ENVIRONMENTAL IMPACT STATEMENT

FLAT ROCK CREEK WATERSHED

Crawford County, Arkansas

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

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FLAT ROCK CREEK WATERSHED PROJECT
Crawford County, Arkansas

FINAL ENVIRONMENTAL IMPACT STATEMENT

M. J. Spears, State Conservationist
Soil Conservation Service

Sponsoring Local Organizations

Crawford County Conservation District
Van Buren, Arkansas 72956

City of Van Buren
Van Buren, Arkansas 72956

January 1975

PREPARED BY

UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
Little Rock, Arkansas 72203

USDA ENVIRONMENTAL IMPACT STATEMENT

Flat Rock Creek Watershed Project
Crawford County, Arkansas

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 purpose and action.

This proposed project is for watershed protection, through conservation land treatment, flood prevention, and recreation. About 4.2 miles of channel work consist of concrete lining, clearing and debris removal, and enlargement on ephemeral streams and 3.2 miles of clearing and debris removal on an intermittent stream. The watershed is located in Crawford County, Arkansas.

V. Summary of environmental impacts and adverse environmental effects.

Flooding in the watershed will be reduced 76 percent and will be practically eliminated in the City of Van Buren. Sheet erosion will be reduced 32 percent and sedimentation will be reduced 42 percent. The life expectancy of Hollis Lake will be extended 40 years. Flood reduction benefits will be provided to 30 farms, 16 commercial properties, 4 industrial properties, and 147 residential properties. About 1,030 acres of flood plain land will be benefited. Some adjustments in land use and cropping patterns will be made. An unsightly ditch through the City of Van Buren will be improved. Fish and wildlife habitat in the watershed will be enhanced. A continuous flow of water in Flat Rock Creek will be provided except in extreme drought periods. The fishery habitat in Flat Rock Creek will be disrupted during the construction period but will quickly recover. The economic climate of the general area will be improved by providing new employment opportunities, creating additional income, and increasing business activity. Agricultural and forest production from 32 acres of grassland and 19 acres of woodland will be committed to the dams and reservoirs. Relocation of two people from one dwelling will be required.

Two archeological sites (one prehistoric and one historic) will require salvage. Sites that were not detected during the Archeological Survey's investigation may be totally or partially destroyed during construction. Archeological sites may be partially or completely lost during salvage operations.

VI. List of alternatives considered.

The alternatives to the proposed project that were considered are as follows: (1) an accelerated program for watershed protection by applying land treatment measures, changing land use, and zoning and insuring urban areas; (2) accelerated land treatment measures and two floodwater retarding structures; (3) accelerated land treatment measures and channel work; (4) levees and floodways; (5) recreational development at Hollis Lake; and (6) no project.

VII. Comments on the draft statement were received from the following agencies.

Department of the Army
Department of Health, Education, and Welfare
Department of the Interior
Department of Transportation
Environmental Protection Agency
Arkansas Department of Planning, State Planning and Development Clearinghouse
Advisory Council on Historic Preservation

VIII. Draft statement transmitted to CEQ on June 4, 1974.

USDA SOIL CONSERVATION SERVICE

FINAL ENVIRONMENTAL IMPACT STATEMENT 1/
for
Flat Rock Creek Watershed Project
Crawford County, Arkansas

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

SPONSORING LOCAL ORGANIZATIONS

Crawford County Conservation District
City of Van Buren, Arkansas

PROJECT OBJECTIVES AND PURPOSES

The plan provides for the establishment of conservation land treatment measures on most of the watershed, the prevention of flood damages in the urbanized part of Van Buren, the reduction of floodwater damages to agricultural land in the flood plain, the development of wildlife habitat and aesthetic values, and the improvement of the general economy of the area. The purposes are watershed protection, flood prevention, and recreation.

Land Treatment

During the 5-year project installation period, the program currently being conducted by the Crawford County Conservation District will be accelerated. The land treatment practices that will be installed are the only planned measures for protection of the upland areas. Land treatment measures will be established and maintained by individual owners and operators. Land treatment measures will be accelerated over the entire watershed and most of the land will have received partial treatment at the end of the installation period. Complete treatment will have been accomplished on 2,850 acres of cropland, 4,500 acres of grassland, and 3,100 acres of forest land. The practices planned for cropland include: (1) conservation cropping systems (methods of growing crops in rotations which include some close-growing grasses or legumes); (2) contour farming (where cultivated rows follow contour lines); and (3) crop residue management (crop residues left on the surface of the soil as much of the time as is possible or as long in the spring as possible before planting the next crop).

1/ All information and data, except as otherwise noted by reference to source, were collected during watershed planning investigations by the SCS and Forest Service, United States Department of Agriculture.

Measures that supplement the soil and cover-improving practices will include 7,000 feet of diversions, 3,500 feet of terraces, 300 acres of land smoothing, 4,000 feet of drainage mains and laterals, 5,000 feet of drainage field ditches, and 5 structures for water control.

Practices planned for grassland include (1) pasture and hayland planting to new and improved species; (2) pasture and hayland management, such as weed control and the application of needed fertilizer and lime; (3) brush management; (4) deferred grazing; and (5) proper grazing use. About 25 farm ponds will supplement these grassland practices by providing proper grazing distribution and livestock water.

Wildlife habitat management is planned for 230 acres to improve the cover conditions and increase food supplies for upland game. Wildlife wetland management is planned for 650 acres in the watershed. Fish and wildlife development will be an important part of the conservation plans of cooperators of the Crawford County Conservation District. Fish management of farm ponds, management of upland game habitat, recreational developments, and food patches for wildlife will be included.

The planned forest land treatment measures include about 900 acres of tree planting, 1,900 acres of stand improvement, and fire prevention measures for all the forested lands. Stand improvement measures on 1,900 acres of forest land include practices such as improvement cuttings, tree release, and removal of inferior species and culls.

An aggressive fencing program is planned to protect tree planting and stand improvement operations from grazing on existing and future forest stands. For sound watershed management, forest lands will be managed for wildlife, recreation, timber, and other environmental requirements. Forest management goals will be directed to attain the most desirable forest succession type. The Crawford County Conservation District and the Arkansas Forestry Commission will work closely in implementing a forest land treatment program that will effectively establish and maintain forest wildlife habitat.

Land treatment measures that will be installed in urban and industrial development areas, where needed for the control of erosion and runoff, are temporary debris basins, seeding and mulching exposed soils, temporary diversion of runoff, forested buffer zones, infiltration zones, and sediment-trapping areas. These special measures include protection and management of existing woodland within the urban influence before, during, and after development. Urban land treatment measures involve 400 acres undergoing urban development, 1,600 acres already in urban development, and 80 acres of forest land. The estimated total land treatment costs are $258,160.

Structural Measures

The proposed structural measures as shown on the Project Map, Appendix C-2, include one single purpose floodwater retarding structure (Number 2), one multiple purpose structure for flood prevention and recreation (Number 1) in the Van Buren City Park, and 7.4 miles of stream channel work.

The State Historic Preservation Liaison Officer supplies the SCS with a listing of properties in Arkansas pending inclusion in the National Register of Historic Places, those under consideration for nomination to the register, and those on the register. The October 1974 listing showed that the development will not encroach on any known historic place. In the event areas of historical significance are uncovered during construction, the Regional Director, Southwest Region, National Park Service, Post Office Box 728, Santa Fe, New Mexico 87501, will be notified immediately.

The Arkansas Archeological Survey has located and identified nine sites, three of which were historic and six that were prehistoric. One prehistoric site will be inundated by the sediment pool of Floodwater Retarding Structure Number 2 and one historic site may be adversely affected by channel work along Town Branch. The Arkansas Archeological Survey will be requested to make additional investigations after areas are cleared for construction.

The Secretary of the Interior and the State Historic Preservation Officer will be notified of the sites and the Secretary of the Interior will be requested to undertake the recovery, protection, and preservation of data, as needed.

The estimated total installation cost of the structural measures is $4,420,550.

Both structures will be earthfill dams with vegetated earth emergency spillways and concrete conduit principal spillways through the fill. Both structures will have maximum heights of 57 feet and will provide sediment storage for 100 years accumulation. Structure Number 1 will create a permanent water impoundment of 11 acres for public recreational use. The sediment pool of Structure Number 2 will initially be used for permanent water storage and will be 31 acres in size with an average depth of about 6 feet. The installation of Floodwater Retarding Structure Number 2 will require the relocation of two people and personal property fron one dwelling. An ungated port for augmentation release will be installed in the principal spillway of Structure Number 2 at the 50-year sediment level.

Both structures will have principal spillways consisting of a two-stage concrete riser with a reinforced concrete conduit through the fill. A drain valve will be included in the principal spillway to facilitate the

installation of the dam by disposal of runoff during construction and to drain the impoundment as needed for repairs. A mid-level gate will be installed to provide for manipulation of water levels for aquatic weed control, fish management operation, exposure of shallow edges for waterfowl plantings, and the means to provide water downstream for emergency use.

The permanent water area of Structure Number 1 will be cleared. Clearing at Structure Number 2 will be kept to a minimum and be limited to embankment, emergency spillway, and borrow areas. Offsite borrow topsoil will be respread to insure establishment of vegetation.

Timber from cleared areas will be disposed of in compliance with state laws on pollution where burning is necessary. Where burning is not necessary, the timber will be piled so as to enhance the wildlife habitat.

All construction areas will be managed to minimize onsite erosion and sediment production, and sediment traps will be constructed below erosive areas to catch construction-related sediment.

All earthfills, emergency spillways, and offsite borrow areas will be revegetated immediately after construction. Most of the revegetation will be with grasses and legumes and will include woody and herbaceous plants for landscaping and wildlife habitat.

The embankment and spillway of Structure Number 2 will be fenced to control grazing.

In order to minimize public health hazards associated with the water resource development, every possible effort will be made to avoid creating conditions which will increase population of vectors of public health importance.

Practices leading to the prevention and source reduction of mosquito and other aquatic insect breeding sites will include the following:

1. All borrow pits and other potential ponding areas associated with construction of the dam which are located above maximum pool level will be made self-draining.

2. Borrow pits and depressions, which will be flooded by the reservoir at maximum pool level and which would retain water at lower pool levels will be provided with drains to insure complete drainage or fluctuation of water within them.

3. After impoundage, the following maintenance measures will be carried out in all potential mosquito-producing areas located within flight range of human population groups or recreational areas frequented by significant numbers of persons:

a. All dense vegetation will be removed periodically from flat, protected areas within the normal fluctuation zone of the permanent pool.

b. Vegetation, debris, and floatage will be removed periodically from all drains to insure free flows.

4. Water level management to minimize conditions favorable for mosquito production will be used to the maximum degree permitted by the primary purposes of the reservoir. This will minimize the need for repetitive measures for controlling vegetation and mosquito production.

Noise from the equipment used during construction cannot be avoided; however, the contractor will keep his equipment in a state of good repair to assure that noise will be held to a minimum. Working time will be during the daylight hours, when possible.

Vegetative measures to ensure greater channel stability, reduce sediment pollution in the channels, improve wildlife habitat, and improve the appearance of structural measures will be required. Vegetative measures for the channel system will be installed including seeding of the earthen channel banks within 24 hours after excavation and vegetating the spoilbanks and berms immediately after shaping. Vegetative materials will include herbaceous and woody plants.

Draglines and other construction equipment will alternate from one side of the channel to the other while performing needed work. Berm widths, not to exceed the height of the spread spoil, will be required on these channels to prevent excavated material from washing or rolling back into the channel. They will also prevent sloughing of the ditchbank caused by heavy soil loads too near the edge of the channel. Travelways for the channels will be located on the top of the shaped spoil to facilitate inspection and maintenance.

Dust is not expected to be a problem but, if it develops, the contractor will sprinkle, apply dust suppressors, or otherwise keep dust within tolerable limits. During project installation, all state and local health, safety, and air and water pollution regulations will be strictly adhered to.

The present land use of the embankment and emergency spillway, offsite borrow, and pool areas for each structure is tabulated as follows:

Structure	Land Use		
	Grassland (Acres)	Woodland (Acres)	Urban & Built-up (Acres)
Number 1			
Embankment & Emergency Spillway	0	0	6 2/
Permanent Inundation	0	0	11 2/
Temporary Inundation 1/	0	0	9 2/
Offsite Borrow	0	0	11 3/
Number 2			
Embankment & Emergency Spillway	12	8	0
Permanent Inundation	20	11	0
Temporary Inundation 1/	100	14	0
Offsite Borrow	18	0	0

1/ Land use is not expected to change in the temporarily inundated flood-pool area.

2/ Van Buren City Park which is in forest vegetation.

3/ Located outside the city park.

The channel work includes 4.2 miles on Town Branch and 3.2 miles on Flat Rock Creek.

The channel work on Town Branch starts at Hollis Lake and includes about one mile of clearing and debris removal to Station 236+91. From there to Interstate 540, about 1.5 miles of channel will be enlarged and about 1.7 miles of channel will be concrete-lined in Van Buren. Work on Flat Rock Creek will consist of clearing and debris removal from the existing channel in Reach III. (See Appendix Map C-2.) Clearing and debris removal operations in Flat Rock Creek include removal of trees, drifts, and other obstacles below the flow line of the channel that would restrict the channel and retard flow. As many trees will be left along the banks as possible. Generally, all work will be done from one side, with one side left undisturbed. Clearing and debris removal is usually done by sawing trees by hand and dragging out trees and debris with a dragline or by snagging only. The trees that are removed will be buried or piled and burned in compliance with state pollution control regulations. The sediment that is removed will be smoothed and sloped away from the channel.

Channel work will include temporary sediment traps to reduce pollution downstream and in Hollis Lake. Pipe drops will be permanently installed, where needed, to reduce the chance of disturbed material from directly eroding into the channels.

A chain link fence will be installed in the top of the wall of the concrete-lined channel for safety. Sanitary facilities and access roads to Structure Number 1 are presently adequate for project needs.

A landscape architect will design landscape measures along Town Branch, and all disturbed areas will be revegetated. The channel work on about 1-1/2 miles of Town Branch will require about a 60-foot increase in the top width of the channel. The concrete-lined channel will require less top width than the existing channel.

The quality of water on Town Branch will be improved by the installation of a secondary sewage treatment plant to be completed by the City of Van Buren in January 1975. There will be an increase in turbidity and sediment concentration during construction of the channels. This is expected to be minimal and temporary. After construction, there will be a small change in water quality from its present state; however, the constructed channels will eliminate existing stagnant water by the design of a continuous downstream flow. The channel flow will be allowed to move downstream faster, aerating the water and increasing the dissolved oxygen.

Nonstructural Features

The Van Buren City Council has agreed to initiate an ordinance whereby future improvements or developments within the Town Branch 100-year frequency flood plain will be restricted to those projects that will not contribute to the flooding problem nor be susceptible to flood damage beyond minor repair and cleanup. Improvements, such as parking lots, recreational areas, or educational nature trails, will be permitted. The city will consider development location, damageable values, flood proofing, and flooding depths before issuing development permits.

Land Use Changes

About 17 acres of the City Park, which are forested, will be required for Structure Number 1. An additional 11 acres of offsite borrow area will be located outside the city park. Suitable borrow areas are located about one-quarter mile downstream and one-quarter to one mile north of the structure. Land use changes at Structure Number 2 will involve 50 acres of grassland, including 18 acres of offsite borrow, and 19 acres of woodland. About 80 acres of cropland in the flood plain south of Van Buren are planned for industrial development after flooding is controlled. Other land use changes that may result from installation of conservation land treatment and land management are decreases of 703 acres of cropland, 397 acres of rangeland, and 360 acres of woodland, and increases of 740 acres of pasture and hayland, 200 acres of wildlife land, 60 acres of recreational land, and 460 acres of urban and built-up land.

Operation and Maintenance

The landowners and operators will maintain the land treatment measures under agreement with the Crawford County Conservation District. All structural measures will be operated and maintained by the Flat Rock Creek Improvement Project Area through the Crawford County Conservation District, except Structure Number 1 which will be maintained by the City of Van Buren. The Soil Conservation Service and the Arkansas Forestry Commission will provide the technical assistance necessary for operation and maintenance on all land treatment measures.

All work will meet the requirements of Act 81, as amended, of the Arkansas General Assembly of 1957, which authorizes the Division of Soil and Water Resources to issue permits for construction of dams, inspect construction, and make annual operation and maintenance inspections after construction. The sponsor will be required to follow the Division's recommendations on needed maintenance work.

Maintenance functions for structures will include an adequate vegetative cover on earthfills, emergency spillways, and borrow areas; major repair work to restore concrete that has deteriorated; replace gates, trash racks, or other metal works; remove and/or stabilize slide material; and replace eroded material. Operation and maintenance of Structure Number 1 will comply with regulations of the State Health Department.

Maintenance functions for channels will include vegetation control, bank stabilization, or removal of obstacles that could result in an abnormal reduction in channel capacities. Special attention will be given to the inspection and maintenance of the grade-stabilization structures. Annual maintenance may be required to remove debris and to control and maintain proper vegetation. During the life of the channels, it may be necessary to remove siltbars, replace grade-stabilization structures, and fill contraction cracks in the concrete-lined channel.

An operation and maintenance agreement will be executed prior to signing a project agreement. This operation and maintenance agreement will contain a reference to the Soil Conservation Service publication, "State of Arkansas Watersheds Operation and Maintenance Handbook," and a plan for operation and maintenance of the structural measures will be prepared.

Project Costs

The following table shows the estimated total structural measures and land treatment cost by Public Law 566 funds.

	PL-566 Funds	Other Funds	Total
	Dollars		
Structural Measures 1/	3,578,471	842,079	4,420,550
Land Treatment	31,200	226,960	258,160
Total	3,609,671	1,069,039	4,678,710

1/ Includes construction cost of $2,838,373 to be shared $2,792,363 by PL-566 funds and $46,010 by other funds.

ENVIRONMENTAL SETTING

Physical Resources

The Flat Rock Creek Watershed comprises 18,952 acres in Crawford County. The watershed is in the west-central part of Arkansas, about 5 miles from Oklahoma and north of the Arkansas River. The Arkansas River levee is the western boundary of the watershed. Part of the City of Van Buren is in the watershed. Fort Smith, the second largest city in Arkansas, is separated from the watershed by the Arkansas River. The 1970 population of Fort Smith was 62,802 and Van Buren was 8,373, according to the U. S. Bureau of Census Final Report PC(1)A5 Arkansas. The watershed population of 8,000 is 5,900 urban and 2,100 rural. This represents an increase of about 1,200 since 1960 due primarily to the growth of Van Buren.

The watershed is in the Arkansas-White-Red Water Resource Region. The water resource region has average annual rainfalls of 15 to 50 inches and has differences in vegetation from short-grass prairie to hardwood-pine forest. Soils within the region vary from shallow, dry, calcareous, and caliche soils to deep, wet, acid, and alluvial soils. Land use and management vary as widely as the above physical characteristics. The watershed is in the eastern part of the region and is characterized by high rainfall, forest vegetation, and deep, poorly to excessively drained, acidic soils.

The watershed is in the Lower Arkansas Water Resource Subregion which is generally the area draining into the Arkansas River between Tulsa, Oklahoma, and Pine Bluff, Arkansas. The eastern part of the subregion consists of steep, mountainous, forested areas bounding the narrow, level alluvium along the Arkansas River. The west part of the subregion is rolling hills with some upland farming on each side of wide alluvial areas along the Arkansas River and its tributaries. The watershed, which is in the central part of the Lower Arkansas Subregion, is more like the western part of the subregion.

The topography of the watershed varies from the relatively flat Arkansas Valley flood plain in the southern portion of the watershed to mountainous slopes and steep stream valleys in the northern portion of the watershed. Elevations range from about 378 feet above mean sea level in the bottom land to about 1,100 feet along the watershed boundary.

About 1,030 acres of bottom land in this watershed are subject to flooding. The flood plain includes two separate areas, 726 acres adjacent to Flat Rock Creek and 304 acres that border Town Branch.

The upland soils are generally shallow to moderately deep, moderately permeable, well drained, and have developed from acid sandstone and shale; these are the Linker and Mountainburg Series. The terrace soils are deep, well drained to somewhat poorly drained, and moderately to slowly permeable; they are the Leadvale and Taft Series. The Arkansas River bottom land soils consist of deep alluvium that varies from very slowly permeable, poorly drained clays to rapidly permeable, excessively drained sands; they are the Severn, Iberia, and Bruno Series. The typical flood-plain soil is deep, poorly drained, and slowly permeable.

The land capabilities of the soils of the watershed are as follows;

Land Capability Class & Subclass 1/	Brief Description 2/	Watershed	Arkansas River Alluvium	Flood Plain
		-------	-Acres -------	
I	Few limitations for cultivated crops	1,734	1,734	578
IIe	Moderate erosion hazard when cultivated	2,126	180	0
IIw	Moderate excess water for cultivated crops	163	163	123
IIIe	Severe erosion hazard when cultivated	4,505	0	0
IIIs	Soil limits choice of cultivated crops	2,250	2,250	0
IIIw	Severe limitations because of excess water	257	257	204
IVe	Very severe erosion hazard occasionally cropped	3,900	0	0
Vw	Excess wetness prevents cultivation	900	900	125
VIe	Should remain in permanent cover because of erosion hazard	664	0	0
VIs	Should remain in permanent cover because of shallow soil	960	0	0
VIIs	Suitable for limited grazing, woodland, and wildlife	1,493	0	0
Total		18,952	5,484	1,030

1/ Standard capability system developed by the Soil Conservation Service.
2/ Complete descriptions are given in Land Capability Classification Agricultural Handbook Number 210, SCS, USDA, 1961.

The lower case or Subclass "w", following the Roman Numeral, indicates that excess water is the limiting factor in the use of the soil for agriculture. This may be the result of poor drainage of surface water, high water table, an overflow hazard, or any combination of these factors. All of these conditions exist in the flood plain but the most common factor is the overflow hazard. There are no "e" or "s" subclasses located in the flood plain but are found within the watershed. The lower case "e" indicates that the main limitations is risk of erosion unless close-growing plant cover is maintained. Soils that are limited mainly because they are shallow, droughty, or stony are shown with a lower case "s".

The watershed is underlain by shale and sandstone of Paloeozoic age and unconsolidated alluvial materials of Quaternary and Recent ages. The watershed is in the Arkansas Valley and Ridges Land Resource Area.

Based on a 30-year record of the U. S. Weather Bureau, the average annual rainfall is 42.22 inches. The maximum recorded annual rainfall of 76.66 inches occurred in 1945. The minimum was 22.77 inches in 1901. The gage is located at Fort Smith, Arkansas.

The average monthly rainfall in inches is as follows:

January	2.66	July	2.80
February	3.43	August	2.92
March	3.47	September	3.64
April	4.24	October	3.45
May	5.26	November	3.18
June	4.35	December	2.82

Mean temperatures range from 38.8 degrees Fahrenheit in January to 83.0 degrees Fahrenheit in July. The minimum temperature of record is minus 15 degrees Fahrenheit and the maximum is 110 degrees Fahrenheit. The normal frost-free period of 234 days extends from March 21 to November 10.

Mineral resources in the Flat Rock Creek Watershed include deposits of sandstone, shale, gravel, sand, and natural gas. Sandstone deposits are extensive with a quarry located in the north-central portion of the watershed. Mining of shale for roadstone is limited to small scattered areas throughout the watershed uplands. Extensive sand and gravel deposits occur in the Arkansas River alluvium near the watershed outlet. Large quantities of natural gas reserves exist under the watershed.

The data presented in the U. S. Geological Survey Water-Supply Paper 1669-L indicated that an abundant supply of shallow ground water is available in Arkansas River alluvium in the southern part of the watershed. The supply of this water is adequate for future needs. Ground-water resources are virtually undeveloped in the northern (upland) part of the watershed. The Hartshorne Sandstone is a potential source of ground water in the uplands

but wells drilled in the strata probably would yield no more than 50 gpm. Ground water from the Arkansas River alluvium is mainly of the calcium-magnesium-bicarbonate type and is characterized by wide variations in the content of dissolved solids. The range of concentrations (mg/l) of the principal constituents was iron (Fe), 0 to 21; bicarbonate (HCO_3), 95 to 622; sulfate (SO_4), 2 to 187; chloride (Cl), 2 to 164; nitrate (NO_3), 0 to 146; and calcium magnesium, 120 to 538. The specific conductance ranged from 234 to 1230 micromhos/cm at 25 degrees centigrade.

Generally, ground water from the Arkansas River alluvium is suitable for domestic use. However, the iron and nitrate contents and the hardness may make the water undesirable for some industrial uses. Such ground water is rated as excellent to good and the rest as good to permissible for irrigation use.

Water samples in the watershed were collected for analyses at the following locations:

Sample Point Number 1 is in the SE¼, Section 30, Township 9 North, Range 31 West, on Town Branch just downstream from Interstate 540. Sample Point Number 2 is in the SE¼, Section 19, Township 9 North, Range 31 West, on Town Branch near the intersection of U. S. Highway 64 and Arkansas Highway 162. Sample Point Number 3 is in the SE¼, Section 29, Township 9 North, Range 31 West, where Flat Rock Creek crosses a county road about one mile east of Sample Point Number 1. Sample Point Number 4 is in the SW¼, Section 20, Township 9 North, Range 31 West, on Flat Rock Creek at Arkansas Highway 162 near its intersection with Interstate 540. Sample Point Number 5 is in the NW¼, Section 10, Township 8 North, Range 31 West, at Hollis Lake.

Water quality analyses were made on Town Branch, Flat Rock Creek, and Hollis Lake August 6, 1974. The following are the results of these analyses.

WATER QUALITY ANALYSES

Test	Town Branch: Sample Point No. 1	Town Branch: Sample Point No. 2	Flat Rock Creek: Sample Point No. 3	Flat Rock Creek: Sample Point No. 4	Hollis Lake: Sample Point No. 5	Arkansas Water Quality Standards 1/
Iron Fe - mg/l	1.20	0.78	0.87	1.80	0.37	
Manganese Mn - Mg/l	0.0	3.7	0.2	1.4	0	
Calcium Ca - mg/l	11	36	16	20	33	
Magnesium Mg - mg/l	4	18	6	9	8	
Alkalinity $CaCO_3$ - mg/l	266	90	70	78	140	
Sulfate SO_4 - mg/l	16	130	18	18	7	120
Chloride Cl - mg/l	36.1	15.5	13.5	18.5	11.0	250
Nitrate N - mg/l	0.0	0.3	0.6	0.0	0.0	
Phosphate PO_4 - mg/l	8.0	1.2	5.5	1.1	1.0	0.1
Total Hardness $CaCO_3$ - mg/l	46	166	64	88	114	
Conductivity at 25 °C Micromhos/cm	780	420	210	230	290	
pH	7.1	6.9	6.9	6.8	7.3	6.0 - 9.0
Water Temperature °C	22.5	21.0	22.5	23.0	24.5	34.0
Color - Apparent PT - CO Units	72	55	90	310	155	
Turbidity JTU	310	25	35	110	55	50
Dissolved Oxygen DO - mg/l	0.0	2.8	0.0	4.8	2.5	5.0
Percent Oxygen Saturation	0	31	0	55	30	
Suspended Solids mg/l	190	5	15	25	55	

1/ Arkansas Water Quality Standards, Regulation Number 2, as amended, September 1973.

Land use in the watershed is as follows:

Land Use	Acres	Percent
Total Watershed		
Cropland	4,714	25
Grassland	6,638	35
Forest Land	4,900	26
Urban & Other	2,700	14
Total	18,952	100
Flood Plain		
Cropland	660	64
Grassland	231	22
Forest Land	50	5
Urban & Other	89	9
Total	1,030	100

The upland forest land occurs as small, scattered areas of predominantly oak-hickory-elm in the rolling hills of the upland. The major tree species in the flood plain are willow, cottonwood, and ash.

The 726-acre flood plain of Flat Rock Creek is presently used for agricultural production even though about 200 of these acres are located within the city limits of Van Buren, Arkansas.

The flood plain of Town Branch, 304 acres, consists of about 242 acres used intensively for agricultural production and 62 acres of urban properties in Van Buren. About 78 acres of the agricultural land are inside the Van Buren city limits.

In the past, much of the watershed upland was used for cultivated crops, mostly cotton and corn. In many places, the shallow soils and steep slopes were marginally suited for cultivation. Consequently, crop production was abandoned and such areas were allowed to follow a natural succession of plants toward an oak-hickory forest. A few such fields are still cultivated and some are planted to pasture with improved grasses. Others are covered with plants, such as annual and perennial weeds, native grasses, persimmon, sassafras, and eastern red cedar.

About one mile of the upper reach of Town Branch is a natural stream channel and the lower five miles is a manmade ditch constructed to Hollis Lake in 1947. The manmade ditchbanks and berms have been well maintained. Flat Rock Creek is a natural channel lined with trees from its source to where it empties into Hollis Lake. The channel has been modified slightly at railroad and highway crossings.

Town Branch is an ephemeral, polluted stream, typical of small urban tributaries. Two food processing plants in south Van Buren discharge waste into Town Branch. The waste collects in small pools and causes unsanitary conditions. High stages on the Arkansas River cause some seepage through the sandy alluvium into the lower reaches of Town Branch. Van Buren is currently constructing a secondary treatment plant consisting of two digestors and a lagoon. The lagoon will have a pumping plant to discharge non-septic liquid into the Arkansas River. The project is to be completed in the early part of 1975. Damaged sewer lines in Van Buren are being repaired or replaced as the City has money to do this work. Only one industry is discharging any waste into the Van Buren sewer system and they are planning to install a system to handle their solid waste but they will continue to discharge liquid waste into the Van Buren's system.

Flat Rock Creek is intermittent and flows about 80 percent of the year. In about one year out of five, the upland part of Flat Rock Creek will be dry but in Reaches III and IV, (Appendix C-2, Project Map), pools exist even during the most severe drought.

Hollis Lake is a 300-acre shallow lake. It is a remnant of the Arkansas River. Both Town Branch and Flat Rock Creek empty into Hollis Lake. Overflow from the lake passes through a ditch, built by the Corps of Engineers, to the Arkansas River.

About 300 acres of wetland surround Hollis Lake. The wetland is wooded, principally with willow, cottonwood, and ash. According to the United States Department of Interior, Fish and Wildlife Service, Circular C-39, Wetlands of the United States, 1956, the area is Type 7 "wooded swamp." Such wetlands are characterized by the water table near the surface during the dry part of the summer growing season and the soil submerged during periods of surface water runoff. This type of wetland is not uncommon in the Lower Arkansas Water Resource Subregion.

Plant and Animal Resources

Fish resources in the upland consist of about 100 farm ponds scattered throughout the area. They provide water for livestock and also fishing for many of the local residents. Many fish from the ponds find their way to Flat Rock Creek and help maintain this stream fishery resource. The main stem of Flat Rock Creek contains a variety of fish. Even during droughts, pools of water remain. Fish species found in the creek include bass, sunfish, bullheads, and channel catfish.

The main stem of Flat Rock Creek becomes a slow-running stream in the bottom land area. In addition to the fish population in the upland area, carp and buffalo are present. Town Branch has virtually no sport fishery. Fishing in Hollis Lake is not considered good. Occasionally, crappie, buffalo, and carp are caught by fishermen.

Fish samples were taken in November 1972 in Flat Rock Creek and the following pertinent data were obtained.

Sample locations

a. SW corner of SE 1/4, Section 29, T9N, R31W (lowland sample).
b. Center Section 17, T9N, R31W (upland sample).

Physical data

a. Pool: Riffle Ratio 1:1.
b. Pool Width: 15 feet - 25 feet.
c. Average Pool Depth: 3 feet.
d. Average Riffle Depth: 1/2 - 1 foot.
e. Bottom Type:
   (1) Clay and gravel in lowland sample.
   (2) Bedrock and cobble in upland sample.
f. Streambank Vegetation: Excellent.
g. Turbidity:
   (1) Slight in lowland sample.
   (2) Clear in upland sample.
h. Instream Habitat: Excellent.
i. Water Temperature: 54 degrees Fahrenheit (both samples).

Chemical data

a. Total Hardness: 51 mg/l
b. pH: 7 (lowland); 4 (upland).
c. Dissolved Oxygen: 11 mg/l

Biological data

Species	Number
European Carp	1
Redfin Shiner	8
Red Shiner	2
Gambusia	7
Black Bullhead	1
Stoneroller	4
Longear Sunfish	4
Blackspotted Topminnow	2
Big Eye Shiner	23
Redfin Darter	3
Brook Silverside	13
Bluntnose Minnow	1

The time of year and sampling method strongly influenced the sample results. November is a poor month to sample because of relatively low water temperatures. Two minnow seines (25 feet and 10 feet long by 4 feet deep) were used to sample. These seines restricted sampling to shallow water with a clean, uniform stream bottom.

Results indicate a small "healthy" stream. The physical data show that this stream will provide only a few annual man-hours of sport fishing. The chemical data show that the water is moderately productive. The sample composition, although taken in November with a water temperature of 54 degrees Fahrenheit, indicates above average diversity. There were 12 different species collected. This compares favorably to an "average Ozark stream" diversity of 25-30 species, according to Dr. Tom Buchanan (See consultation section). Qualitatively, a riffle species (redfin darter), a river species (red shiner), a pool species (redfin shiner), small stream species (stoneroller and brook silverside), and a widespread species (big eye shiner) indicate that the diverse habitat required for a well-balanced aquatic community is present.

Cover in the intensively farmed bottom-land area is restricted to fence rows, turnrows, and woodland along streams. The limiting habitat for rabbits is cover. Furbearer populations are excellent along the streams. Dove and meadowlark populations are excellent in open areas. Quail and squirrel populations are confined principally to food and cover areas along fence rows and streams.

The 300 acres of wooded swamp which surround Hollis Lake contain an excellent rabbit and songbird population. Doves come to the lake regularly for water. Waterfowl use the area during fall and spring migration. Shorebirds are noted throughout the year. Aquatic species, such as turtles, snakes, and bullfrogs, are also abundant in and around the lake.

Much of the upland area is open fields with strips of woodland along streamcourses. There are a few scattered woodland areas of generally low quality hardwoods. Open fields are either fallow or in pasture with a few scattered cropland fields. The food and cover present is excellent for rabbits and songbirds and fair for quail, squirrels, doves, and furbearers.

Use of about 320 acres of woodland is dedicated by the landowners to wildlife management. Since almost all of the fish and wildlife resources are privately owned, public access to and use of the resources depend upon permission from the landowners. All parts of the watershed are physically accessible by county and farm roads.

Economic Resources

The Van Buren City Park (128 acres) is owned and operated by the City of Van Buren. The remaining area is in private ownership.

Types of farms range from the small part-time farming units to larger full-time family-sized units. There are about 150 farms in the watershed with an average size of 110 acres. This is below the average size of 148 acres for Crawford County and is due primarily to the large number of small farms, many of which are owned by nonfarm residents.

Principal crops grown and their average yields per acre under "without project" conditions in the flood plain are as follows: soybeans, 35 bushels; wheat, 50 bushels; corn, 50 bushels; and alfalfa, 5.1 tons. Yields of major crops in the bottom land adjacent to the flood plain are soybeans, 40 bushels; alfalfa, 6.0 tons; and corn, 70 bushels. In addition to the above mentioned crops, commercial vegetable production within the bottom land contributes much to the local economy. Vegetables that are being produced include cabbage, cucumbers, peas, sweet corn, Irish and sweet potatoes, tomatoes, peppers, and squash. Hay yields about 1.5 tons per acre in the upland under average management.

In recent years, land values have sharply increased in the watershed. The average value of land and buildings in 1969 was $46,140 per farm according to the 1969 Census of Agriculture, Section 2. The value of agricultural land varies according to the location and the intended land use. The value ranges from about $200 per acre in the upland to $500 per acre in the bottom land.

The value of all urban land in the watershed has also shown a sharp increase in the past 10 years. The present value of undeveloped urban land is about $2,000 per acre with little variation between upland and bottom land.

Van Buren and Fort Smith serve as the main trade centers for the residents of the watershed and the surrounding areas. These centers offer facilities to satisfy any need for rail, air, water, or truck transportation. Two railroads, the Missouri-Pacific and the St. Louis-San Francisco, furnish the rail transportation. There are 24 commercial flights in and out of the Fort Smith Municipal Air Terminal daily. Five bus companies and fifteen trucklines maintain home or division offices in Fort Smith and provide nationwide service. Barge transportation is available on the Arkansas River.

The road system serving the interior of the watershed consists of about 20 miles of highways, excluding city streets, and 50 miles of gravel all-weather roads. The 20 miles of highways include about 8 miles of interstate system and 12 miles of state and county highways. This network of roads provides easy accessibility to any point within the watershed.

With the help of various organizations both in Van Buren and Fort Smith, several new industrial plants have located in the area. In 1970, there were 250 manufacturing plants employing 16,600 workers, which is 28 percent of the labor force.

In 1970, the Van Buren labor area showed an unemployment rate of 10.8 percent. Agricultural employment decreased from 13 percent in 1960 to 7 percent in 1970. In 1970, the per capita income in Crawford County was $2,094. Crawford County is eligible to receive assistance under the Public Works and Economic Development Act of 1965 in the form of grants and small business loans.

Crawford County is one of six counties comprising the Western Arkansas Planning and Development District. This district was formed so that projects with a multi-county effect could be planned, sponsored, and initiated.

Crawford County is included in the Arkansas River Valley Resource Conservation and Development Project. This project encompasses an eight-county area and was established under the provisions of Title I of the Food and Agriculture Act of 1962. This project provides federal assistance for projects in the multi-county area that will conserve, improve, develop, or more efficiently utilize land, water, and other natural resources.

Recreational Resources

The Arkansas River is available for activities such as boating, fishing, limited swimming, and waterskiing. A 10-acre private lake just north of Van Buren provides fishing on a user-fee basis. Lake Fort Smith, 20 miles north of Van Buren, consists of a 438-acre municipal water reservoir and a 15-acre state park, but swimming and skiing are prohibited.

Shores Lake, 30 miles northeast of Van Buren, is a U. S. Forest Service lake of 82 acres which was constructed for recreation. Swimming, boating, and sanitary facilities are available. Sugarloaf Lake, 30 miles south of Van Buren, is an Arkansas Game and Fish recreation lake of 334 acres and is one of the most heavily fished small lakes in the state. Boat docks, nature trails, picnicking, and sanitary facilities are available. The city park and two city-owned playgrounds, of 3 acres each, provide land-based recreational facilities. These facilities include two ball parks, picnic tables, rodeo arena, playground, minature golf, minature zoo, country club, boys' club, and a swimming pool (See Appendix C-3). The A 116-acre privately owned hunting and fishing club includes part of the wooded swamp near Hollis Lake.

Archeological and Historic Resources

The Butterfield Stage Line passed through Van Buren and crossed the Arkansas River there. Traces of Indian artifacts on the sand ridges in the bottom land south of Van Buren indicate habitation by Indians. The Arkansas Archeological Survey, under a cooperative agreement with the Soil Conservation Service, prepared a preliminary report on the archeological resources of the watershed. The archeological resource base for the watershed area is relatively unknown. Archeological research in this portion of Arkansas has been minimal and the general culture history of the region is defined primarily in reference to archeological research conducted in other areas of Arkansas and in surrounding states. Presently, there is no synthesis of the prehistory of west-central Arkansas.

The most intensive archeological survey of the western Arkansas River Valley (within the State of Arkansas) was conducted in 1965 within the area now inundated by Ozark Reservoir near the Town of Ozark, Arkansas (Hoffman 1965). Fifty-nine prehistoric sites were identified and recorded. Based on information provided by this survey, a tentative, general culture history for the area was projected. The summary of the aboriginal occupation of the Ozark Reservoir area (Hoffman 1965: 75-84) was based somewhat on earlier research conducted at the Tom's Brook shelter, north of Clarksville, Arkansas (Bartlett 1963).

Hoffman's summary outlines the known prehistoric occupation of the area with reference to the artifact types found or reported. The general summary is presented below by stages and substages (Hoffman 1965: 75-84).

Paleo-Indian (12,000 - 9000 B.C.)

There is no positive evidence for occupation in the area during the Paleo-Indian stage. Allegedly, a point similar to a Clovis point was found near Frog Bayou, but this find was not documented.

Archaic 1 (8000 - 5000 B.C.)

This substage was represented only by scattered surface finds of Dalton points. All of these occurred on upland sites situated on high terraces.

Archaic 2 (5000 - 2000 B.C.)

This substage is characterized by Big Sandy and Johnson projectile point types (Bartlett 1963). No Johnson points were found during the Ozark Reservoir survey. Possible Big Sandy points were found at only two sites, both located in the uplands.

Archaic 3 (2000 - 1000 B.C.)

The Archaic 3 substage is defined on the basis of corner-notched (Williams and Bulverde) points and contracting-stemmed (Gary and Langtry) points. This substage in the Ozark Reservoir area was represented at 39 sites. This is the first extensive occupation for which there is evidence. The sites occurred both in the uplands and lowlands. In the lowlands the sites were located primarily on old natural levees. In the uplands the sites were situated on the edges overlooking the Arkansas River Valley.

Early Ceramic (The Gober Complex) (1000 B.C. - A.D. 700)

The three artifactual hallmarks of the Gober Complex are the narrow pointed-stem Gary projectile point, clay-tempered pottery, and the argillite spade. Sites of this complex were located in the bottomlands on natural levees or, as in one case, on a slight erosional terrace surrounded on three sides by streams.

Late Ceramic (The McClure Comples) (A.D. 700 - 1700)

There are two diagnostic artifacts of the McClure Complex. These are arrow points and shell-tempered pottery. The arrow point types definitely associated with the complex are the Fresno and Reed types, plus two unnamed types--a long isosceles triangular type and a leaf-shaped stemless arrow point with convex sides and a straight or rounded base. McClure Complex sites generally occur in the lowlands.

It should be apparent from the above outline that knowledge of the archeological resource base of west-central Arkansas is minimal. While the sequence of prehistoric occupation in the area is generally known, information pertaining to particular stages of occupation is lacking. There has not been adequate archeological research in the region to even document the overall culture history.

The Arkansas Archeological Survey's reconnaissance of the watershed in the areas to be directly affected by the structural measures resulted in the identification of nine sites, three of which were historic and six that were prehistoric.

The number, name, and a brief description of each of these sites follows:

3CW81 (Stevenson Site #1)

This is the site of a log cabin built in 1837 by James Graham Stevenson. The cabin was used as headquarters by Confederate General Price during his retreat from the Battle of Pea Ridge in northwest Arkansas. Price's Confederate Company camped along Flat Rock Creek before crossing the Arkansas River.

Physical evidence of the site does not exist and no materials were collected.

3CW82 (Stevenson Site #2)

This is an historic dwelling built in 1854 by James Graham Stevenson. Stevenson, a Civil War veteran (Union Army), was Mrs. T. J. Garner's great grandfather. The frame and front of this structure are made from hewn logs, a couple of which are 30 feet long. The house is still in good condition and is presently occupied.

No materials were collected from this site.

3CW83 (Garner Site)

This is an area of a high second terrace above a tributary of Flat Rock Creek which yielded concentrations of lithic debris (mostly flakes) and several other nondiagnostic artifacts. It was reported that over the last 50 years, a good many large projectile points had been collected from the area. This suggests that the site may be Archaic. A salt lick was reported to exist within a half mile of the site.

3CW84 (Garner Cemetery Site)

This is an area yielding chert flakes and large projectile points according to Mrs. T. J. Garner. Survey of the area only produced a couple of chert flakes. The site is situated on a high second terrace above Flat Rock Creek. The site may be Archaic. A salt lick was reported to exist within a half-mile of the site.

3CW85 (Slate Branch Site)

This site was poorly defined solely on the basis of a couple of chert flakes and one nondiagnostic chert tool. In addition, several historic ceramic sherds were found in the area. The site is located in a primary stream terrace above Flat Rock Creek. It was reported that a spring used to exist in the immediate vicinity.

3CW86 (Vinsett Site #1)

This is the area of a widely dispersed concentration of lithic materials situated on a second terrace on the eastern side of Flat Rock Creek. The materials collected include chert cobbles, flakes, and a couple biface fragments. No diagnostic artifacts were collected. The site may be Archaic.

3CW87 (Vinsett Site #2)

This is the area of a relatively dense concentration of lithic materials situated on a second terrace on the eastern side of Flat Rock Creek. The materials collected include chert cobbles, flakes, biface fragments, scrapers, a hammerstone, and several broken projectile point fragments. None of the artifacts were diagnostic. The site is probably Archaic.

3CW88 (Vinsett Site #3)

This site was defined solely on the basis of one chert flake and one non-diagnostic chert biface. The site is situated on the crest of a high hill on the eastern site of Flat Rock Creek. The site may be Archaic.

3CW89 (Railroad Site)

This is a 300-400 meter square area scattered with stoneware ceramics, old bricks, pieces of metal, and fragments of slate or coal. The soil of the site is stained grey, possibly due to coal. A couple of chert cobbles were found but their prehistoric affinity is questionable. This is the probable location of an old railroad station or similar facility. A modern railroad is nearby. The site is located on the eastern bank of Town Branch.

Based on the land forms with which the above sites were associated, it is within reason to suggest that they were occupied during the Middle or Late Archaic periods.

None of the properties listed in the October 1974 report supplied by the State Historic Preservation Liaison Officer are located in the watershed.

Soil, Water, and Plant Management Status

Most of the needed land use changes have been made during the last 20 years; that is, most of the marginal cropland in the upland part of the watershed has been converted to permanent vegetation. Woodland in three areas totaling 145 acres has been converted to cropland. Urban sprawl, in and around Van Buren, has engulfed considerable acreage in the vicinity of the watershed flood plain. Based on a continuation of this trend, it appears likely that urban uses will encroach on the flood plain in the future even without the project. Forest land acreage in the watershed is static now, and any decrease in this acreage is expected to result primarily from urban expansion on about 80 acres.

The conservation land treatment measures in the upland have changed with the changes in land use. The changes on the marginal cropland have been from conservation treatments necessary for farming, such as stripcropping, contour farming, and crop rotation to those treatments needed for permanent cover, such as tree planting, pasture planting, controlled grazing, rotational grazing, livestock water development, and wildlife habitat development.

Crops, such as cotton, alfalfa, and vegetables, that are severely damaged by flooding or that have high capital inputs are not grown in the frequently inundated flood plain. This area is usually used for soybean production.

Woodland is in a state of deterioration as a result of many years of neglect, indiscriminate burning and grazing, and destructive logging practices. While most of the damage occurred years ago, these poor woodland conditions are perpetuated on most of the tracts by present neglect and abuse. Examination of the forested areas showed that 40 percent has moderate to severe grazing damage.

The watershed is served by the Crawford County Conservation District. Assistance is provided to the district by the Soil Conservation Service field office at Van Buren, Arkansas. The conservation district has about 60 cooperators who manage 44 percent of the nonurban land in the watershed. Basic conservation plans have been developed for 55 cooperators and cover 41 percent of the nonurban land in the watershed.

The applied conservation measures represent an expenditure of $163,695, which is 42 percent of the total land treatment needs in the watershed. About 44 percent of the cropland and 64 percent of the grassland have been adequately treated.

Forest fire protection is available through the Arkansas Forestry Commission in cooperation with the U. S. Forest Service through the Clarke-McNary Cooperative Fire Control Program. Other available cooperative federal-state forestry programs include forest management, reforestation, general forestry assistance, and insect and disease control.

WATER AND RELATED LAND RESOURCE PROBLEMS

Land and Water Management

Proper conservation land treatment practices are difficult to apply in areas where excess water problems exist. Conservation cropping systems that include water-intolerant crops cannot be practiced on about 50 percent of the flood plain because of the flood problem. Crop residue management is difficult because the floodwater can cause drifting or removal of crop residues before they are incorporated into the soils. Some of the problems in land management caused by excess water are delayed cultural practices, such as preparing the seedbed, planting, and cultivating; increased production costs because replanting is often necessary; unharvested mature crops; and decreased quality of farm products.

The lag in the application of land treatment measures in the upland can be attributed to the large number of small ownerships that are primarily rural residences. This group does not depend on farming for their total income.

Farming may be an income supplement or it may be only a hobby. On these farms, woodland protection and improvement and proper grazing are the practices most needed. Also, the marginally suited soils that are cultivated need to be converted to permanent vegetation. Reforestation is needed on 900 acres for the use of land within its capabilities.

Floodwater Damage

The 100-year frequency flood would inundate 1,030 acres and would cause an estimated $740,000 direct damage to the 167 urban properties that are subject to flooding. The location of the urban flood plain is shown on the Urban Flood Plain Map (Appendix C-1). As forest land, grassland, and idle land are altered by urbanization, runoff will increase, thus tending to increase flood stages and floodwater damages.

For purposes of evaluation, the flood plain was divided into five reaches which are located as follows:

Reach I: Town Branch - Hollis Lake to the Missouri-Pacific Railroad.

Reach II: Town Branch - Missouri-Pacific Railroad to Multiple Purpose Structure Number 1.

Reach III: Flat Rock Creek - Hollis Lake to Interstate 540.

Reach IV: Flat Rock Creek - Interstate 540 to Missouri-Pacific Railroad.

Reach V: Flat Rock Creek - Missouri-Pacific Railroad to Structure Number 2.

Reach II contains only 62 acres of flood plain or about 6 percent of the watershed flood plain. This acreage consists of urban properties along Town Branch in Van Buren. Nonagricultural damages in this reach depend on flood depth. Flooding occurs frequently in this urban area.

The damages result from shallow (less than 5 feet) first floor flooding to industrial, commercial, and residential properties. Carpets, furniture, unsealed foods, vehicles, lawns, gardens, garages, storage buildings, lawnmowers, appliances, wood flooring, air conditioners, floor furnaces, basements, wall paneling, sheetrock, clothing, machinery, tools, supplies, and lumber are examples of items that are damaged by water and sediment when these properties are flooded.

Reaches I and III contain 242 acres and 423 acres of the flood plain, respectively. The combined acreage in these reaches constitutes 65 percent of the entire flood plain in the watershed. These reaches suffer frequent flooding with three to four damaging floods occurring each year. Nevertheless, both reaches are used intensively for agricultural production. About 86 percent of the flood plain in these two reaches is used for crop production and the balance is used for grassland and miscellaneous uses. The frequent flooding results in severe crop and pasture damages. Crops are damaged by delayed planting, inundation, oxygen deficiency in root zone, increased weed competition, decreased quality of crops, scour, and sedimentation.

Reach IV (184 acres) and Reach V (119 acres) are similar and contain 29 percent of the total watershed flood plain. Flooding is frequent with an average of about two floods annually. The valley is narrower in these reaches than it is downstream and the soils are not well suited to crop production. This accounts for the less intense land use in these reaches with cropland occupying about 46 percent of the flood plain. Grassland and miscellaneous uses account for the other 54 percent.

The variations among reaches, with regard to land use and intensity of production, are reflected in the damageable values and floodwater damages. The following table presents, for the agricultural reaches, the estimated per-acre value of flood-plain production; the average annual crop and pasture damage per acre; and the average annual flood damage as a percent of the value:

Reach	Location	Damageable Value Per Acre (Dollars)	Annual Crop and Pasture Damage Per Acre (Dollars)	Percent Annual Damage Per Acre
I	Town Branch - Hollis Lake to Missouri-Pacific Railroad	143.00	16.15	11
III	Flat Rock Creek - Hollis Lake to Interstate 540	165.00	30.44	18
IV	Flat Rock Creek - Interstate 540 to Missouri-Pacific Railroad	88.00	19.13	21
V	Flat Rock Creek - Missouri-Pacific Railroad to Structure Number 2	66.00	3.61	5

The other agricultural damages experienced in the watershed are relatively minor and consist of fence damages in Reaches IV and V. There are no other agricultural damages in Reaches I, II, or III.

Major floods are defined as those which overflow 50 percent or more of the area inundated by the 100-year flood. The severity of flooding in the agricultural reaches (I, III, IV, and V) is substantiated by the fact that the 2-year frequency flood inundates 49 percent of the entire flood plain in these reaches. Of the total agricultural damages produced during the 100-year evaluation period, the majority are caused by small frequent floods. Floods up to and including the 2-year frequency account for approximately 76 percent of the total agricultural damage from all floods.

A typical major flood occurred in April 1964. This flood approximated the 25-year frequency event and inundated about 880 acres of the flood plain. This flood occurred when direct crop damage was minimal except to winter small grain which is susceptible to flood damage in April. Land preparation for soybeans was delayed as much as three weeks but some of this delay would have resulted from the rain and poor surface runoff even if overbank flooding had not occurred. About 5 percent of the damages were agricultural and about 95 percent were nonagricultural and indirect. The total damage caused by this flood is estimated to be $501,400 of which $415,000 was damage to urban properties.

The average annual floodwater damages amount to $189,280 of which $144,780 is nonagricultural.

Indirect damages that occur as a result of actual or threatened flooding include the interruption of travel; loss of income by workers who commute; loss or delay of sales by local merchants; and the additional time, distance, cost, and general inconvenience associated with marketing farm products; delivering mail and transporting children to school. Indirect damages also occur in Van Buren when families evacuate their homes during a flood threat; however, the chance of floods severe enough to cause a direct hazard to human life in Van Buren is considered insignificant. The cost incurred by businessmen during a flood threat to move or elevate merchandise is an indirect damage.

Erosion Damage

Erosion damage is a minor problem in the watershed. Moderate to severe erosion exists only on small, isolated areas. Sheet erosion, which is 88 percent of the gross erosion in the watershed, has a rate of 2.2 tons per acre. This rate will not reduce long-term soil productivity. Roadside erosion is 9 percent and streambank erosion is 3 percent of the gross erosion in the watershed.

Sediment Damage

Although erosion rates are not excessive, sediment from the watershed, through normal geologic processes, is gradually destroying Hollis Lake and the wooded swamp surrounding it. At the present erosion and sedimentation rates, Hollis Lake is receiving an average of more than 13.5 acre-feet of sediment per year. The depletion rate of the lake is 1.8 percent per year, resulting in a projected life expectancy of about 55 years. Hollis Lake is in the last stages of its usefulness as a fishery habitat and is significantly damaged by sediment deposition. The average sediment concentration in the lake is about 450 mg/l.

Drainage Problems

About 600 acres of the soils in the watershed were classified as poorly drained. The drainage problems have been adequately solved on most of these areas. The remaining need for drainage is limited to onfarm needs and can be alleviated by accelerating programs presently available.

Recreation Problems

The Arkansas Statewide Comprehensive Outdoor Recreation Plan, 1969, shows that swimming, boating, picnicking, and other recreation facilities are not adequate in the vicinity to meet the needs of the local residents. The 75,000 residents of Van Buren and Fort Smith are among the potential users of recreational resources in the watershed. The City of Van Buren is interested in developing additional recreational facilities such as, bridle paths, nature trails, fishing, skating rink and an amphitheater.

Plant and Animal Resource Problems

The major fish and wildlife resource problems center around sediment deposition in Hollis Lake. The water control outlet for the lake is as high as feasible; therefore, the only way to protect the lake and surrounding wetland is to reduce the rate of sedimentation.

There is need for management of selected areas throughout the watershed for wildlife purposes and the improvement of wooded areas for wildlife improvement. There is a need for maintaining woody habitat along watershed streams because this represents unique habitat in the watershed.

Water Quality Problems

Town Branch is an ephemeral, polluted stream, typical of small urban tributaries. The waste from two food-processing plants collects in small pools in Town Branch and causes unsanitary conditions. Van Buren is currently constructing a secondary treatment plant consisting of two

digestors and a lagoon. The lagoon will have a pumping plant to discharge non-septic liquid into the Arkansas River. The project is to be completed in the early part of 1975. Damaged sewer lines in Van Buren are being repaired or replaced as the City has money to do this work. Only one industry is discharging any waste into the Van Buren sewer system and they are planning to install a system to handle their solid waste but they will continue to discharge liquid waste into the Van Buren's system. The elimination of waste discharge into Town Branch and the creation of a constant gradient ditch bottom would help alleviate the problems.

Economic and Social Problems

Even though many jobs have been created in the industrial segment of the economy, the problems of unemployment (10.8 percent) and underemployment continue to plague the local economy.

Income levels can also be cited as evidence of the poverty-stricken economy. In 1970, the per capita income in Crawford County was $2,094 which compares to the state average of $2,642 and the national average of $3,687.

The low incomes are detrimental. The purchasing power of individuals and families is limited. The tax base is reduced which, in turn, limits the revenue available to finance community facilities and development projects that will benefit the public in general.

There is a high degree of awareness of the need for expanding the economic opportunities and improving the social welfare of the residents of the area, as evidenced by the establishment of the following: (1) Arkansas Valley Resource Conservation and Development Project, (2) Crawford County Development Council, (3) Western Arkansas Planning and Development District, and (4) the Ozarks Economic Development Region.

ENVIRONMENTAL IMPACT

Conservation Land Treatment

Application of conservation land treatment measures and the planned forest land treatment measures will markedly reduce the runoff, erosion, and sediment in the watershed and will also enhance recreation, wildlife, and wood-production values. Well-managed forests will contribute significantly to the aesthetic and environmental aspects of living in the watershed.

Conservation land treatment measures in the uplands, particularly proper grazing of grasslands and restricted grazing of woodlands, in addition to wildlife habitat development, will significantly add to the wildlife population.

Sheet erosion will be reduced 32 percent to an average annual rate of 1.5 tons per acre. Sediment deposition in Hollis Lake from the watershed will be reduced from 1,350 acre-feet to 788 acre-feet resulting in a reduction of 42 percent or 562 acre-feet during the life of the project.

Sediment yield will temporarily increase during construction but sediment traps will contain the bulk of this sediment. Through the combined program of land treatment and structural measures, the installed project will reduce the sediment yield to 7.5 acre-feet per year. This project will extend the life expectancy of Hollis Lake about 40 years.

The installation of planned land treatment measures on the 4,714 acres of cropland will: (a) reduce erosion and resultant sediment, which will have an indirect effect on lessening the loss of pesticides, insecticides and chemical nutrients that commonly ride "piggy-back" on moving soil particles; (b) permit improved cropping patterns and systems by making it possible to grow a wider variety of crops. This will help alleviate or eliminate the growth of weeds and insects common to one or two crop agriculture, thereby lessening the need for herbicides; (c) the control or elimination of flooding, along with items (a) and (b) above, will lessen the spread of weed seeds and insects, thereby causing less use to be made of herbicides and insecticides. It will also bring about an improvement in soil tilth and increase the production and decomposition of crop residues, which will bring about increases in crop yields that are now being obtained by increased use of chemical fertilizers.

Lesser amounts of fertilizer, pesticides, and herbicides will be removed from the areas where flooding and erosion are reduced. Pionke and Chesters concluded that, "downstream loss of the absorbed pesticide can be prevented by controlling erosion from croplands or trapping the 'host' sediment." (J. Environ. Quality, Vol. 2, No. 1, 1973, pg. 41) Nitrate nitrogen moves freely with the water in the soil. The movement of nitrogen into the ground water will be reduced by shortening the duration that floodwater remains on the soil.

Parker (Crops and Soils, Nov. 1972, pg. 10) states that, "Since nearly all phosphate is bound severely in the soil, about the only way to lose it is by removal of the soil. Thus, erosion presents the greatest potential for loss of phosphate. The obvious solution is management that prevents erosion."

Onfarm drainage will be improved by the installation of mains, laterals, field ditches, and land smoothing under land treatment. All of the flood plain will have improved drainage because of reduction in floodwater and improved drainage systems that will be installed on areas where flooding frequency is reduced.

The 25 farm ponds to be constructed as part of the land treatment measures will provide fishing and recreation resources to local residents.

Structural Measures

The project will provide direct flood reduction to 30 farms, 16 commercial properties, 4 industrial properties, and 147 residential properties on the 1,030-acre flood plain. Properties that will receive damages after the project is installed include 1 industrial property and 11 residential properties. Damage in Town Branch from a 100-year frequency storm will be practically eliminated.

The average annual area flooded is the accumulative number of acres of land inundated by each expected flood in a 100-year period divided by 100. The following tabulation shows the expected effect that the project will have on the average annual area flooded by reaches, which are shown on the Project Map, Appendix C-2.

Reach Number	Location	Average Annual Acres Flooded Without Project	Average Annual Acres Flooded With Project	Percent Reduction
	Town Branch Unit			
I	Hollis Lake to Missouri-Pacific Railroad	174	3	98
II	Missouri-Pacific Railroad to Structure Number 1	39	0	100
Subtotal		213	3	99
	Flat Rock Creek Unit			
III	Hollis Lake to Interstate 540	396	135	66
IV	Interstate 540 to Missouri-Pacific Railroad	119	41	66
V	Missouri-Pacific Railroad to Structure Number 2	38	2	95
Subtotal		553	178	68
TOTAL		766	181	76

The average annual area flooded will be reduced 76 percent in the watershed with 99 percent reduction on Town Branch and 68 percent reduction on Flat Rock Creek. The average annual area flooded in Reach II, the urban reach of Town Branch, will be less than one-half acre. The project will virtually eliminate the flooding and damages that occur in the Town Branch unit. The frequency at which flooding begins will be reduced from four times per year to one time in 17 years. The 100-year frequency flood will continue to flood about 14 acres. No buildings are in the area that would be flooded by a 100-year flood. The area that will be flooded is shown on the Urban Flood Plain Map, Appendix C-1.

On Flat Rock Creek, the area flooded by the 1-year frequency flood will be reduced from 225 to 19 acres. The area flooded by the 100-year frequency flood will be reduced 33 percent.

The area inundated by the April 1964 flood, a 25-year event, would have been reduced 47 percent and the total damage from this flood would have been reduced 96 percent. The variation between the reduction in area inundated and reduction in damages results from the high level of protection provided in the urban area where 87 percent of the watershed flood damages occur. The total reduction in damages of about $481,400 for this flood represents a benefit of about $60 for each of the 8,000 watershed residents.

Flood protection provided by the project will allow farmers to intensify farming operations in the protected area by using conservation cropping systems, including crop rotation. A two-crop system of small grains followed by soybeans and increases in acreages of vegetables and alfalfa are expected where flooding is reduced.

Timely planting and harvesting of crops will produce higher yields with improved quality. Production costs will be decreased because of efficient planting operations and weed and insect control.

A 100-year level of protection will be provided to about 330 acres of urban land. This protection will greatly enhance the potential for industrial development.

About 80 acres of the flood plain south of Van Buren are planned to be converted from cropland to industrial use. The land has been in the industrial park for some time but continued flooding has prevented its development. These enhancement benefits were estimated to be $66,000 annually.

Structure Number 2 will have 31 surface acres and the ungated orifice will provide a prolonged low flow in Flat Rock Creek. The low-flow augmentation feature will result in more running riffle areas during normal dry periods. This will stabilize habitat for fish species such as riffle darters and stonerollers. A continual inflow of oxygenated water will help insure a continual level of dissolved oxygen within the tolerances of adapted stream organisms within the pools.

During periods of extended drought, the storage set aside for the low flow will be depleted and the device will cease to flow. As sediment accumulates above the orifice outlet, the storage will be depleted and the flow will cease more often. The trend, however, will be toward the natural or present condition. When the low flow plus evaporation lower the water level to below the orifice, subsequent inflow would have to raise the water level back up to the orifice before outflow would occur.

During the period when the clearing and debris removal is being accomplished, the fishery habitat will be temporarily disturbed but it will recover when the construction is completed. Secondary plant succession will begin immediately. This plant community will provide habitat for some species of wildlife. Debris removal will decrease stream shelter, an important component of fish habitat. Sediment deposition will cover spawn and fish nests.

Fish and wildlife habitat will be lost to the floodwater retarding structures. However, relative to the miles of stream fish habitat and acres of wildlife habitat within the watershed, the habitat lost to the floodwater retarding structures is very small. The two sediment pools will provide lentic (standing water) habitat. This will not be replacement in kind; however, a new habitat type will be created.

The 26 acres committed to the dam and spillways will not be lost as wildlife habitat. For the life of the project the 26 acres will be committed to grassland, such as weeping lovegrass and sericea lespedeza.

Environmental effects will also be realized in the lower portion of the watershed by prolonging the life of Hollis Lake by about 40 years. The wooded swamp which surrounds Hollis Lake will continue to be an excellent wetland habitat. Sediment delivered to the lake will be reduced 42 percent and the long-term average annual sediment concentration will be reduced 44 percent.

The 11-acre recreational lake at Multiple Purpose Structure Number 1 will be used intensively and will add to the living quality of the area. Approximately 200 people will use the lake on peak use days. The following tabulation shows the projected annual use of the recreational water and surrounding area:

Recreational Use	Visitor-Days per year
Sightseeing	6,000
Fishing	800
Picnicking	3,000
Boating	500
Frog Gigging	50

The aesthetic and scenic values in the watershed will be improved by converting the present unsightly ditch through Van Buren to one that is landscaped and designed for aesthetic values. Landscaping of the areas around the two structures will also improve the aesthetic and scenic value.

Travel within the City of Van Buren will be temporarily disrupted; this will involve detours of a few blocks during the construction of the concrete-lined channel. All developed recreational facilities are accessible from the west side of the city park and construc-

tion activities will not interfere with the use of the facilities.

There will be noise pollution in the park and surrounding area associated with the construction work. The difference in the effect of the noise at different periods on recreation is small compared to all environmental effects considering different periods of the year.

Certain social adjustments will be required of the family that is to be relocated due to project measures. The impact of these adjustments will be minimized with help and understanding from the local sponsors. A comparable replacement dwelling giving full consideration to the desires and needs of the family involved will make the adjustments minor and the period of adjustment short.

Nonstructural Measures

The Arkansas Archeological Survey's reconnaissance of the watershed resulted in the identification of one historic site and one prehistoric site that will be directly affected by the installation of structural measures. Archeological sites may be inadvertently disturbed and may be totally or partially destroyed during salvage operations.

Economic and Social

The project will serve as an immediate stimulus to the local economy by providing new employment opportunities. The employment multiplier was used to measure the total effect of creating additional employment. The multiplier was derived from the occupational classifications of the employed labor force. Basic data for estimating the number of jobs created by the project were obtained from OBERS projections and from U. S. Census of Population, Arkansas, 1960.

The analysis indicates that 80 new jobs will be created by providing employment opportunities for local labor during the construction period. Also, there will be 95 new jobs, associated with basic and derivative industries, that will continue after construction is completed. This effect of the project is particularly significant due to the high rate of unemployment and underemployment in the local area. The use of local labor for operation and maintenance of the project will provide a continuing favorable effect on the local economy. Loss of agricultural production in the pool area will cause a minor loss of agricultural income.

Additional income will be received by the laborers employed during construction and by farmers from the increased sales of farm products as a result of damage reduction and agricultural enhancement. The increased purchase of items or services required to produce and market

the expanded production represents new income to local farm supply dealers, transporters, and processors. The urban enhancement resulting from flood protection will provide landowners, developers, building material suppliers, and laborers with added income.

The new income will generate additional consumer expenditures for basic necessities, items which improve their standard of living, and other goods and services. These expenditures will initiate a chain of spending whereby each successive recipient spends a portion of the amount received. Business activity in other sectors of the local economy will increase as this new income is spent and respent. Also, more employment opportunities will be provided in these sectors.

The improved economic climate will enable the community to better support new or improved schools, parks, roads, health facilities, and other public projects that will add to the enjoyment of life.

Knowledge of the protection afforded by the project will give the residents a greater sense of security. Families can offer their children greater incentives to continue their education and remain in the community.

The various effects of the project will contribute to the economic goals of the Arkansas Valley Resource Conservation and Development Project, the Crawford County Development Council, the Western Arkansas Planning and Development District, and the Ozarks Economic Development Region.

In essence, the project will have an impact on the economic growth and development in the region.

FAVORABLE ENVIRONMENTAL EFFECTS

Flooding will be reduced 76 percent.

Sediment will be reduced 42 percent and erosion will be reduced 32 percent.

Flows will be prolonged so that Flat Rock Creek will cease to flow only in periods of extreme drought.

The life of Hollis Lake will be increased 40 years by the reduction in sediment.

The reservoirs will provide 42 surface acres of water, including 11 acres for recreation.

The economic climate of the general area will be improved by providing new employment opportunities, creating additional income, and increasing business activity.

ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

Clearing and debris removal will disrupt fish and wildlife habitat during the construction period.

Sediment will be increased during construction.

A loss of agricultural income will result from the loss of production in the sediment pool of Floodwater Retarding Structure Number 2.

Relocation of one family dwelling.

Archeological sites will be partially damaged during salvage operations and sites that have not been located may be totally destroyed during construction.

ALTERNATIVES

The alternatives to the proposed project that were considered are as follows: (1) an accelerated program for watershed protection by applying land treatment measures, changing land use, and zoning and insuring urban areas; (2) accelerated land treatment measures and two floodwater retarding structures; (3) accelerated land treatment measures and channel work; (4) levees and floodways; (5) recreational development at Hollis Lake; and (6) no project.

Alternative (1) consists of accelerating the application of conservation land treatment measures described as part of the proposed project; converting the agricultural land that is damaged most in the flood plain to uses with lower damageable values such as wildlife and recreation, forest land, or pasture; and zoning and insuring urban areas. Land treatment measures would reduce flooding about 3 percent and would reduce associated damages about $1,830 annually. Sheet erosion would be reduced about 32 percent or to an average annual rate of 1.5 tons per acre.

Changing land use of the 660 acres of cropland in the flood plain to uses such as wildlife and recreation, forest, or pasture would eliminate the damages to cropland and would significantly reduce the $21,000 average annual floodwater damages to agriculture. The average annual loss in agricultural income is estimated to be $85,000. Changing the land use in the urban developed area would involve 16 commercial properties, 4 industrial properties, and 147 residences. Estimated cost of this change is $15,000,000. The combined programs of zoning and flood insurance for the urban area would not relieve the flood damages to properties presently in the flood plain but would compensate for dollar damage. The annual cost for this protection is estimated to be $150,000. Indirect

damages would still exist. Flood insurance costs would be greater than the flood damage. Zoning, so that new development in the flood plain could be restricted, would prevent increasing flood damage. This alternative would have no adverse effects from floodwater retarding structures or channel work.

Alternative (2) provides for accelerated land treatment at an estimated cost of $75,000 over the entire watershed with all the needed treatment being applied to 10,500 acres during the installation period. The details of the land treatment measures are discussed as part of the proposed project. Structure Number 1 would provide some reduction in damages to the upper portion of Reach II but would have little effect on flood damages in the lower portion. Floodwater retardation by Structure Number 2 would not provide the needed level of protection for the Flat Rock Creek flood plain. The adverse environmental impacts associated with the proposed channel work would be eliminated. The average annual cost of the structures, including water storage for recreation in Structure Number 1, and land treatment, would be about $53,200 and the benefits would be $22,000. The amount of land required for this alternative would be practically the same as for the proposed project.

Alternative (3) involves accelerated land treatment measures with channel work. The entire watershed would receive accelerated land treatment measures with all the needed treatment being applied to 10,500 acres during the installation period. The channels would have to be enlarged sufficiently to carry the peak flows for the needed level of protection. This would necessitate both widening and deepening the channels and the removal of all the habitat from one side of the creeks if the present alignment were followed. If the channels were offset, the habitat would be undisturbed but the amount of new land required for the channels would be prohibitive.

Both the enlargement of the existing channel or the construction of a new channel would increase sedimentation in Hollis Lake during construction but overall there would be a reduction. Channel work along Town Branch and Flat Rock Creek would cost about $3,300,000 and would require about 40 acres of land. The needed recreational resource would remain undeveloped.

Alternative (4) consists of construction of levees and floodways in Van Buren; this would require considerable land and the relocation of several properties. Street crossings would need to be raised to go over the levees; also, ditches and pumping plants would be required to remove excess runoff water from the landside of the levees. The costs would be high because of the need to purchase developed urban land for right-of-way. The environment in the floodway in Van Buren would be similar to the present conditions. However, the levees could be developed to

provide wildlife habitat for a few species such as birds and rabbits. The levees would limit the view of nearby residents but would have the advantage of screening the unsightly ditch that is present.

Floodways along Flat Rock Creek would require several hundred acres of agricultural land for levee construction, borrow areas, and the floodway. Sediment deposition would be increased into Hollis Lake from the levees and borrow areas. The confinement of all flows to the area between the levees would drastically change the ecological balance along lower Flat Rock Creek. The cost of this alternative was not estimated because of the environmental effects and the large amount of land that would be required.

Alternative (5) involves the proposed construction of a recreational development at Hollis Lake. This was recommended by the USDI Fish and Wildlife Service, Bureau of Sport Fisheries and Wildlife. This alternative should not be considered as a substitute for the recreational development at Structure Number 1 but rather as an addition to the plan. The development at Hollis Lake could include nature trails near the shoreline and through the wooded swamp, the development of a green-tree reservoir to attract waterfowl, picnic areas, and boating facilities. The shallowness of the water in the lake would limit its development as a desirable fishery. Mosquitoes and snakes would deter the use of the area during certain seasons and certain times of the day unless special controls were employed. The nature trails would provide a wide variety of plants and animals along the shore and through the wooded swamp. The cost of the alternative would depend on the intensity of the development and the financial support of the sponsors. This alternative could be developed at any time without affecting the functions of the proposed project.

Alternative (6) of no project would include the continuation of the ongoing land treatment program. Some of the land treatment practices would be applied in the upland part of the watershed. Proper grassland and hay management would be encouraged and some of the land unsuitable for cultivation would be converted to permanent vegetation. Conservation land treatment practices in the flood plain will continue with little change. Some relief from flood damage may result from individual or group efforts in installing small levees and drainage ditches. Urban flooding in Van Buren will likely increase and become more damaging as more land in the Town Branch watershed is urbanized. This will result from increased surface water runoff and higher peak flood flows. The City of Van Buren might do some work on Town Branch to improve its appearance and carrying capacity without outside financial aid. Some method of reducing flooding in the industrial development area will probably be installed because the area is ideally located for this purpose except for the flood hazard.

If the proposed project action is terminated or delayed, the average annual benefits which will be foregone are estimated to be $364,910. There would be $210,000 direct benefits foregone in the nonagricultural

portion of the flood plain. This would include losses to residential, commercial, and industrial properties. This also would include losses which would occur because of a lack of urban enhancement possibilities.

A delay or termination of the Flat Rock Creek Watershed Project would hinder the economic development of the area. The contribution this project would make toward expanding economic conditions, providing greater employment opportunities, and creating added income would be foregone.

If the project is not installed, a net annual benefit of $82,560 will be foregone. See Appendix A (Table 6 from the Work Plan) for a comparison of benefits and costs for structural measures.

RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The major land use trends are toward grassland and urbanization. Grassland is expected to be increased by about 740 acres and urban land by about 460 acres during the life of the project. About 200 acres of woodland will be devoted primarily to the production of wildlife and 60 acres will be used primarily for recreation. Decreases in cropland (703 acres), rangeland (397 acres), and woodland (360 acres) are expected.

After the 100-year design life, the structures will have reduced effectiveness in controlling floods and trapping sediment. The effectiveness can be restored by removing the accumulated sediment.

Flood reduction in the City of Van Buren will protect the properties in the flood plain and will allow for some urban expansion; however, urban expansion in the areas that would still be subject to flooding will be discouraged. The industrial development area south of Van Buren is strategically located near railroads, interstate highways, and river barge transportation. The project will protect this area from flooding. Flood prevention in the residential and industrial areas is compatible with future projected uses and development.

The land in the flood plain along Flat Rock Creek has been intensively farmed for many years. The future use of this land is not expected to change significantly. The flood protection and expansion of supplemental irrigation will permit more production. Immediately after the project is installed, farmers will have a wider selection of crops and cropping patterns and will be able to efficiently carry out proper conservation land treatment practices. Farmers will be able to grow various legumes and vegetables which have a greater demand than crops that are presently grown. Acreages of surplus crops will decrease as other crops are introduced.

The long-term effects of the project are compatible with the goals of the Arkansas Valley Resource Conservation and Development Project, the Crawford

County Development Council, the Western Arkansas Planning and Development District, and the Ozarks Economic Development Region.

Flat Rock Creek is in the Lower Arkansas Water Resource Subregion. In the Arkansas portion of the subregion, there are ten PL-566 watershed projects authorized for operations, of which four include part of the Arkansas River alluvium. These four projects are about two or three times as large as Flat Rock Creek Watershed. Four watershed projects have been completed in the subregion in Arkansas and three of these include or are restricted to the Arkansas River alluvium. These three completed projects are about the same size as the Flat Rock Creek Watershed. Considering all the planned and completed watershed projects in the subregion in Arkansas, about 5 percent of the entire area has completed projects and about 15 percent of the area has planned projects. The cumulative effect of these completed and planned projects will significantly retard floodwater runoff, reduce erosion and sedimentation, and will enhance fish and wildlife habitat. Applications for Public Law 566 watershed projects have been made for about one-half of the area in the subregion in Arkansas. If, in the future, these applications are approved and construction is completed, the cumulative beneficial and adverse effects of all the watershed projects on man's environment would be increased proportionally.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

There will be 26 acres of land committed to the dams and spillways and 42 acres to reservoir areas. Other resources committed to the project will include material, labor, equipment, and fuel.

Any archeological values that are inadvertently disturbed by construction will be partially or completely irretrievably lost. Any salvage operations will preserve the data obtained but the site values and any unobtained data will be a committed non-renewable resource of the project.

CONSULTATION WITH APPROPRIATE FEDERAL AGENCIES AND REVIEW BY STATE AND LOCAL AGENCIES DEVELOPING AND ENFORCING ENVIRONMENTAL STANDARDS

General

An application for assistance in solving problems related to land and water resources was made by a group of landowners in March 1965. This application was submitted to the Arkansas Soil and Water Conservation Commission. The Commission approved the application and the project was later given a planning priority by the Governor. The Soil Conservation Service prepared a preliminary report setting forth the project proposal. This report was used by the local group in creating the Flat Rock Creek Improvement Project Area of the Crawford County Conservation District, a legal subdivision of the State Government.

At least six articles concerning the formation of the improvement project area and the project were published in the local newspaper. A public hearing was held on December 4, 1968. Numerous meetings of the steering committee and local and state agencies were held during the planning of the project.

A public informal field level review was held on September 8, 1971. The purpose of the review was to explain the project in detail to the sponsors, the general public, and interested federal, state, and local agencies and to receive comments on the plan.

The Environmental Protection Agency recommended: (1) that green belts be established in the urban area along the channel; (2) that channel alterations be designed to preserve the natural setting with channel and concrete channel construction minimized; and (3) that provisions be made for mitigation of streamflow losses in Flat Rock Creek and Town Branch for the 100-year life of the project.

In regard to the establishment of green belts, a landscape plan will be developed along Town Branch within the urban area. The landscape plan will be implemented as part of this project.

The channel work and concrete construction have been held to a minimum and the establishment of vegetation will be accomplished immediately following the channel construction. The curved channel should also help to give the area a "natural setting" appearance.

Provisions have been made for design features that provide for mitigating streamflow losses in Flat Rock Creek for the life of the project by designing a prolonged principal spillway release in Floodwater Retarding Structure Number 2. It is not feasible to plan a prolonged release for Multiple Purpose Structure Number 1 because of limited storage characteristics within the structure caused by the location of the Van Buren Community Building immediately upstream from the proposed lake. Town Branch is not a live stream and has a relatively small drainage area.

The U. S. Department of Interior Fish and Wildlife Service, Bureau of Sport Fisheries and Wildlife recommended that the channels be designed and constructed so as to minimize the amount of sediment movement and channel degradation that would take place within the watershed. They suggested that every reasonable effort should be made in planning, construction, and operation of the project to prevent further deterioration of Hollis Lake. These recommendations are being followed.

The Arkansas Game and Fish Commission reviewed the plan and concurred in the report of the Bureau of Sport Fisheries and Wildlife.

Dr. Tom Buchanan, Ichthyologist, Westark Junior College, Fort Smith, Arkansas, assisted in fish collections and was consulted on interpretation of results.

The Arkansas Historic Preservation Program provides the Soil Conservation Service with a listing of Arkansas historic places listed in the National Register, places pending inclusion in the National Register, and properties currently under consideration for nomination to the National Register.

Dr. Charles R. McGimsey III, Director, Arkansas Archeological Survey, was notified when the project was authorized on March 17, 1969.

On August 26, 1971, the Survey was sent a copy of the Draft Work Plan and was invited to attend the informal field level review on September 8, 1971.

A cooperative agreement between the Arkansas Archeological Survey and the Soil Conservation Service provided for the state to furnish qualified archeologists, supervision, equipment, and material to perform archeological surveys. The Soil Conservation Service furnished maps, drawings, sketches, and technical specifications of the area to be surveyed and reimbursed the state for performing the archeological survey. The Survey: (1) determined if archeological resources exist within the area committed to the project; (2) recorded, identified, and appraised any located resources; (3) evaluated the impact of project installation of each resource; (4) provided recommendations for mitigation of anticipated adverse impacts; and (5) provided estimates of costs required for mitigation, salvage, or protection. The final report by the Survey was furnished to the Soil Conservation Service in July 1974.

All suggestions and recommendations were reviewed carefully before preparation of the work plan and this final environmental statement.

Discussion and disposition of each comment on draft environmental statement

Comments on the draft environmental statement were requested from the following:

Department of the Army
Department of Commerce
Department of Health, Education, and Welfare
Department of the Interior
Department of Transportation
Environmental Protection Agency
Arkansas Department of Planning, State Planning and Development Clearinghouse
Governor of Arkansas
Arkhoma Regional Planning Commission
Office of Equal Opportunity, USDA
Advisory Council on Historic Preservation
Federal Power Commission

Comments were received from all except the Department of Commerce, Arkhoma Regional Planning Commission, Office of Equal Opportunity (USDA) and the Federal Power Commission.

The Technical Review Committee responded for the Governor of Arkansas.

Comments from the State Planning and Development Clearinghouse included the following:

Arkansas Archeological Survey
Arkansas Department of Commerce,
Division of Soil and Water Resources
Arkansas Department of Pollution Control and Ecology
Arkansas Forestry Commission
Arkansas Game and Fish Commission
Arkansas State Board of Health

Copies of the letters of comments are given in Appendix B.

Department of the Army

Comment: The draft environmental statement is considered to be satisfactory.

Response: None.

Department of Health, Education, and Welfare

(1) Comment: More specific plans should be included in the final environmental impact statement covering:

A. Sanitation and vector control around Van Buren City Park recreation area.

B. Alleviation of waste discharge of food processing plants into Town Branch.

Response: A. Multiple Purpose Structure Number 1 is located in the City Park of Van Buren and adequate sanitary facilities are available in this area.

In order to minimize public health hazards associated with water resource developments, every possible effort will be made to avoid creating conditions which will increase populations of vectors of public health importance.

Practices leading to the prevention and source reduction of mosquito and other aquatic insect breeding sites will include the following:

1. All borrow pits and other potential ponding areas associated with construction of the dam which are located above maximum pool level will be made self-draining.

2. Borrow pits and depressions, which will be flooded by the reservoir at maximum pool level and which would retain water at lower pool levels will be provided with drains to insure complete drainage or fluctuation of water within them.

3. After impoundage, the following maintenance measures will be carried out in all potential mosquito-producing areas located within flight range of human population groups or recreational areas frequented by significant numbers of persons:

   a. All dense vegetation will be removed periodically from flat, protected areas within the normal fluctuation zone of the permanent pool.

   b. Vegetation, debris, and floatage will be removed periodically from all drains to insure free flows.

4. Water level management to minimize conditions favorable for mosquito production will be used to the maximum degree permitted by the primary purposes of the reservoir. This will minimize the need for repetitive measures for controlling vegetation and mosquito production.

Reponse: B. Van Buren is currently constructing a secondary treatment plant consisting of two digestors and a lagoon. The lagoon will have a pumping plant to discharge non-septic liquid into the Arkansas River. The project is to be completed in the early part of 1975. Damaged sewer lines in Van Buren are being repaired or replaced as the City has money to do the work.

Only one industry is discharging any waste into the Van Buren sewer system and they are planning to install a system to handle their solid waste but they will continue to discharge liquid waste into Van Buren's system.

The above information has been incorporated into the final environmental impact statement.

United States Department of the Interior

(1) Comment: We believe the work plan and draft statement could be improved by deleting extraneous material. For example, benefit-cost data should be well documented in the work plan and the method of computation and all reference material should be appended.

Response: The Watershed Protection Handbook and SCS memorandums sets forth the format and content of watershed work plan preparation. This format indicates the minimum detail which is to be covered under the several headings. The above mentioned guides were followed in preparation of the watershed work plan and the environmental statement.

(2) Comment: The draft statement should be an unbiased presentation of environmental information and justification statements or other material which tends to prejudge the decision on the project should be deleted from the statement.

Response: See response to comment number 1 above.

(3) Comment: The draft environmental statement appears to have been developed by duplicating sections of the work plan text and changing subject headings. Such a procedure can lead to a very superficial evaluation of environmental effects. For example, page 29 of the impact statement lists the favorable and adverse environmental effects but they are set forth without elaboration or supportive data.

Response: This duplication is in accordance with SCS guidelines. For example, the "Environmental Setting" section in the EIS should be identical to the "description of the watershed" in the plan.

The two lists "Favorable Environmental Impacts" and "Adverse Environmental Effects", summarize the Environmental Impact Section, and contain only sufficient detail to identify them. Each item in the lists was discussed in detail in the environmental impact section.

(4) Comment: In part 3-11 of the work plan introduction, it is stated "An open rock quarry is degrading the natural beauty of the part of the watershed where it is visible." In part 3-12 it is stated "The visual appearance of the rock quarry could be improved by screening with tall growing vegetation and partial backfilling for reclamation." It is not stated whether this quarry is currently active and whether this backfilling is a goal of this project. On page 67 an active quarry is mentioned that has been in operation for 10 years and reserves are listed as at least equal to past production. If this is the same quarry recommended for partial backfilling elsewhere in the work plan, elaboration of this proposed action is needed and the impacts of the action explained in the environmental statement. Reserves that would be

lost should be determined as well as whether backfilling would require the opening of a new quarry site at a future date. It makes little sense for reasons of aesthetics to spend funds to reclaim an established source of needed rock if another site has to be opened.

Response: This is only a part of the abridged section of the plan that is required and is not a goal of proposed project; however the following additional information is provided. The rock quarry mentioned for visual improvement is the same quarry discussed in the "Investigation and Analysis" section of the work plan. This quarry is currently active and is an established source of needed rock. The partial backfilling and screening with tall vegetation would apply only to that portion of the quarry that had been "used up". Reclamation would be applied to the depleted quarries, reserves of valuable rock would not be lost, and the opening of a new qaurry site would not be necessary.

(5) Comment: Our Fish and Wildlife Service has responsibility of maintaining and increasing public opportunities for recreational use of fish and wildlife resources. In keeping with this responsibility and stated recommendations of the Committee on Government Operations contained in the October 21, 1971, House Report Number 92-586 entitled "Public Access to Reservoirs to Meet Growing Recreation Demands," we recommend that adequate provisions for public access to the Floodwater Retarding Structure Number 2 be included in the work plan for Flat Rock Creek.

Response: Public Law 566 does not provide funds for providing public access. The decision to provide public access of the floodwater retarding structure must be made by the sponsors. They generally can obtain limited rights which include the right to construct and operate and maintain the structure for the primary purpose of flood prevention.

(6) Comment: We agree with the statement on page 18 of the work plan that there is a need for management of selected areas throughout the watershed for wildlife purposes, and the improvement of wooded areas for wildlife habitat enhancement. Moreover, the work plan provides for 880 acres of wildlife habitat management but there is no guarantee that the project sponsors will develop or maintain these features. Therefore, we believe that the plan should contain provisions for a performance bond or other formal guarantee by local interests to insure that compensatory measures relative to fish and wildlife resources will be carried out.

Response: There is no guarantee on the 880 acres of wildlife habitat management to be carried out because this is a voluntary action by the landowners. The 650 acres of wildlife wetland management will remain as wetland around Hollis Lake because it is physically and economically unfeasible to change the land use. The sponsors have agreed to improve an additional 230 acres. They have already dedicated 320 acres for wildlife management.

(7) Comment: Page 21 of the work plan states that there are no National Register sites in the watershed. This statement should be corrected as the Drennen-Scott House, Drennen Reserve, North Third Street, Van Buren is listed on the National Register of Historic Places in the February 19, 1974, Federal Register.

Response: The Drennen-Scott House and the Wilhauf House are listed in the Federal Register. Both houses are located on North Third Street but not in the watershed.

(8) Comment: This section indicates that flood insurance is estimated to cost $150,000 annually and is said to be greater than the flood damage (environmental statement, page 30, paragraph 2; work plan, page 25, paragraph 2), yet annual flood damages are estimated to be $180,830 on page 2 of the work plan. Further clarification is warranted to support the conclusions reached in this section.

Response: The $180,830 refers to average annual benefits occurring from structural measures resulting from flood damage reduction over the evaluation period. The average annual nonagricultural floodwater damage amounts to $144,780.

(9) Comment: It also seems dubious to claim $10,350 annual recreation benefits from an 11-acre lakesite when Hollis Lake (300 acres), Lake Fort Smith (438 acres), Shores Lake (82 acres), Sugarloaf Lake (334 acres), and the Arkansas River are close to the proposed project. Further clarification of this point is warranted to support the conclusions reached in the project formulation section of the work plan.

Response: One objective of the local sponsoring organizations is to install a recreation development at the multiple purpose structure in the Van Buren City Park which will accommodate a number of people at any one time

for various recreational activities. Monetary benefits from such recreational developments are used for project justification. Benefits are based on the value of a recreation visit and the estimated number of visitors annually. The value assigned per recreation visit is based on the degree to which facilities are developed to serve the various kinds of recreational uses. Competitive recreational developments in the area are taken into consideration when making this analysis. Based on all factors considered in making this evaluation, the $10,350 annual recreational benefits are reasonable.

(10) Comment: Six conditions are listed on page 48 of the work plan which are to be fulfilled before the installation of structural measures. We suggest adding a further condition reflecting the pre-construction requirements relating to archeological values as set forth under "Other Measures" on page 34 of the work plan.

Response: The report made by the Arkansas Archeological Survey has been received by the SCS and this information has been incorporated in the final work plan and final environmental impact statement.

The SCS will carry out its responsibilities, as outlined by Public Law 86-523 and Public Law 93-291 regarding the preservation of historical and archeological data, prior to signing the project agreement.

(11) Comment: The section dealing with "Structural Measures" in the Project Section of the draft environmental impact statement should identify and describe the Drennen-Scott House in Van Buren since the site is in the watershed and is listed in the National Register. The impact section can then assess whether or not the proposal will impact on this historic site.

Response: See Response Number 7.

(12) Comment: The fourth sentence, third paragraph, under Structural Measures of the statement states: "In the event areas of historical significance are uncovered during construction, the National Park Service in Fort Smith will be notified immediately." This sentence should be revised in the final statement to indicate notification of the Regional Director, Southwest Region, National Park Service, Post Office Box 728, Santa Fe, New Mexico 87501, rather than Fort Smith.

Response: Changed as suggested.

(13) Comment: The Arkansas Archeological Survey plans to make a detailed site location survey in this watershed. The final statement should reflect the findings of this survey and evaluate the impact of the project on any archeological values found in the study area. The final statement should also discuss the plans for mitigating any damage to this resource base.

Response: The Survey has completed their report and their findings and evaluations have been incorporated into the final statement. Damages to archeological sites and salvage of these sites have been discussed in the final statement.

(14) Comment: It is noted that Multiple Purpose Structure Number 1 will be located in the Van Buren City Park. Although "sanitary facilities" are mentioned as being available at the present time, there is no mention of the recreation facilities at the park. The draft should identify the existing facilities and discuss the planned ones as well. The statement might also include a discussion of the compatibility of the planned facilities with the present ones in the City park.

Response: Concur. Existing recreational facilities in the City Park are: ball park, picnic tables, rodeo arena, playground, minature golf, minature zoo, country club, boys' club, and swimming pool. Planned recreational facilities are bridle paths, nature trails, fishing, skating rink, and an amphitheater. These planned facilities are compatible with the existing facilities. The above information was added to the final environmental impact statement and a city park map has been added to the appendixes.

(15) Comment: To aid in the location of the park and proposed project, the draft might also identify the park on the enclosed appendixes C-1 and C-2.

Response: Concur. A map of the city park has been included in the final environmental impact statement. (See Appendix C-3).

(16) Comment: The draft also mentions disruption of traffic and other activities due to the construction of the project. The statement should identify and discuss the possibility of interference of any recreational activities due to the construction of the project and if possible, schedule the proposed work around periods of high use in the city park.

Response: All developed recreational facilities are accessible from the west side of the city park and construction activities will not interfere with the use of the facilities.

There will be noise pollution in the park and surrounding area associated with the construction work. The difference in the effect of the noise at different periods on recreation is small compared to all environmental effects considering different periods of the year.

The above information was added to the final environmental impact statement.

(17) Comment: Since the project calls for channel work along several streams, the project sponsor might consider working with the City of Van Buren in establishing "hike and bike" trails along the proposed channels or "nature" trails in the wildlife habitat areas.

Response: Noted. These trails could be established independent of the project.

(18) Comment: The use of eleven acres of forested land for an offsite borrow area for Structure Number 1 from the Van Buren City Park should be subjected to an evaluation of feasible alternatives to avoid such use.

Response: The statement was clarified. The 11 acres of offsite borrow is not in the city park but it is located within the city limits. The offsite borrow areas are one-fourth mile downstream and one-fourth to one-half mile north of the dam site.

(19) Comment: On page 6 the statement is made: "About 28 acres of the City Park, which are forested, will be required for Structure Number 1." It is misleading to place the tabulation of this acreage under "Urban and Built-up Land" on the table on page 5, rather than under "Wooded Land".

Response: The land located in the City Park is within the city limits of Van Buren and is considered "urban and built-up land". See response to Comment 18.

(20) Comment: Physical Resources - The topographical information on page 8 could be much more clearly set forth on a map.

Response: The difference in clarity would not justify the inclusion of a topographic map.

(21) Comment: Economic Resources - An assessment of the mineral resources committed by this action should be evaluated in the environmental statement as a portion of the "Economic Resources."

Response: The economic significance of the commitment of mineral resources by the project is so small that it does not merit assessment.

(22) Comment: Conservation Land Treatment - In the impact section the statement that "restricted grazing of woodlands . . . will significantly add to the wildlife population" is not supported in the work plan. We assume this lack of support is because the action will be voluntary on the part of the individual landowner. If true, the statement should contain an explanation of how the restricted grazing program will be carried out.

Response: The land treatment section of the work plan describes how the restricted grazing of woodlands will be carried out.

The effects of restricted grazing are indicated in the "Effects of Works of Improvement" section of the work plan.

(23) Comment: One favorable effect listed is, "The family-farm pattern of agriculture will be strengthened." This apparently contradicts a declared monetary benefit of the project referred to on page 46 of the work plan which states, "It is anticipated that urban enhancement benefits arising from the conversion of agricultural land to industrial use will amount to $66,000 annually."

Response: Concur. Discussion of the family-farm pattern of agriculture has been deleted from the watershed work plan and environmental impact statement.

(24) Comment: Adverse Environmental Effects Which Cannot Be Avoided Section is inadequate and needs further explanation. There is no mention of the adverse effects that will occur to the stream fisheries and wildlife habitat as a result of inundation by the planned floodwater retarding structures.

Response: Fish and wildlife habitat will be lost to the floodwater retarding structures. However, relative to the miles of stream fish habitat and acres of wildlife habitat within the watershed, the habitat lost to the floodwater retarding structures is very small. The two sediment pools will provide lentic (standing water) habitat. This will not be replacement in kind; however, a new habitat type will be created.

The above information was added to the final environmental impact statement.

(25) Comment: The statement that "clearing and debris removal will disrupt fish and wildlife habitat during the construction period" does not adequately describe the adverse impact on stream fisheries of associated wildlife habitats. It is stated that "Sediment will be increased during construction." It does not mention, however, that this sediment increase will have an adverse effect on the indigenous aquatic life and their habitat, nor does it define the length of time higher levels of sediment will exist.

Response: Clearing will destroy wildlife habitat. Secondary plant succession will begin immediately. This plant community will provide habitat for some species of wildlife. Debris removal will decrease stream shelter, an important component of fish habitat. Sediment deposition will cover spawn and fish nests during the two year construction period.

The above information has been added to the final environmental impact statement.

(26) Comment: On page 33 the statement that "there will be 26 acres of land committed to the dam and spillways and 42 acres to reservoir areas" does not mention

that wildlife habitat and stream fisheries habitat will be permanently inundated. This should be referenced and an explanation given as to how this permanent loss will be compensated.

Response: The 26 acres committed to the dam and spillways will not be lost as wildlife habitat. For the life of the project the 26 acres will be committed to grassland, such as weeping lovegrass and sericea lespedeza. Regarding the 42 acres that will be permanently inundated, 20 acres are presently grassland, 11 acres are forest land, and 11 acres are urban. When these acreages are compared to land use totals within the watershed, the percent loss for grassland is 0.4 percent, for forest land is 0.3 percent, and for urban is 0.6 percent.

Approximately three-fourths mile of headwater stream fish habitat will be permanently inundated. This habitat will be replaced by two large pools creating 42 acres of Type V wetland.

(27) Comment: Both salvage of or the inadvertent destruction of archeological resources represent an irreversible and irretrievable commitment of such nonrenewable resources, and all such commitments should be identified in this section of the statement.

Response: Concur. The environmental impact statement was expanded to identify any archeological losses.

Department of Transportation - U. S. Coast Guard

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

Response: None.

U. S. Environmental Protection Agency

(1) Comment: Existing water quality data from Town Branch Creek should be included in the statement with a discussion of how the various parameters (such as dissolved oxygen and total suspended solids) will be affected by the channel improvements during and after project construction.

Response: Concur. Additional water quality analyses on Town Branch, Flat Rock Creek, and Hollis Lake have been added to the final statement. The quality of water on Town Branch will be improved by the installation of a secondary sewage treatment plant to be completed by the City of Van Buren in January 1975. There will be an increase in turbidity and sediment concentrations during construction of the channels. This is expected to be minimal and temporary. After construction, there will be a small change in water quality from its present state; however, the constructed channels will eliminate existing stagnant water by the design of a continuous downstream flow. The channel flow will be allowed to move downstream faster, aerating the water and increasing the dissolved oxygen.

(2) Comment: On page 26, it is stated that the flood protection provided by the project will allow farmers to intensify farming operations in the protected area. The increase in farming intensity could have an indirect effect on water quality through increased use of fertilizers and pesticides. The statement would be strengthened by a discussion of these possible impacts.

Response: Concur. The installation of planned land treatment measures on the 4,714 acres of cropland will (a) reduce erosion and resultant sediment, which will have an indirect effect on lessening the loss of pesticides, insecticides, and chemical nutrients that commonly ride "piggy-back" on moving soil particles; and (b) permit improved cropping patterns and systems by making it possible to grow a wider variety of crops. This will help alleviate or eliminate the growth of weeds and insects common to one or two crop agriculture, thereby lessening the need for herbicides; (c) the control or elimination of flooding, along with items (a) and (b) above, will lessen the spread of weed seeds and insects, thereby reducing the need for herbicides and insecticides. It will also bring about an improvement in soil tilth and increase the production and decomposition of crop residues, which will bring about increases in crop yields that are now being obtained by increased use of chemical fertilizers.

This information was added to the final statement.

(3) Comment: More discussion as to how erosion and other pollutant problems (that may affect noise, water, and air quality) will be controlled during construction should be included in the statement. This information will allow the reviewer to more adequately assess the total impacts of the project.

Response: Concur. Noise from the equipment used during construction cannot be avoided; however, the contractor will keep his equipment in a state of good repair to assure that noise will be held to a minimum. Working time will be during the daylight hours, when possible.

Vegetative measures to ensure greater channel stability, reduce sediment pollution in the channels, improve wildlife habitat, and improve the appearance of structural measures will be required. Vegetative measures for the channel system will be installed including seeding of the earthen channel banks within 24 hours after excavation and vegetating the spoilbanks and berms immediately after shaping. Vegetative materials will include herbaceous and woody plants.

Draglines and other construction equipment will work from alternate sides of the channel. Berm widths, not to exceed the height of the spread spoil, will be required on these channels to prevent excavated material from washing or rolling back into the channel. They will also prevent sloughing of the ditchbank caused by heavy soil loads too near the edge of the channel. Travelways for the channels will be located on the top of the shaped spoil.

Dust is not expected to be a problem but, if it develops, the contractor will sprinkle, apply dust suppressors, or otherwise keep dust within tolerable limits. During project installation, all state and local health, safety, and air and water pollution regulations will be strictly adhered to.

The above information has been added to the final statement.

(4) Comment: Page 24 of the work plan mentions that pollution of the pool of the floodwater retarding structure could develop due to increased public use with no sanitary facilities. A discussion of the facilities that could be installed to control possible degradation of water quality from recreation usage should be included in the statement and work plan. We would suggest that consideration be given to providing sanitary facilities in order to assure the long-term maintenance of water quality in the impoundment.

Response: Sanitary facilities will not be installed on the single-purpose floodwater retarding structure because it is located on private lands and will not be made available for public use. PL-566 does not provide funds for sanitary facilities on private lands, not open to the public. The decision to have the structure open to the public and have sanitary facilities must be made by local, county, or state levels of government.

Arkansas Archeological Survey

(1) Comment: As it stands, the Draft Environmental Impact Statement for Flat Rock Creek Watershed Project does not adequately evaluate the impact of the project on the archeological and historical resources.

However, the statement does include comment on page 17 that "Any archeological resources that may exist in the watershed will be evaluated from a survey to be conducted by the Arkansas Archeological Survey prior to construction."

An evaluation of the archeological and historical resources in the direct impact area of construction will be made during the summer 1974 and this report should be included in the Final Environmental Impact Statement. Plans for the mitigation of impact to archeological and historical resources should also be discussed in the Final Impact Statement, based on the conclusions and recommendations of the survey.

Response: The report "Archeological Reconnaissance of the Flat Rock Creek Watershed Project Impact Areas, Crawford County, Arkansas", dated July, 1974 has been received by the SCS and information from this report has been incorporated in the work plan and final environmental impact statement.

Division of Soil and Water Resources

(1) Comment: We have reviewed the Draft Work Plan and Environmental Impact Statement, Flat Rock Creek Watershed. The Statement adequately describes project Environmental Impacts and satisfies the requirements of the National Environmental Policy Act of 1972.

It is apparent that several beneficial environmental effects will result from the development of this project. The project should greatly enhance the water and related land resources of the area.

Response: None.

State of Arkansas - Department of Pollution Control and Ecology

(1) Comment: We feel that adequate consideration has been given to the effect that this project will have upon the environment and agree that its overall effect will be beneficial.

Response: None.

(2) Comment: On page 20 it states that the City of Van Buren has agreed to initiate an ordinance whereby future improvements will be restricted to those projects which will not be susceptible to flood damage beyond minor repair. The City should be encouraged to adopt an ordinance which will outright deny any developments within the 100-year flood plain with the project. The small areas to be affected by such an ordinance is shown on Figure 3 which is an aerial photo map of the urban area.

Response: The City of Van Buren is practicing wise land use management in the flood plain by allowing improvements that will receive minor repair and cleanup after a flood. The decision by the city to allow parking lots, recreational areas, and educational nature trails in the flood plain is recognized as good planning of the nation's water and land resources.

Arkansas Forestry Commission

(1) Comment: This is to advise that we have received, reviewed and are in concurrence with the draft environmental statement for Flat Rock Creek Watershed Project, Crawford County, Arkansas.

Response: None.

Arkansas Game and Fish Commission

(1) Comment: This is an urban project and we find no significant damages to wildlife resources will result.

Response: None.

(2) Comment: We would point out, however, that this is another project which has become necessary because of unwise development in the natural flood plain.

The flood plain area in question lends itself to many uses which would require no large scale, expensive engineering work.

Planning for proper flood plain management should be the initial approach to flooding problems in the watershed and, where possible, should be the method used for flood control.

Response: Concur; however, the planned project in this watershed is to provide flood protection for those areas that are already developed or committed to development. Flood plain management has a significant beneficial impact in planning by (1) helping to assure that efficient and proper use is made of flood-prone lands; (2) preventing large flood damages that would occur if unsuitable developments were to occur; (3) eliminating or sharply reducing the need for local, state, and federal relief expenditures in the event of floods; (4) eliminating or sharply reducing the cost of constructing large-scale flood-water control works; and (5) preserving and enhancing the recreation and fish and wildlife values of the areas involved. Flood plain management is being utilized by the Van Buren City Council as evidenced by their agreement to initiate an ordinance to those projects that will not be susceptible to flood damage.

Arkansas State Board of Health

(1) Comment: Reference is made to the Flat Rock Creek Watershed Project draft environmental impact statement and draft work plan. This office has completed its review and we recognize that the project will reduce flooding the Van Buren area and public health should benefit from this. We find no adverse public effects in this project.

Response: None.

Advisory Council on Historic Preservation

(1) Comment: The Advisory Council considers the environmental statement to be adequate regarding our area of expertise and we have no further comment to make at this time.

Response: None.

List of Appendixes

Appendix A - Comparison of Benefits and Costs for Structural Measures.

Appendix B - Letters of Comment received on the Draft Environmental Impact Statement.

Appendix C-1 - Urban Flood Plain Map.

Appendix C-2 - Project Map.

Appendix C-3 - City Park Map.

Approved by _____ Date February 24, 1975
M. J. Spears
State Conservationist
Soil Conservation Service

Appendix A - COMPARISON OF BENEFITS AND COSTS FOR STRUCTURAL MEASURES

Flat Rock Creek Watershed, Arkansas

(Dollars) 1/

Evaluation Unit	AVERAGE ANNUAL BENEFITS									
	Flood Prevention				Nonagricultural Water Management				Average Annual Cost 3/	Benefit-Cost Ratio
	Damage Reduction	Intensified Land Use	Changed Land Use: Agricultural	Changed Land Use: Urban	Recreation	Secondary	Redevelopment	Total		
Town Branch										
Multiple Purpose Structure Number 1 and Channel Number 1	168,290	540	1,480	30,000	10,350	48,000	17,700	276,360	184,790	1.5 to 1
Project Administration	XXXXXXX	XXX	XXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXXXX	27,700	XXXXXXXX
Sub-total	168,290	540	1,480	30,000	10,350	48,000	17,700	276,360	212,490	1.3 to 1
Flat Rock Creek										
Floodwater Retarding Structure Number 2 and Channel Number 2	12,540	4,140	4,000	36,000	-	24,870	7,000	88,550	44,610	2.0 to 1
Project Administration	XXXXXX	XXXXX	XXXXX	XXXXXX	XXXXXX	XXXXXX	XXXXX	XXXXXX	4,890	XXXXXXX
Sub-total	12,540	4,140	4,000	36,000	-	24,870	7,000	88,550	49,500	1.8 to 1
GRAND TOTAL	180,830 2/	4,680	5,480	66,000	10,350	72,870	24,700	364,910	261,990	1.4 to 1

1/ Price Base: Crop and pasture benefits current normalized prices; all other benefits 1974 prices.
2/ In addition, it is estimated that land treatment measures will provide flood damage reduction benefits of $1,830 annually.
3/ From table 4.

January 1975

Secy's Cont, No. 04-53248

62

DEPARTMENT OF THE ARMY
WASHINGTON, D.C. 20310

6 AUG 1974

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 566, 83rd Congress, the Administrator of the Soil Conservation Service, by letter dated 24 May 1974, requested the views of the Secretary of the Army on the Watershed Work Plan and Draft Environmental Statement for the Flat Rock Creek Watershed, Crawford County, Arkansas.

We have reviewed the work plan and foresee no conflict with any projects or current proposals of this Department. The draft environmental statement is considered to be satisfactory.

Sincerely,

Charles R. Ford

Charles R. Ford
Chief
Office of Civil Functions

APPENDIX B

M. J. Spears, SCS, Little Rock, Arkansas

DEPARTMENT OF HEALTH, EDUCATION & WELFARE
REGIONAL OFFICE
1114 COMMERCE STREET
DALLAS, TEXAS 75202

June 26, 1974

SPEARS	✓
LEMON	✓
SWENSON	
EVANS	
SULLIVAN	✓
EDWARDS	
DENNIS	
PETERS	
McGREW	
ELLINGTON	
FILE	

*Action by:

Our Reference: EI # 0674-362

Mr. Kenneth E. Grant
Administrator
U. S. Department of Agriculture
Soil Conservation Service
Washington, D.C. 20250

Re: Flat Rock Creek Watershed, Arkansas

Dear Mr. Grant:

Pursuant to your request, this office has completed a Departmental review of the Environmental Impact Statement in accordance with the provisions of Section 102(2)(C) of P. L. 91-190 and the Council on Environmental Quality Guidelines of April 23, 1973.

Environmental health program responsibilities and standards of the Department of Health, Education, and Welfare include those vested with the United States Public Health Service and the Facilities Engineering and Construction Agency. The U. S. Public Health Service has those programs of the Federal Food and Drug Administration (milk, food, interstate travel and shellfish sanitation) and of the Health Services and Mental Health Administration, which include the Bureau of Community Environmental Management (housing hygiene, injury control, recreational health, and insect and rodent control) and the National Institute of Occupational Safety and Health.

Attached are comments and reactions to the Environmental Statement made by departmental agencies concerned with environmental health aspects of the project.

We thank you for the opportunity to coordinate our mutual environmental interests as they relate to this project proposal.

Very truly yours,

JUL - 1974

William F. Crawford
Environmental Impact Coordinator

cc: OEA/Phyllis Hayes
Warren Muir, Council on Env. Quality

DEPARTMENT OF HEALTH, EDUCATION AND WELFARE

Reaction Review and Comments on Environmental Impact Statement for Project Proposal:

Draft Environmental Impact Statement Reviewed With Objections

Draft Environmental Impact Statement Reviewed With No Objections X

Date: June 24, 1974 EI# 0674-362

Agency/Bureau: DHEW, PHS

Project Proposal: Flat Rock Creek Watershed, Arkansas

Comments: More specific plans should be included in final EIS covering the following areas of concern:

A. Sanitation and vector control around Van Buren City Park recreation area.

B. Alleviation of waste discharge of food processing plants into Town Branch.

M. J. Spears, SCS, Little Rock, Ark.

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

REC'D	ROUTE
SPEARS	
LEWIS	
SELLERS	
EVANS	
SCULLY	
MORRIS	
DENNIS	
PE	
[illegible]	
[illegible]	
FILE	

*Action by:

In Reply Refer To:
ER-74/717

AUG 29 1974

Dear Mr. Grant:

Thank you for the letter of May 24, 1974, requesting our views and comments on a work plan and draft environmental statement for the Flat Rock Creek Watershed, Crawford County, Arkansas.

We have completed our review of the work plan and draft statement and will provide some general comments followed by specific comments on the work plan and the draft statement.

General Comments

We believe the work plan and draft statement could be improved by deleting extraneous material. For example, benefit-cost data should be well documented in the work plan and the method of computation and all reference material should be appended. The draft statement should be an unbiased presentation of environmental information and justification statements or other material which tends to prejudge the decision on the project should be deleted from the statement.

The draft environmental statement appears to have been developed by duplicating sections of the work plan text and changing subject headings. Such a procedure can lead to a very superficial evaluation of environmental effects. For example, page 29 of the impact statement lists the favorable and adverse environmental effects but they are set forth without elaboration or supportive data.

Work Plan - Introduction

In part 3-11 it is stated "An open rock quarry is degrading the natural beauty of the part of the watershed where it is visible." In part 3-12 it is stated "The visual appearance of the rock quarry could be improved by screening with tall growing vegetation and partial backfilling for reclamation." It is not stated whether this quarry is currently active and

whether this backfilling is a goal of this project. On page 67 an active quarry is mentioned that has been in operation for 10 years and reserves are listed as at least equal to past production. If this is the same quarry recommended for partial backfilling elsewhere in the work plan, elaboration of this proposed action is needed and the impacts of the action explained in the environmental statement. Reserves that would be lost should be determined as well as whether backfilling would require the opening of a new quarry site at a future date. It makes little sense for reasons of aesthetics to spend funds to reclaim an established source of needed rock if another site has to be opened.

Summary

Our Fish and Wildlife Service has responsibility of maintaining and increasing public opportunities for recreational use of fish and wildlife resources. In keeping with this responsibility and stated recommendations of the Committee on Government Operations contained in the October 21, 1971, House Report No. 92-586 entitled "Public Access to Reservoirs to Meet Growing Recreation Demands," we recommend that adequate provisions for public access to the floodwater-retarding structure No. 2 be included in the work plan for Flat Rock Creek Watershed.

Plant and Animal Resources Problems

We agree with the statement on page 18 that there is a need for management of selected areas throughout the watershed for wildlife purposes, and the improvement of wooded areas for wildlife habitat enhancement. Moreover, the work plan provides for 880 acres of wildlife habitat management but there is no guarantee that the project sponsors will develop or maintain these features. Therefore, we believe that the plan should contain provisions for a performance bond or other formal guarantee by local interests to insure that compensatory measures relative to fish and wildlife resources will be carried out.

Project Formulation

Page 21 of the work plan states that there are no National Register sites in the watershed. This statement should be corrected as the Drennen-Scott House, Drennen Reserve, North Third Street, Van Buren is listed on the National Register of Historic Places in the February 19, 1974, Federal Register.

This section indicates that flood insurance is estimated to cost $150,000 annually and is said to be greater than the flood damage (environmental statement, page 30, paragraph 2; work plan, page 25, paragraph 2), yet annual flood damages are estimated to be $180,830 on page 2 of the work plan. It also seems dubious to claim $10,350 annual recreation benefits from an 11-acre lakesite when Hollis Lake (300 acres), Lake Fort Smith (438 acres), Shores Lake (82 acres), Sugarload Lake (334 acres), and the Arkansas River are close to the proposed project. Further clarification of these points is warranted to support the conclusions reached in this section.

Project Installation

Six conditions are listed on page 48 which are to be fulfilled before the installation of structural measures. We suggest adding a further condition reflecting the preconstruction requirements relating to archeological values as set forth under "Other Measures" on page 34 of the work plan.

Draft Environmental Statement

The section dealing with "Structural Measures" should identify and describe the Drennen-Scott House in Van Buren since the site is in the watershed and is listed in the National Register. The impact section can then assess whether or not the proposal will impact on this historic site.

The fourth sentence, third paragraph, states: "In the event areas of historical significance are uncovered during construction, the National Park Service in Fort Smith will be notified immediately." This sentence should be revised in the final statement to indicate notification of the Regional Director, Southwest Region, National Park Service, P. O. Box 728, Santa Fe, New Mexico 87501, rather than Fort Smith.

The Arkansas Archeological Survey plans to make a detailed site location survey in this watershed. The final statement should reflect the findings of this survey and evaluate

the impact of the project on any archeological values found in the study area. The final statement should also discuss the plans for mitigating any damage to this resource base.

It is noted that Multiple Purpose Structure Number 1 will be located in the Van Buren City Park. Although "sanitary facilities" are mentioned as being available at the present time, there is no mention of the recreation facilities at the park. The draft should identify the existing facilities and discuss the planned ones as well. It might also include a discussion of the compatibility of the planned facilities with the present ones. To aid in the location of the park and proposed project, the draft might also identify the park on the enclosed appendices C-1 and C-2.

The draft also mentions disruption of traffic and other activities due to the construction of the project. The statement should identify and discuss the possibility of interference of any recreational activities due to the construction of the project and if possible, schedule the proposed work around periods of high use in the city park.

Since the project calls for channel work along several streams, the project sponsor might consider working with the City of Van Buren in establishing "hike and bike" trails along the proposed channels or "nature" trails in the wildlife habitat areas.

Land Use Changes

The use of eleven acres of forested land for an offsite borrow area for Structure Number 1 from the Van Buren City Park should be subjected to an evaluation of feasible alternatives to avoid such use.

On page 6 the statement is made: "About 28 acres of the City Park, which are forrested, will be required for Structure Number 1." It is misleading to place the tabulation of this acreage under "Urban and Built-up Land" on the table on page 5, rather than under "Wooded Land."

Environmental Setting

Physical Resources - The topographical information on page 8 could be much more clearly set forth on a map.

Economic Resources - An assessment of the mineral resources committed by this action should be evaluated in the environmental statement as a portion of the "Economic Resources."

Environmental Impact

Conservation Land Treatment - The statement that "restricted grazing of woodlands . . . will significantly add to the wildlife population" is not supported in the work plan. We assume this lack of support is because the action will be voluntary on the part of the individual landowner. If true, the statement should contain an explanation of how the restricted grazing program will be carried out.

Favorable Environmental Effects

One favorable effect listed is, "The family-farm pattern of agriculture will be strengthened." This apparently contradicts a declared monetary benefit of the project referred to on page 46 of the work plan which states, "It is anticipated that urban enhancement benefits arising from the conversion of agricultural land to industrial use will amount to $66,000 annually."

Adverse Environmental Effects Which Cannot Be Avoided

This section is inadequate and needs further explanation. There is no mention of the adverse effects that will occur to the stream fisheries and wildlife habitat as a result of inundation by the planned floodwater retarding structures.

The statement that "clearing and debris removal will disrupt fish and wildlife habitat during the construction period" does not adequately describe the adverse impact on stream fisheries of associated wildlife habitats. It is stated that "Sediment will be increased during construction." It does not mention, however, that this sediment increase will have an adverse effect on the indigenous aquatic life and their habitat, nor does it define the length of time higher levels of sediment will exist.

Irreversible and Irretrievable Commitment of Resources

The statement that "there will be 26 acres of land committed to the dam and spillways and 42 acres to reservoir areas" does not mention that wildlife habitat and stream fisheries habitat will be permanently inundated. This should be referenced and an explanation given as to how this permanent loss will be compensated.

Both salvage of or the inadvertent destruction of archeological resources represent an irreversible and irretrievable commitment of such nonrenewable resources, and all such commitments should be identified in this section of the statement.

We trust the foregoing comments will be of assistance in preparing this report for submission to the Congress.

Sincerely yours,

Deputy Assistant Secretary of the Interior

Mr. Kenneth E. Grant
Administrator
U.S. Department of Agriculture
Soil Conservation Service
Washington, D. C. 20250

M. J. Spears, SCS, Little Rock, Arkansas 71 ✓

DEPARTMENT OF TRANSPORTATION
UNITED STATES COAST GUARD

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

JUL 23 1974

Mr. Kenneth E. Grant
Administrator
Soil Conservation Service
Department of Agriculture
Washington, D. C. 20250

Dear Mr. Grant:

This is in response to your letter of May 24, 1974 addressed to Admiral Bender concerning a draft environmental impact statement for the Flat Rock Creek Watershed Project, Crawford County, Arkansas.

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,

R. I. PRICE
Rear Admiral, U. S. Coast Guard
Chief, Office of Marine Environment and Systems

APPENDIX B

M. J. Spears, SCS, Little Rock, Arkansas

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VI
1600 PATTERSON
DALLAS, TEXAS 75201

REC'D 4	ROUTE
SPEARS 1	
LEMON 1	
SWENSON	
EVANS	
SULLIVAN 2	
EDWARDS	
DENNIS	
PETERS	
McGREW	
ELLINGTON	
FILE	

*Action by:

July 22, 1974

Mr. Kenneth E. Grant
Administrator
United States Department
of Agriculture
Soil Conservation Service
Washington, D. C. 20250

Re: D-SCS-A36414-AR

Dear Mr. Grant:

We have reviewed the Draft Environmental Impact Statement and the Draft Watershed Work Plan for the Flat Rock Creek Watershed Project, Crawford County, Arkansas. The proposed project will provide for watershed protection through conservation land treatment, and flood prevention measures. The project includes 4.2 miles of channel work consisting of concrete lining, clearing and debris removal, and enlarging of Town Branch Creek, and 3.2 miles of clearing and debris removal on Flat Rock Creek.

In general, the statment adequately discusses the impacts that the proposed project will have on the environment. However, we offer the following comments for your consideration in developing the Final Environmental Impact Statement and Work Plan:

1. Existing water quality data from Town Branch Creek should be included in the statement with a discussion of how the various parameters (such as dissolved oxygen and total suspended solids) will be affected by the channel improvements during and after project construction.

2. On page 26, it is stated that the flood protection provided by the project will allow farmers to intensify farming operations in the protected area. The increase in farming intensity could have an indirect effect on water quality through increased use of fertilizer and pesticides. The statement would be strengthened by a discussion of these possible impacts.

3. More discussion as to how erosion and other pollutant problems (that may affect noise, water, and air quality) will be controlled during construction should be included in the statement. This information will allow the reviewer to more adequately assess the total impacts of the project.

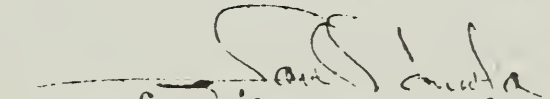
4. Page 24 of the Work Plan mentions that pollution of the pool of the floodwater retarding structure could develop due to increased public use with no sanitary facilities. A discussion of the facilities that could be installed to control possible degradation of water quality from recreation usage should be included in the statement and Work Plan. We would suggest that consideration be given to providing sanitary facilities in order to assure the long-term maintenance of water quality in the impoundment.

These comments classify your Draft Environmental Impact Statement as LO-2. In general, we have no objection to the proposed program. However, additional information is needed to assess fully the impacts of the project on water quality. The classification and the date of our comments will be published in the Federal Register in accordance with our responsibility to inform the public of our views on proposed Federal actions, under Section 309 of the Clean Air Act.

Definitions of the categories are provided on the attachment. Our procedure is to categorize our comments on both the environmental consequences of the proposed action and on the adequacy of the impact statement at the draft stage, whenever possible.

We appreciate the opportunity to review the Draft Environmental Impact Statement and we will be happy to discuss our comments with you. Please send us two copies of the Final Environmental Impact Statement at the same time it is sent to the Council on Environmental Quality.

Sincerely yours,



Arthur W. Busch
Regional Administrator

Enclosure

ENVIRONMENTAL IMPACT OF THE ACTION

LO - Lack of Objections

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

ER - Environmental Reservations

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

EU - Environmentally Unsatisfactory

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

ADEQUACY OF THE IMPACT STATEMENT

Category 1 - Adequate

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

Category 2 - Insufficient Information

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

Category 3 - Inadequate

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

STATE OF ARKANSAS
DEPARTMENT OF PLANNING
400 TRAIN STATION SQUARE • VICTORY AT MARKHAM
LITTLE ROCK 72201

DALE BUMPERS
GOVERNOR

CHARLES T. CROW
DIRECTOR

August 5, 1974

REC'D 3
SPEARS 4
LEMON 1
SWEARENGEN
EVANS
KSULLIVAN
EDWARDS
DENNIS
PETERS
McGREW
ELLINGTON
FILE
*Action by:

Mr. M. J. Spears
State Conservationist
Soil Conservation Service
P. O. Box 2323
Little Rock, Arkansas 72203

Re: Flat Rock Creek Watershed Environmental Impact Statement and Draft Work Plan

Dear Mr. Spears:

The State Planning and Development Clearinghouse is in receipt of the conclusions reached by the Technical Review Committee on the above cited project at their July 11, meeting.

The Committee member's comments are enclosed for your inspection and use in developing your final Environmental Impact Statement and Work Plan. It should be noted that certain comments reflect the opinion that this and similar projects are made necessary by unwise development in a flood plain. The Technical Review Committee determined the documents to be adequate as cited in the Committee Chairman's, John P. Saxton, August 1, letter to Charles Crow, Chairman of the Cabinet Committee on National Resources and Environmental Quality.

If we can be of any further assistance, please do not hesitate to call on us.

Sincerely,

Armand DeLaurell

Armand De Laurell
Director
State Clearinghouse

ADL/reb/fk

Enclosures (7 attachments to Spears' Letter)

cc: Charles T. Crow
John P. Saxton
Kay McElveen

SERVING THE PAST FOR THE FUTURE

ARKANSAS ARCHEOLOGICAL SURVEY

DIRECTOR • CHARLES R. McGIMSEY III
STATE ARCHEOLOGIST • HESTER A. DAVIS

Coordinating Office
University of Arkansas Museum
Fayetteville, AR 72701

To: Mr. John P. Saxton, Chairman, Technical Review Committee

From: Hester A. Davis

Date: August 8, 1974

Re: Comment on Draft Environmental Statement and Draft Work Plan on the Flat Rock Creek Watershed Project submitted by the Soil Conservation Service, Little Rock.

As it stands Draft Environmental Impact Statement for the Flat Rock Creek Watershed Project does not adequately evaluate the impact of the project on the archeological and historical resources.

However, the statement does include comment on page 17 that "Any archeological resources that may exist in the watershed will be evaluated from a survey to be conducted by the Arkansas Archeological Survey prior to construction."

An evaluation of the archeological and historical resources in the direct impact area of construction will be made during the summer, 1974 and this report should be included in the Final Environmental Impact Statement. Plans for the mitigation of impact to archeological and historical resources should also be discussed in the Final Impact Statement, based on the conclusions and recommendations of the survey.

cc: State Planning and Development Clearinghouse

Hester Davis

RECEIVED
AUG 13 1974
SOIL AND WATER
CONSERVATION COMMISSION

TO		INIT'L
	SAXTON	
	MOTT	
	BRYNIARSKI	
✓	FORTENBERRY	
	YOUNG	
✓	Cantrell	RPC
	CHAPIN	
	SWEARINGEN	
	FERGUSON	
	WHITE	
	STEPHENS	
	WITT	

APPENDIX B

July 3, 1974

MEMORANDUM

TO: Bill Williams, Department of Commerce Representative on Technical Review Committee, c/o Geology Division

FROM: John P. Saxton, Director, Division of Soil and Water Resources

RE: Draft Work Plan & E.I.S., Flat Rock Creek Watershed

Comment: We have reviewed the Draft Work Plan and Environmental Impact Statement, Flat Rock Creek Watershed. The Statement adequately describes project Environmental Impacts and satisfies the requirements of the National Environmental Policy Act of 1972.

It is apparent that several beneficial environmental effects will result from the development of this project. The project should greatly enhance the water and related land resources of the area.

JPS:ADF:cc

cc: Armand DeLaurell

APPENDIX B

STATE OF ARKANSAS
DEPARTMENT OF POLLUTION CONTROL AND ECOLOGY
8001 NATIONAL DRIVE
LITTLE ROCK, ARKANSAS 72209

501 371-1701 GEN. OFF.
501 371-1136 AIR DIV.

MEMORANDUM TO: Mr. John Saxton, Chairman,
Technical Review Committee

FROM: Trusten H. Holder T.H.H.

SUBJECT: Flat Rock Creek Watershed
Draft Work Plan

DATE: July 9, 1974

The above work plan has been reviewed by this Department. We feel that adequate consideration has been given to the effect that this project will have upon the environment and agree that its overall effect will be beneficial.

On page 20 it states that the City of Van Buren has agreed to initiate an ordinance whereby future improvements will be restricted to those projects which will not be susceptible to flood damage beyond minor repair. The City should be encouraged to adapt an ordinance which will outright deny any developments within the 100 year flood plain with the project. The small areas to be affected by such an ordinance is shown on Figure 3 which is an aerial photo map of the urban area.

Copy to: Armand DeLaurell, Director
State Clearinghouse
Little Rock, Arkansas 72201

DEPARTMENT OF COMMERCE
ARKANSAS FORESTRY COMMISSION

P. O. BOX 4523 ASHER STATION
LITTLE ROCK, ARKANSAS 72204

June 27, 1974

DONALD V. ALLEN
Director of Commerce
Phone 501-371-2331

Mr. John P. Saxton, Chairman
Technical Review Committee
Soil & Water Commission
1920 West Capitol
Little Rock, Ark. 72201

Dear Mr. Saxton:

This is to advise that we have received, reviewed and are in concurrence with the draft environmental statement for Flat Rock Creek Watershed Project, Crawford County, Arkansas.

Sincerely,

B. G. Gresham
State Forester

James G. Barnum

By: James G. Barnum
Assistant Management Forester

JGB/plm

c. Bill Williams
Don Allen
Charles Crow
Armand DeLaurell

ARKANSAS GAME AND FISH COMMISSION
July 1, 1974

MEMORANDUM TO: John Saxton, Chairman,
Technical Review Committee

FROM: Richard W. Broach, Member,
Technical Review Committee

RE: Flat Rock Creek Watershed Project

We have reviewed the Draft E.I.S. and Work Plan for the Flat Rock Creek Watershed Project.

This is an urban project and we find no significant damages to wildlife resources will result.

We would point out, however, that this is another project which has become necessary because of unwise development in the natural flood plain.

The flood plain area in question lends itself to many uses which would require no large scale, expensive engineering work.

Planning for proper flood plain management should be the initial approach to flooding problems in any watershed and, where possible, should be the method used for flood control.

RWB:DGC:ac

cc: State Planning and Development Clearinghouse
B.S.F.W., Vicksburg

ARKANSAS STATE BOARD OF HEALTH

LITTLE ROCK

June 25, 1974

Mr. John Saxton, Director
Division of Soil & Water Resources
1920 West Capitol Avenue
Little Rock, Arkansas

Dear Mr. Saxton:

Reference is made to the Flat Rock Creek Watershed Project draft environmental impact statement and draft work plan. This office has completed its review and we recognize that the project will reduce flooding in the Van Buren area and public health should benefit from this. We find no adverse public health effects in this project.

Yours truly,

BUREAU OF CONSUMER PROTECTION SERVICES

GTK

G. T. Kellogg, P.E.
Director and Chief Engineer

GTK/fd

cc: Mr. Armand DeLaurell, Director
State Planning & Development Clearinghouse

M. J. Spears, SCS, Little Rock, Arkansas ✓

Advisory Council
On Historic Preservation
[illegible]

REC'D	ROUTE
SPEARS ✓	[illegible]
LEMON ✓	[illegible]
SWENSON	
EVANS	
SULLIVAN ✓	[illegible]
EDWARDS	
DENNIS ✓	[illegible]
PETERS	
McGREW	
ELLINGTON	
FILE	[illegible]

*Action by:

Mr. Kenneth E. Grant
Administrator
Soil Conservation Service
U.S. Department of Agriculture
Washington, D.C. 20250

Dear Mr. Grant:

This is in response to your letter of July 17, 1974, transmitting additional information concerning the environmental statement for the Flat Rock Creek Watershed Project, Crawford County, Arkansas. Based on the additional information contained in your letter, the Advisory Council considers the environmental statement to be adequate regarding our area of expertise and we have no further comment to make at this time.

Your continued cooperation is appreciated.

Sincerely yours,

Ann Webster Smith

Ann Webster Smith
Director, Office of Compliance

APPENDIX B

APPENDIX C-1

URBAN FLOOD PLAIN
VAN BUREN, ARKANSAS
FLAT ROCK CREEK WATERSHED

U. S. DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE, LITTLE ROCK, ARKANSAS
USDA-SCS-FORT WORTH, TEX., 1971

2-71 4-R-30,159

SITE NUMBERS AND DRAINAGE AREA IN ACRES

Site No.	Acres
1	230
2	3,309

R 32 W | R 31 W

94°20'

35°30'

T 10 N / T 9 N

T 9 N / T 8 N

35°25'

Furry

Shibley

SAN FRANCISCO R.R.

ST. LOUIS

MISSOURI PACIFIC R.R.

PACIFIC

MISSOURI

R R

VAN BUREN

MISSOURI PACIFIC INDUSTRIAL PARK

HOLLIS LAKE

ARKANSAS RIVER

R-I

R-II

R-III

R-IV

BRANCH

TOWN

FLAT ROCK

Sta. 70+00

Sta. 203+16

Sta. 236+91

Sta. 373+50

Sta. 292+41

FLAT ROCK CREEK WATERSHED

ARKANSAS

LEGEND

- Interstate Highway
- U.S Highway
- State Highway
- Low Type Road
- Gravel Road
- Unimproved Road
- Railroad
- City or Town
- Drainage
- Marsh
- Lake
- Dike
- Watershed Boundary
- Area Benefited
- Drainage Area Controlled by Structure
- Floodwater Retarding Structure
- Multiple Purpose Structure (R-Recreation)
- (1) Structure Number
- Sta.203+16 Station Number
- R-I Evaluation Reach
- Channel Improvement For Flood Prevention
- Bridges to be Installed (Note: 7 Additional Bridges Within City Limits of Van Buren)
- Watershed Outlet

APPENDIX C-2

PROJECT MAP

FLAT ROCK CREEK WATERSHED

CRAWFORD COUNTY, ARKANSAS

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
LITTLE ROCK, ARKANSAS

APPROX. SCALE 1:48,000

TOTAL D A 18,952 ACRES

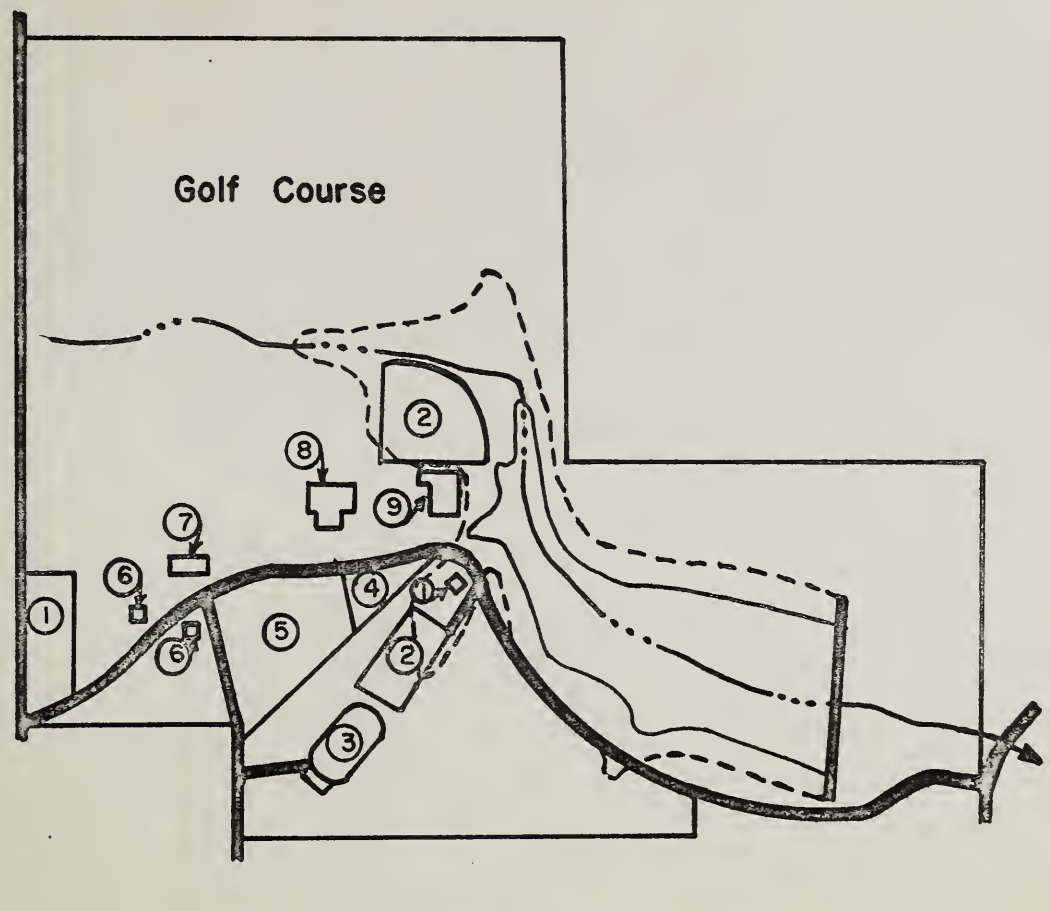
Base compiled from USGS quadrangle sheets and latest available General Highway Maps.

POLYCONIC PROJECTION

3-71 4-R-30189

Rev. 3-71 4-R-20,120

USDA SCS-FORT WORTH, TEX 1971



LEGEND

- Roads
- Permanent Pool
- Flood Pool
- ① Picnic Tables
- ② Ball Park
- ③ Rodeo Arena
- ④ Playground
- ⑤ Miniature Golf
- ⑥ Miniature Zoo
- ⑦ Country Club
- ⑧ Swimming Pool
- ⑨ Boys Club

APPENDIX C-3

CITY PARK

FLAT ROCK CREEK WATERSHED

VAN BUREN, ARKANSAS

0 660 1320

Scale-Feet