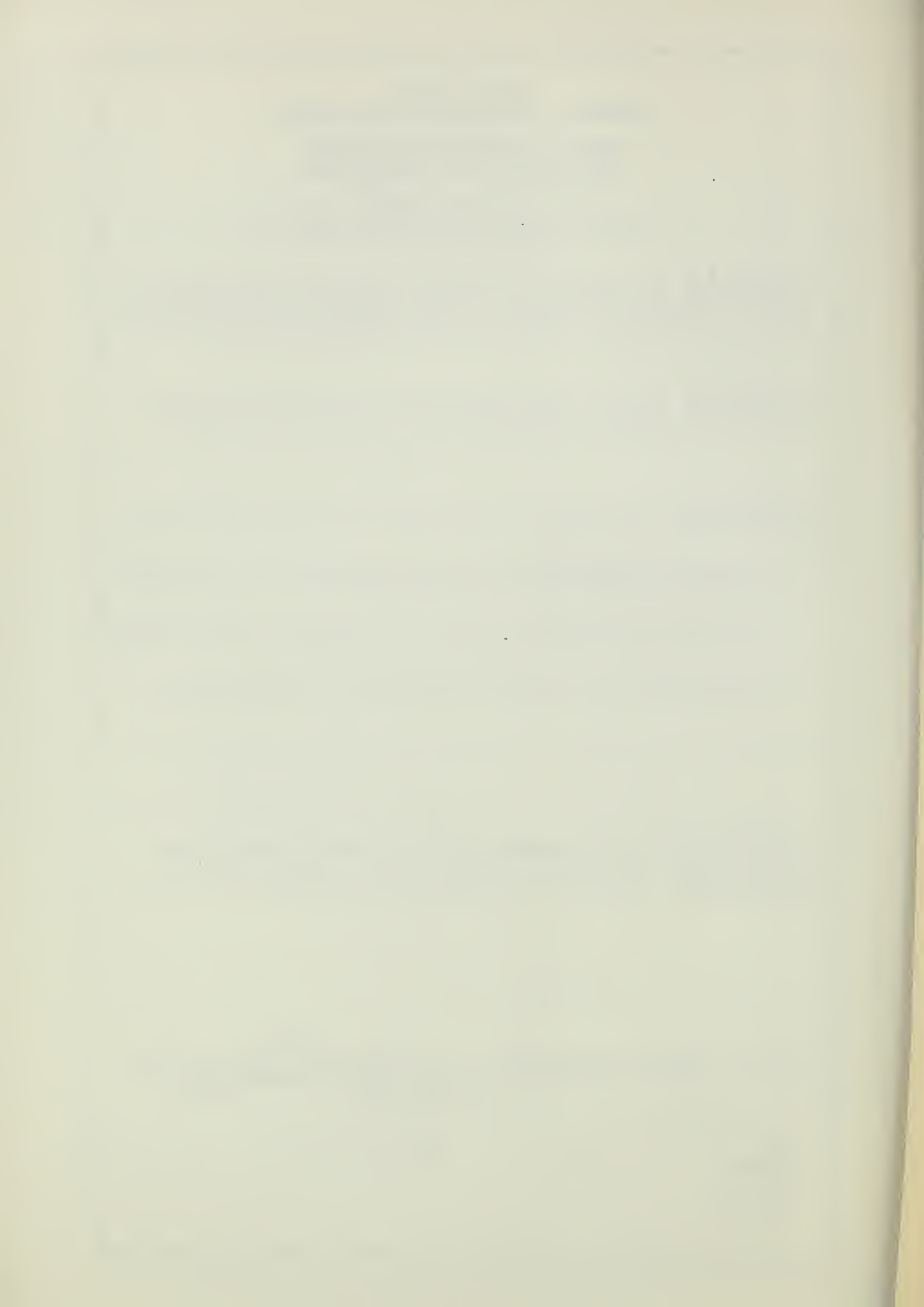
SECRETARY

BY: \_\_\_\_\_

Vice-CHAIRMAN for Project Review

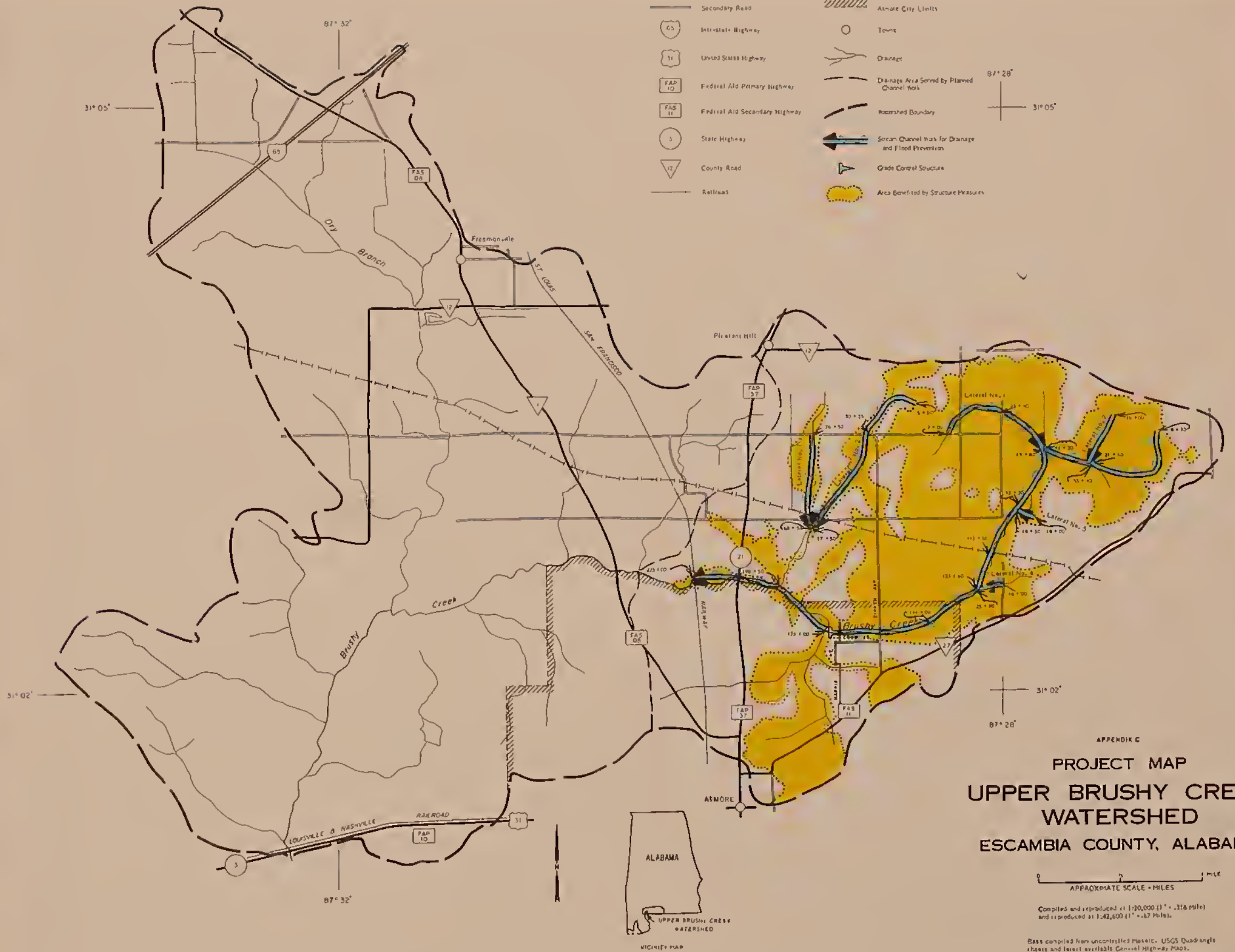


BY: \_\_\_\_\_



LEGEND

- Primary Road
- Secondary Road
- Interstate Highway
- United States Highway
- Federal Aid Primary Highway
- Federal Aid Secondary Highway
- State Highway
- County Road
- Railroad
- Gas Pipeline
- Atmore City Limits
- Town
- Drainage
- Drainage Area Served by Planned Channel Work
- Revised Boundary
- Stream Channel Work for Drainage and Flood Prevention
- Grade Control Structure
- Area Benefited by Structure Measures



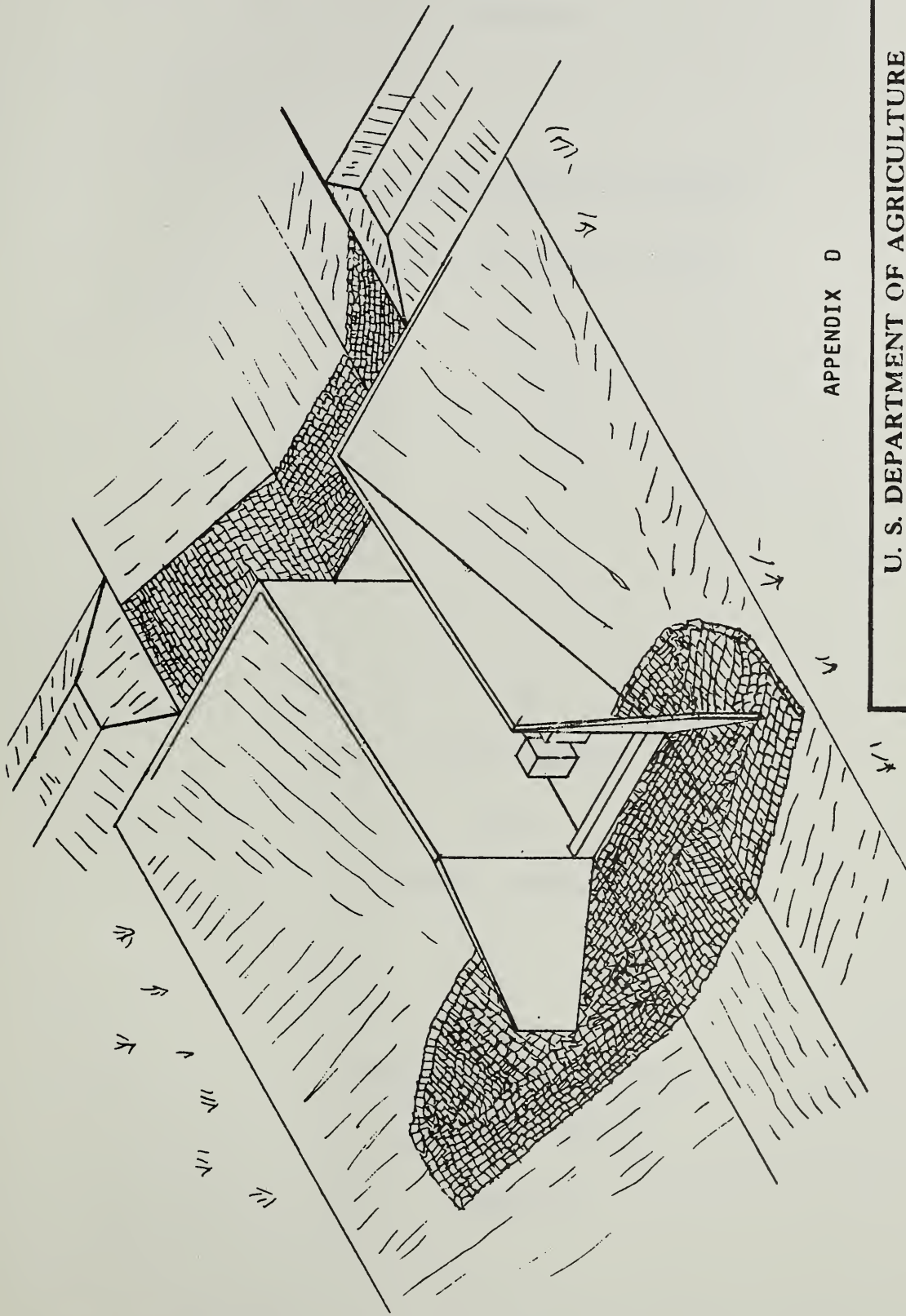
APPENDIX C  
**PROJECT MAP**  
**UPPER BRUSHY CREEK**  
**WATERSHED**  
**ESCAMBIA COUNTY, ALABAMA**

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20  
 APPROXIMATE SCALE - MILES

Compiled and reproduced at 1:20,000 (1" = .318 mile)  
 and reproduced at 1:42,600 (1" = .67 mile).

Base compiled from uncontrolled source - USGS Quadrangle sheets and latest available General Highway Maps.





APPENDIX D

U. S. DEPARTMENT OF AGRICULTURE  
SOIL CONSERVATION SERVICE

TYPICAL REINFORCED CONCRETE

DROP SPILLWAY





APPENDIX E

UPPER BRUSHY CREEK WATERSHED  
ARCHAEOLOGICAL SITE SURVEY

by

John W. O'Hear

and

David L. DeJarnette

The University of Alabama

University, Alabama

June 1974

## INTRODUCTION

The Upper Brushy Creek Watershed is located in the southwest corner of Escambia County, Alabama.

From its headwaters, just north of Atmore, Alabama, Brushy Creek flows southwesterly to the confluence with the Perdido River, and hence into Perdido Bay. The area that is the subject of this report is the very upper reaches of Brushy Creek, close to the city of Atmore.

The following is a report on the results of the archaeological site survey of this watershed area.

The survey was conducted during the week of May 20 through May 24, 1974, by the University of Alabama under contract to the U. S. D. A. Soil Conservation Service. David L. DeJarnette, associate professor of anthropology at The University of Alabama and curator of Mound State Monument, acted as project director. John W. O'Hear, graduate student in anthropology, served as field supervisor.

No sites of archaeological or historical importance were located during the survey. The area surveyed included the main channel of Brushy Creek from 500 feet west of the St. Louis and San Francisco railroad trestle to its end in the northeast quarter of Section 15, Township 1 North, Range 6 East (see Figure 1). All laterals listed in Appendix D of the solicitation as being affected were examined. This includes laterals 1, 2, 4, 5, 6, and 7. Several of these laterals and segments of the main channel appeared to already have been subjected to minor excavation and clearing.

During the survey, the field party consulted Mr. Hardee of the Atmore Soil Conservation Office and Mr. Hawkins of the Brewton Office. These gentlemen were very helpful and advised the crew that the proposed project would affect a maximum area of 150 feet on either side of the channel proper. These areas were also examined.

## SUMMARY AND CONCLUSIONS

This project would have no adverse effects on any areas of archaeological or historical importance. This particular area of Upper Brushy Creek would not have been attractive to aboriginal populations due to the poorly drained soil and the uncertainties of the water supply from Brushy Creek.

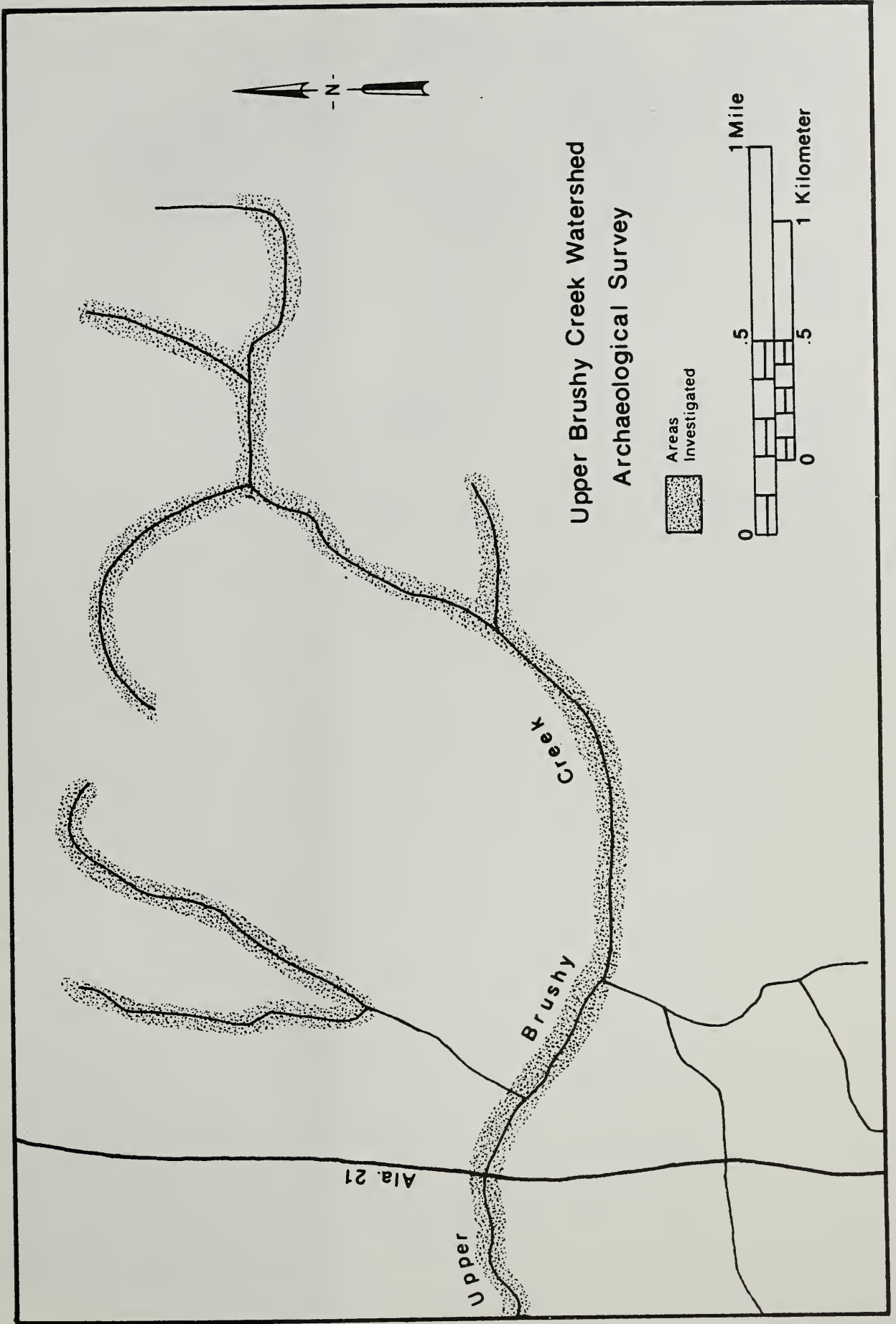
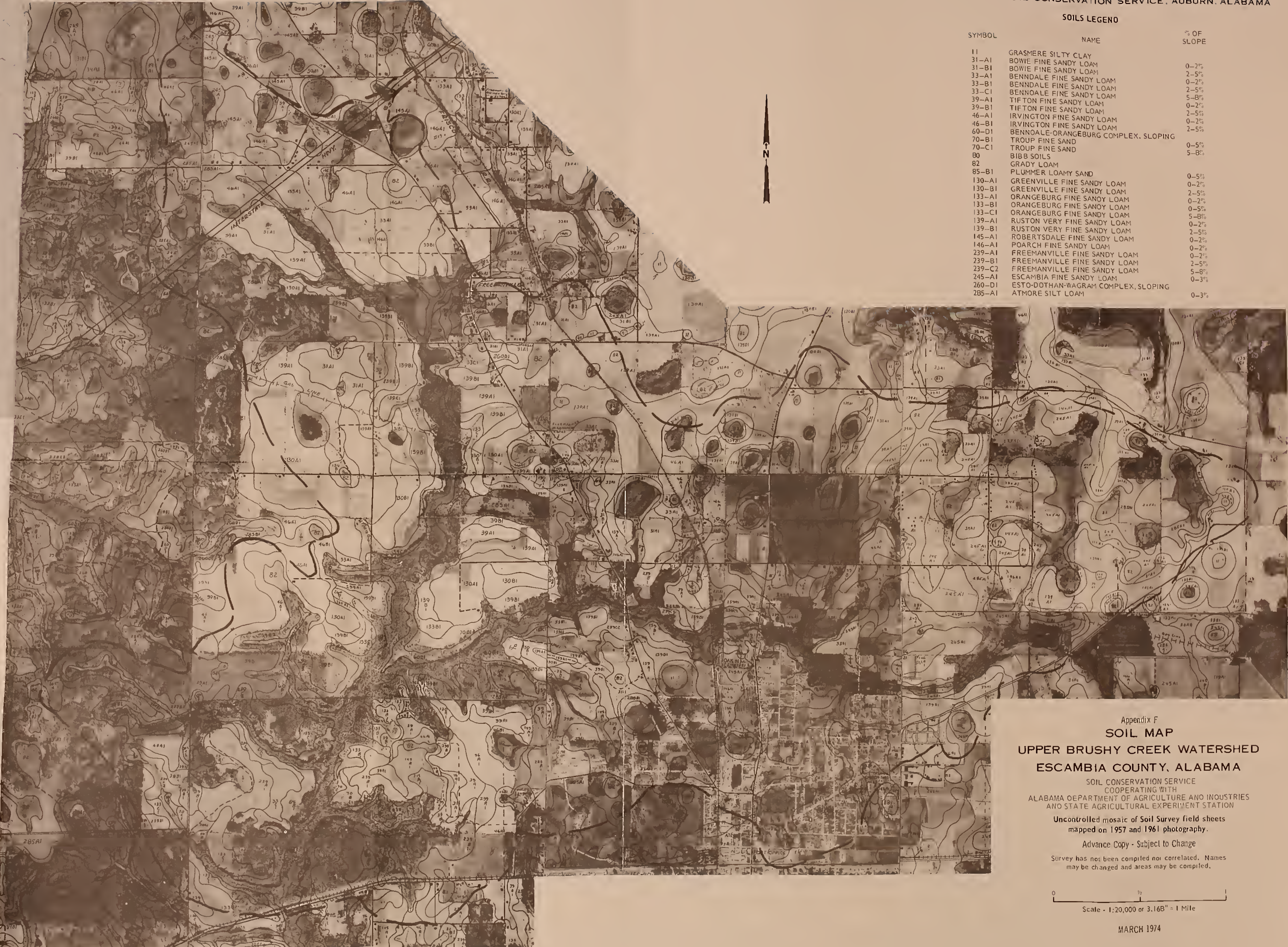


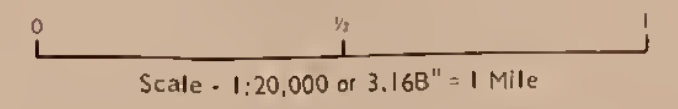
Fig. 1

SOILS LEGEND

SYMBOL	NAME	% OF SLOPE
11	GRASMERE SILTY CLAY	
31-A1	BOWIE FINE SANDY LOAM	0-2%
31-B1	BOWIE FINE SANDY LOAM	2-5%
33-A1	BENDDALE FINE SANDY LOAM	0-2%
33-B1	BENDDALE FINE SANDY LOAM	2-5%
33-C1	BENDDALE FINE SANDY LOAM	5-8%
39-A1	TIFTON FINE SANDY LOAM	0-2%
39-B1	TIFTON FINE SANDY LOAM	2-5%
46-A1	IRVINGTON FINE SANDY LOAM	0-2%
46-B1	IRVINGTON FINE SANDY LOAM	2-5%
60-D1	BENNOALE-ORANGEBURG COMPLEX, SLOPING	0-5%
70-B1	TROUP FINE SAND	5-8%
70-C1	TROUP FINE SAND	
80	BIBB SOILS	
82	GRADY LOAM	
85-B1	PLUMMER LOAMY SAND	0-5%
130-A1	GREENVILLE FINE SANDY LOAM	0-2%
130-B1	GREENVILLE FINE SANDY LOAM	2-5%
133-A1	ORANGEBURG FINE SANDY LOAM	0-2%
133-B1	ORANGEBURG FINE SANDY LOAM	0-5%
133-C1	ORANGEBURG FINE SANDY LOAM	5-8%
139-A1	RUSTON VERY FINE SANDY LOAM	0-2%
139-B1	RUSTON VERY FINE SANDY LOAM	2-5%
145-A1	ROBERTSDALE FINE SANDY LOAM	0-2%
146-A1	POARCH FINE SANDY LOAM	0-2%
239-A1	FREEMANVILLE FINE SANDY LOAM	0-2%
239-B1	FREEMANVILLE FINE SANDY LOAM	2-5%
239-C2	FREEMANVILLE FINE SANDY LOAM	5-8%
245-A1	ESCAMBIA FINE SANDY LOAM	0-3%
260-D1	ESTO-DO THAN-WAGRAM COMPLEX, SLOPING	
285-A1	ATMORE SILT LOAM	0-3%

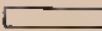



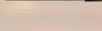


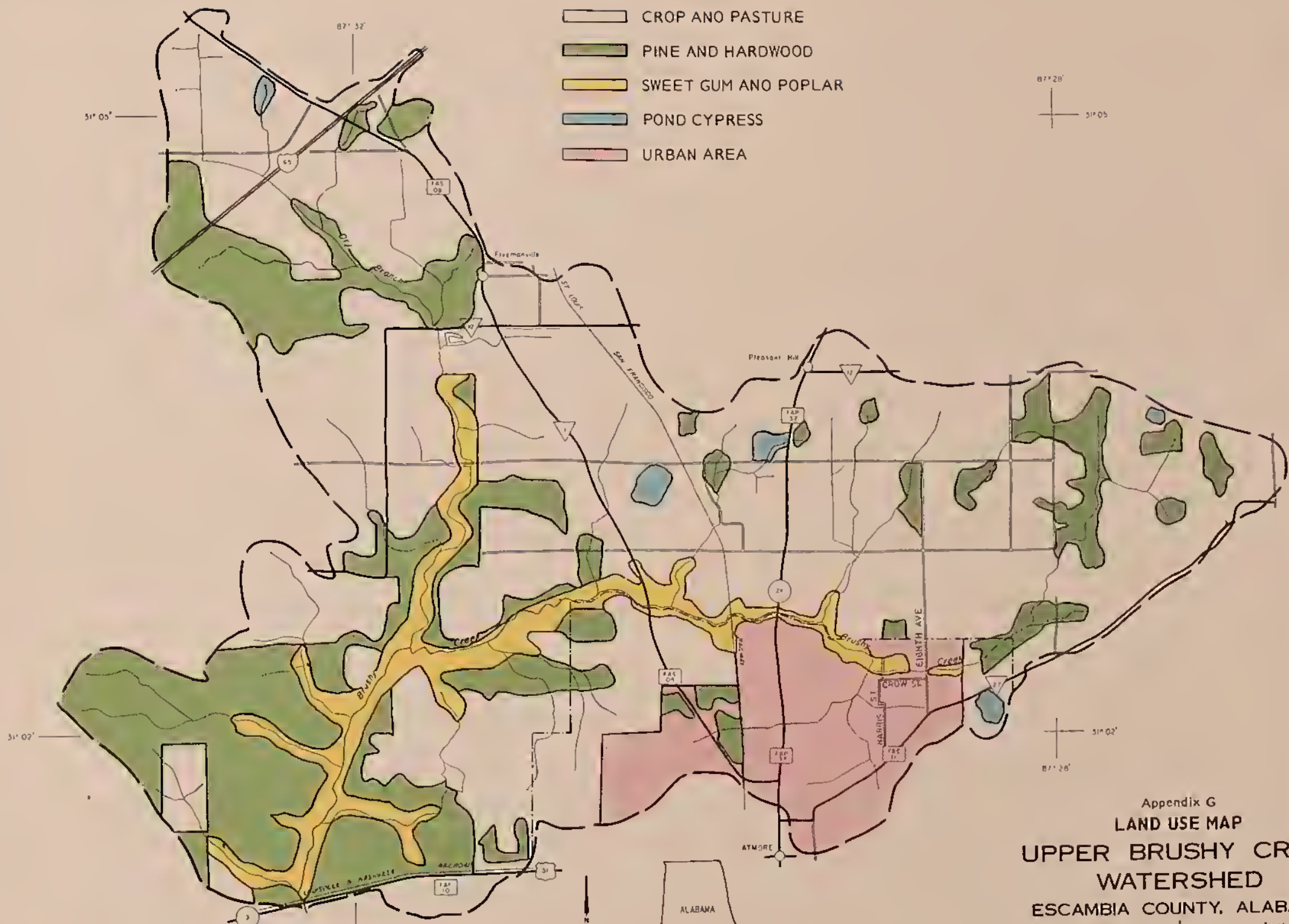
Appendix F  
**SOIL MAP**  
**UPPER BRUSHY CREEK WATERSHED**  
**ESCAMBIA COUNTY, ALABAMA**  
 SOIL CONSERVATION SERVICE  
 COOPERATING WITH  
 ALABAMA DEPARTMENT OF AGRICULTURE AND INDUSTRIES  
 AND STATE AGRICULTURAL EXPERIMENT STATION  
 Uncontrolled mosaic of Soil Survey field sheets  
 mapped on 1957 and 1961 photography.  
 Advance Copy - Subject to Change  
 Survey has not been compiled nor correlated. Names  
 may be changed and areas may be completed.



MARCH 1974

LEGEND

-  CROP AND PASTURE
-  PINE AND HARDWOOD
-  SWEET GUM AND POPLAR
-  POND CYPRESS
-  URBAN AREA



Appendix G  
**LAND USE MAP**  
**UPPER BRUSHY CREEK**  
**WATERSHED**  
**ESCAMBIA COUNTY, ALABAMA**

APPROXIMATE SCALE  
 Compiled and reproduced at 1:42,600 (1" = 0.67 Miles).  
 Base compiled from uncontrolled Mosaic, USGS  
 Quadrangle sheets and latest available General  
 Highway Maps.

MARCH 1974  
 Nov 1971  
 4-R-33755  
 4-R-31033

