BACK TO THE FUTURE: ANOTHER WATERSHED MANAGEMENT APPROACH FOR THE YAZOO RIVER BASIN?

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INTRODUCTION

From earliest settlement, land reclamation and flood control efforts were necessary in Mississippi's Yazoo River Basin. To be effective, these efforts had to be planned and coordinated on a watershed or river basin scale. In addition, as reflected generally throughout the Lower Mississippi Alluvial Plain, effective water resource development and management efforts must be planned on a watershed or river basin scale. For example, main stem Mississippi River levees were ineffective without complementary tributary flood control efforts. Similarly, agricultural tributary headwater projects and other voluntary conservation programs to control erosion and reduce sedimentation enhance flood control efforts. A wide range of relevant federal and Mississippi State legal authority coalesces in these two broad watershed management themes of flood control and agricultural watershed management and related land treatments programs. In addition, these themes are often implemented through cooperative, federal, state, and local administrative frameworks on a watershed and/or river basin scale. Federal legal authority for flood control and agricultural projects evolved to include natural resource and environmental considerations in project planning and to allow multiple purpose watershed projects. But until the mid-1980s these issues were addressed on a single resource (*e.g.*, threatened or endangered species, wetlands) or media (*e.g.*, water, air) rather than a watershed basis. In the early 1990s, however, they developed into a distinct theme as the Environmental Protection Agency (EPA) and the U.S. Fish and Wildlife Service (FWS) initiated watershed and watershed based ecosystem management approaches to their missions. The question is: how will this new theme be implemented? Will it go "back to the future" to develop a new administrative watershed management framework or be integrated into the Basin's existing infrastructure?

PROFILE OF MISSISSIPPI'S YAZOO RIVER BASIN

The Yazoo River Basin, or Yazoo-Mississippi Delta, is an intrastate basin situated in the Lower Mississippi River's alluvial plain in Mississippi's Northwest corner. The Basin is about 200 miles long and averages about 70 miles in width. It encompasses approximately 13,400 square miles, or 28 percent, of Mississippi State. The Basin has two distinct topographic regions: a flat, western, Delta, and an eastern upland Hill area. The Delta region contains approximately 6,600 square miles and abuts the Tennessee State line to the north, Vicksburg to the south, the eastern Mississippi River mainline levee to the west and by the eastern "hill line." The Hill region contains approximately 6,800 square miles and abuts the Big Black River Basin to the south, the Tombigbee River Basin to the east, and the Delta on the west. Briefly, the Yazoo River's main stem and upper tributaries provide drainage for the entire Basin. In the Hills, the Coldwater, Little Tallahatchie, Yocona, and Yalobusha Rivers also transport rainfall from the Hills to the Delta. The Basin has been considerably altered to facilitate settlement and agricultural and economic development. The Hill region has four large multipurpose reservoirs to control upland flood water flow into the Delta. Finally, Steele Bayou and the Deer Creek and Big Sunflower River systems augment drainage in the Delta (Map 1).

FLOOD CONTROL ACTIVITIES IN THE YAZOO RIVER BASIN

The Yazoo Basin faces flooding from three sources: direct Mississippi River overflow, backwater flooding from the Mississippi River, and rapid run-off from the hill area (U.S. Congress 1934). Actions to protect the Basin from flooding grew from individual efforts to coordinated, broader efforts by the Board of Mississippi River Levee Commissioners for Bolivar, Washington, and Issaquena Counties in 1877 and the Yazoo-Mississippi Delta Levee Commission for all of Tunica, Coahoma, Quitman, and Sunflower Counties and portions of DeSoto, Tallahatchie, Leflore, and Yazoo Counties in 1884 (Harrison and Mooney 1993). Subsequently, recognizing the need for interstate levee standards and coordination, Congress authorized the U.S. Army Corps of Engineers (Corps), in conjunction with local levee boards and other local agencies, to undertake Mississippi River and later Yazoo River flood control projects (*See generally,* 33 U.S.C. §§ 701 *et seq.*).

The Corps' ongoing intra-basin, flood control efforts are divided into three projects: the Yazoo Headwater, Yazoo Backwater, and the Big Sunflower River (33 U.S.C. §§ 701a-12(a) & (b)). These projects underwent a "reformulation study" that resulted in the Corps preparing a Draft Upper Yazoo Projects Reformulation Report (1993) to identify and evaluate various plans to: increase urban flood protection, reduce agricultural intensification, and reduce adverse environmental impacts by giving full

consideration to nonstructural and nontraditional flood control measures while ensuring full compliance with environmental statutes discussed below (Ballweber 1995b; Harrison and Mooney 1993). Aspects of the Yazoo Basin's flood control projects remain enmeshed in reformulation reports, Congressional appropriations, and law suits. Much of the controversy stems from questions about whether these projects "adequately" consider natural resources and environmental concerns. These controversies reflect the constantly evolving federal role in and changing national priorities for water resources development including flood control (Harrison and Mooney 1993). In brief, the Yazoo Basin's three flood control projects' features and current status are:

- Yazoo Headwater: consists of new and enlarged levees along the Yazoo, Tallahatchie, and Coldwater Rivers from Yazoo City to Prichard, Mississippi, and channel clearing, cutoffs, and enlargement along the Yazoo, Tallahatchie, and Coldwater Rivers from Yazoo City to Arkabutla Lake. This project is being evaluated as part of the Yazoo Basin projects' Reformulation Study.
- Big Sunflower River Project: about 4,100 square miles bordering the Mississippi River's east levee and west of Cassidy Bayou, Tallahatchie and Yazoo Rivers, and Lower Auxiliary Channel, extending from the Clarksdale, Mississippi, to about 10 miles north of Vicksburg, Mississippi.
- Yazoo Backwater: approximately 1,550 square miles of alluvial lands from the Mississippi River's east levee to the hills north of Vicksburg, Mississippi. The area is subject to backwater flooding from the Mississippi River entering the area through an opening between the end of the Mississippi River levees and the hills. The Backwater project has four separate areas: The Yazoo, Carter, Rocky Bayou, and Satartia areas. Completion of the Muddy Bayou Structure in 1978 mitigated projected fishery impacts. Terrestrial losses are mitigated by four greentree reservoirs and five slough control structures on the Delta National Forest and the acquisition and reforestation of 8,800 acres of frequently flooded cleared lands (Lake George Wildlife Wetland Restoration Project) is underway (http://www.mvk.usace.army.mil/pr/projinfo.htm).

Also relevant to watershed management is the Corps' regulatory authority under section 404 of the Clean Water Act (CWA), 33 U.S.C. §§ 1251 *et seq.* to issue wetlands permits. Consequently, virtually any comprehensive Basin management plan must be integrated with or at least utilize the Corps' broad water resource development and flood control authority.

AGRICULTURAL WATERSHED MANAGEMENT IN THE YAZOO BASIN

The 1936 Flood Control Act, *see* 33 U.S.C. § 701a, authorized the U.S. Department of Agriculture (USDA) to initiate headwater watershed investigations to study measures for run-off and waterflow retardation and soil erosion prevention (*e.g.*, Helms 1988). The 1936 Flood Control Act interjected the USDA into the federal flood control arena and marked the beginning of numerous agricultural projects and programs directly or indirectly related to watershed management in the Yazoo Basin. Initial watershed projects were later enhanced by assorted voluntary USDA conservation incentive programs available to willing landowners. These agricultural programs developed from an educational and technical perspective based on land-grant colleges' research applied in the field by an extension network for disseminating information and providing technical and financial support to local agencies and landowners (Blodgett 1990).

Yazoo and Little Tallahatchie Rivers (Y-LT) Flood Prevention Project

The Flood Control Act of 1944 (PL 534) authorized the USDA through the Soil Conservation Service (now the Natural Resources Conservation Service (NRCS) to install "works of improvement" to reduce flood, sedimentation, and erosion damages and to conserve, develop, utilize, and dispose of water and to conserve and properly utilize land in eleven specific watersheds, including the Yazoo Basin's Yazoo and Little Tallahatchie River (Y-LT) drainages (33 U.S.C. § 701f-3). The Y-LT project ran from 1947 through 1985 and encompasses approximately fifty-eight percent of the Yazoo Basin (USDA 1975; USFS 1988). The project area was delineated into watersheds of 250,000 acres or less (Maps 2 and 3). A further delineation of "minor watersheds" in each sub-watershed was needed for planning purposes. The NRCS used a "top-down" approach to select sub-watersheds for intensive work with local NRCS Districts providing information such as soils maps, present and projected land use, and recommendations for vegetation treatments and on-farm engineering practices. The NRCS then attempted to enroll landowners and prepare as many farm plans as possible in the activated sub-watershed. Landowner input was solicited and plans could be amended to meet landowners' needs and desires while adhering to good conservation principles.

Later a "bottom-up" planning process was adapted to require local landowners to submit a formal request for planning to the NRCS. In addition, *watershed landowners had to form a legal sub-unit of state government authorized to assume certain legal and financial responsibilities*. The U.S. Forest Service (FS) provided assistance with flood water and

sediment on forested agricultural land. By 1975, over 300,000 acres of badly eroded land had been reforested and an additional 250,000 acres of private forest land improved (USFS 1988).

Watershed Protection and Flood Prevention Act of 1954

The Watershed Protection and Flood Prevention Act, 16 U.S.C. §§ 1001 *et seq.*, (hereinafter PL 566), stated that:

> [e]rosion, floodwater, and sediment damages in the watersheds of the rivers and streams of the United States, causing loss of life and damage to property, constitute a menace to the national welfare; and it is the sense of Congress that the Federal Government *should cooperate with States and their political subdivisions, soil or water conservation districts, flood prevention or control districts, and other local public agencies for the purpose of preventing such damages*, of furthering the conservation, development, utilization, and disposal of water, and the conservation and utilization of land and thereby of preserving, protecting, and improving the Nation's land and water resources and the quality of the environment (16 U.S.C. § 1001, emphasis added).

Landowners, organized as local agencies, can receive planning and technical and financial support for "works of improvements" directly benefitting agriculture or rural communities. Works of improvement are undertakings for: flood prevention (including structural and land treatment measures); the conservation, development, utilization, and disposal of water; or the conservation and proper utilization of land in watershed or subwatershed areas under 250,000 acres in size. Local sponsors can request that projects be planned together if they are within a larger watershed (16 U.S.C. § 1002). Following an application for assistance, the USDA can help local sponsors to:

> (1) conduct investigations and surveys necessary to prepare plans for works of improvement;
> (2) prepare plans and estimates required for adequate engineering evaluation;
> (3) allocate costs between multi-purpose projects' various purposes to show the basis of such allocations and to determine if benefits exceed costs;
> (4) cooperate with and provide technical and financial assistance to local organizations:
> (5) obtain the cooperation and assistance of other Federal agencies in these activities;
> (6) enter into agreements with landowners based on conservation plans *developed in cooperation with and approved by the local soil and water conservation district*, providing for changes in cropping systems and land uses and for the installation of soil and water conservation practices and measures to conserve and develop the soil, water, woodland, wildlife, and recreation resources of, and enhance water quality within the planning area.

The Yazoo Basin's Delta has many PL 566 watershed projects (Map 3). Reflecting the utility of PL 566 projects, as of 1993, 1,538 projects were authorized nationwide, of which: 1,324 provide flood prevention; 303 drainage; 89 irrigation; 5 rural water supply; 274 recreation; 96 fish and wildlife habitat enhancement or development; 169 municipal or industrial water supply; 5 water quality and 236 watershed protection. Of the watershed protection projects: 156 primarily address erosion control, 61 water quality, and 9 water conservation (Peterson 1993).

Related Agricultural Soil and Water, and Conservation Programs

The Food and Agriculture Act of 1962, Pub. Law No. 87-703; 16 U.S.C. §§ 3451 *et seq.*, authorized a USDA resource conservation and development program (RC&D) to provide state and local agencies with technical and financial assistance so that they can operate and maintain a planning and implementation process to conserve and improve the use of land, develop natural resources, and improve and enhance the social, economic, and environmental conditions in rural areas (16 U.S.C. § 3453). To realize this goal, the USDA can cooperate and enter into agreements with other federal, state, and local governmental units and nonprofit organizations (16 U.S.C. § 3455). The RC&D programs' regions were delineated by economic, not hydrologic, boundaries but often include PL 566 projects and other water-related development projects (Holmes 1979). The USDA (1975) reports two RC&D projects within the Yazoo Basin. RC&D programs can support:

- land conservation, to control erosion and sedimentation;
- water management, including the conservation, utilization, and quality of water, including irrigation and rural water supplies, mitigation of floods and high water tables, construction, repair, and improvements of dams and reservoirs, improvement of agricultural water management, and *improvement of water quality through control of nonpoint sources of pollution*;
- community development, to develop natural resources based industries, protect rural industries from natural resource hazards, develop adequate rural water and waste disposal systems, improve recreational facilities, and the quality of rural housing, or
- protect fish and wildlife habitats (16 U.S.C. § 3452(1).

The USDA also has broad soil and water conservation authority under the Soil and Water Resources Conservation Act (SWCA), 16 U.S.C. §§ 2001 *et seq*, to cooperate with local agencies to implement mutually developed land treatment plans (Holmes 1979). In addition, the USDA, through its various agencies, administers several voluntary, incentive-based private property land treatment and conservation programs that could be integrated into watershed management (Holmes 1987). The 1996 Farm Bill, P. L. No. 104-127, reauthorized and amended the scope of many of these programs including: Conservation and Wetlands Reserve Programs (CRP, WRP), Wildlife Habitat Improvement Program (WHIP), and the Environmental Quality Incentives Program (EQIP). These programs all provide incentives for landowners to voluntarily undertake different types of conservation measures to promote national natural resources and environmental goals.

The PL 534 and PL 566 projects, in conjunction with Basin landowners' voluntary participation in USDA conservation programs through local agencies, provides a foundation for integrated watershed management within the Basin. A common Basin delineation (Maps 1-3) facilitates cooperative watershed management partnerships between the Corps, the USDA, and local agencies. Also, like the Corps, the NRCS has primary regulatory power for CWA section 404 agricultural wetlands permits.

NATURAL RESOURCES AND ENVIRONMENTAL MANAGEMENT

Natural resources and environmental issues and impacts are considered during water resource projects' planning, and many of the Yazoo Basin's water resource projects include natural resources and environmental components. For instance, the Fish and Wildlife Coordination Act, 16 U.S.C. §§ 661 *et seq*, requires the Corps and USDA to solicit comments from the FWS and Mississippi's Department of Wildlife, Fisheries and Parks on a water resource project's likely impacts to fish and wildlife and their habitats and to take reasonable steps to avoid and/or mitigate adverse impacts. Yet despite local opposition in the Yazoo Basin, the FWS often requested that mitigation include the acquisition of private property for fish and wildlife refuges instead of design modifications or other areawide voluntary conservation measures to enhance fish and wildlife habitat. Likewise, the National Environmental Policy Act (NEPA), 42 U.S.C. §§ 4321 *et seq.*, expanded the type of issues to be considered in federal water resource project planning and required detailed Environmental Assessments and/or Environmental Impact Statements to evaluate alternative plans, including a "no action" alternative (Ballweber 1995b). Nonetheless, NEPA does not require agencies to adopt the environmentally preferred alternative (*See Robertson v. Methow Valley Citizens Council*, 490 U.S. 332 (1989)). While many of the Yazoo Basin's flood control projects were authorized prior to NEPA, compliance with the Act is still a major consideration in completing authorized projects as Congress appropriates funds (*Environmental Defense Fund, Inc. v. Corps of Engineers*, 492 F2d 1123 (5th Cir. 1974)).

Apart from being considered in conjunction with the Corps' and USDA's watershed projects and programs, natural resource and environmental management focused on single resources (wetlands, endangered and threatened species) and media (water, air, solid waste) (GAO 1994). These various statutory schemes can often overlap and have conflicting priorities (*e.g.*, Markell 1994). Especially since the Environmental Movement in the 1970s, Congress has stressed policy innovation without looking at what was created and how well it was working. "In the haste to get new federal water and related environmental programs in place, consultation and concurrence to ensure equitable and effective results have been neglected if not ignored (Light and Wodraska 1990 at p. 479). For example, the General Accounting Office (GAO) (1994) reports that 12 different major statutes delegate some aspect of watershed management authority to the EPA including authority under the CWA to restore and maintain the chemical, physical, and biological integrity of the nation's waters. Finally, unlike the agricultural theme, environmental and natural resource laws like the CWA and the Endangered Species Act (ESA), 16 U.S.C. §§ 1531 developed from a technical, legal perspective in which mandatory, enforceable regulatory criteria are crucial. The primary policy of many environmental statutes is that, "wastes are regulated and polluters pay" (Blodgett 1990).

Until recently, the EPA focused its resources on water pollution point sources to the exclusion of nonpoint source planning efforts (GAO 1991). The FWS's administration of the Endangered Species Act (ESA), 16 U.S.C. §§ 1531 *et seq.*, which requires the FWS to develop threatened and endangered species lists, delineate their critical habitat, and develop recovery plans for listed species, mirrors the EPA's initial single media CWA focus. (*See e.g.*, Ruhl 1998; Houck 1997). However, the CWA provides statutory authority for watershed management including: Areawide Planning, CWA § 208, 33 U.S.C. §§ 1288; Basin Planning, CWA § 209, 33 U.S.C. § 1289; Water Quality Standards and Implementation Plans (including Total Maximum Daily Load (TMDL) criteria), CWA § 303, 33 U.S.C. § 1313; State Water Quality Reports CWA § 305, U.S.C. § 1315; and Nonpoint Source Management Programs CWA § 319, 33 U.S.C. § 1329. In the early 1990s, the EPA and FWS administratively adopted watershed and watershed based ecosystem approaches to apply their respective authority on a regional scale. The EPA's work with local interests and agricultural landowners using the CWA's section 319

program, initiated a nonpoint source pollution project on the Yazoo Basin's Lake Washington in 1991 to adopt Best Management Practices to control nonpoint source pollution demonstrates this new emphasis (EPA 1994). The federal administrative Clean Water Initiative, Fed. Reg. 63(56): 14109-14112 (March 24, 1998), proposes to essentially meld natural resources and environmental legal authority and programs into a *de facto* single theme for new collaborative efforts to restore watersheds not meeting clean water, natural resource, and public health goals, and to maintain other watersheds.

EPA's Watershed Approach aims to: 1) identify primary threats to human and ecosystem health within watersheds; 2) involve local people and organizations in the process; and 3) take corrective actions in an integrated, comprehensive way after problems are prioritized and solutions identified (EPA 1994b). In line with this approach, EPA is providing states with guidance and support to develop TMDLs. Briefly, the TMDL process requires states to identify impaired or threatened waters, set priorities, and allocate pollutant loadings among point and nonpoint sources. EPA then approves the state plan or, if a state fails to submit a plan or a proposed plan is inadequate, develops a plan. All available authorities, programs, and initiatives will then be used to reduce point and nonpoint source pollutants to meet the TMDL levels (EPA 1997). Similarly, the FWS's ecosystem approach to endangered and threatened species recovery and habitat protection is intended to reduce conflicts between endangered species and private development and provide a partnership framework for private individuals and local, state, and federal agencies to plan private development and land use activities to avoid or minimize adverse impacts to endangered species and their habitat (*e.g.*, Ruhl 1998; Houck 1997; Ruhl 1995). The FWS delineates ecosystems on a watershed basis using the U.S. Geological Survey's hydrologic unit maps (GAO 1994).

THE YAZOO BASIN'S WATER-RELATED ADMINISTRATIVE INFRASTRUCTURE

Mississippi has numerous water and water-related laws and state and local agencies, but until recently had neither a comprehensive state water policy or statutory legal mechanisms to facilitate coordinating local agencies' activities to support a watershed or river basin management plan (Mississippi Water Resources Management Planning Council 1995). Notwithstanding the absence of a coordinating mechanism, Mississippi's legislature has provided substantial water and water-related land management authority to various local agencies so that they can participate in federal flood control and agricultural projects and programs. This federal leadership allowed the Yazoo Basins' flood control and agricultural watershed plans and projects to be coordinated on a river basin scale.

The following local agencies are authorized and can be vested with a broad array of water and water-related legal authority:

- Water Management Districts, Miss. Code Ann. §§ 51-7-1 *et seq.*
- Joint Water Management Districts, Miss. Code Ann. §§ 51-8-1 *et seq.*
- Lower Yazoo River Basin District, Miss. Code Ann. §§ 51-23-1 *et seq.*
- Drainage Districts with Local Commissioners, Miss. Code Ann. §§ 51-33-1 *et seq.*
- Drainage Districts with County Commissioners, Miss. Code Ann. §§ 51-31-1 *et seq.*
- Swamp Land Districts, Miss. Code Ann. §§ 51-33-201 *et seq.*
- Flood Control Districts, Miss. Code Ann. §§ 51-35-1 et seq.
- Erosion Control Committees, Miss. Code Ann. §§ 69-27-203 *et seq.*
- Soil and Water Conservation Districts, Miss. Code Ann. §§ 69-27-1 *et seq.*

Local agencies have diverse boundaries -- some follow county boundaries others do not and some boundaries overlap -- and different levels of authority -- some have broad powers while others can be limited to a single purpose. Many of these local agencies are expressly authorized to cooperate and partner with the Corps and/or the USDA and other federal and state agencies on local water resource projects. Briefly, these agencies generally have authority to: carry out demonstration projects and erosion control operations; enact and enforce; often with landowner approval, land use regulations; enter into contracts and agreements with landowners and federal and state agencies to carry out conservation plans; and to obtain land by purchase or gift to carry out control operations (*See generally,* Sage and Jarman 1984). For example, Mississippi's soil and water conservation districts provide local leadership and promote land, water, and related resources' conservation (Miss Code Ann. §§ 69-27-1 *et seq.*). Districts must develop and implement comprehensive plans for agricultural practices to conserve the state's soil and water resources (Miss. Code Ann. § 69-27-35). These plans may:

- ♦ require engineering operations, including the construction of terraces, terrace outlets, check dams, dikes, ponds, ditches, and other structures;
- ♦ require particular cultivation methods, including contour cultivating or furrowing, lister furrowing, planting, strip cropping, seeding, and planting water conserving and erosion-preventing plants, trees and grasses, afforestation, and reforestation;
- ♦ specify cropping programs and tillage practices;
- ♦ require the retirement of highly erodible areas or areas where erosion may not be controlled; and

- require other measures to assist conservation of water and soil resources and prevent or control soil erosion.

Local interests in the Yazoo Basin have a history of actively organizing to use available authority. For instance, Harrison (1961), citing a 1941 USDA study, reported 108 drainage districts in the Yazoo Basin covering about 2,400,000 acres of alluvial land had built over 3,000 miles of drains. Recently, these discreet local agencies have been enhanced by larger geographic scale, but are still local agencies. The Yazoo-Mississippi Delta (YMD) Joint Water Management was voluntarily organized on July 17, 1989, to serve the Delta and part Delta counties that share common surface and groundwater supplies (*See* Mississippi Water Resources Planning Task Force 1992). The YMD could potentially serve as a local watershed-scale water resources coordinating body and assume some of the responsibilities now vested in the Mississippi Department of Environmental Quality and other state agencies as they pertain to the Yazoo Basin (Harrison and Mooney 1993). Similarly, Mississippi's Soil and Water Conservation Commission, representing local soil and water conservation districts state wide, cooperates with Mississippi's Environmental Quality Commission in addressing agricultural nonpoint source pollution and must enter into a memorandum of understanding to establish its role in those issues (Miss. Code Ann. § 69-27-13(m)). The Yazoo Basin's local agencies to various degrees have the authority, but not necessarily the obligation, to adopt enforceable land use regulations necessary to address priority environmental issues such as nonpoint source water pollution issues (*See* Environmental Law Institute 1997). Conversely, for the most part, federal natural resources and environmental management agencies have neither a Yazoo Basin management plan nor a watershed based administrative infrastructure to implement any such plan.

CONCLUSION

There is an abundance of direct and indirect legal authority for watershed management in the Yazoo Basin, but it is scattered among many federal, state, and local agencies with often conflicting goals and missions (*e.g.*,Ballweber 1995; Robinson and Marks 1994). The natural resources and environmental theme is just emerging in the watershed/river basin management arena as an equal partner with the flood control and agricultural watershed projects and water-related land treatment programs' theme rather than being a consideration in their activities. Various suggestions have been offered regarding new mandatory national ecosystem or watershed management legislation to promote this transition (*See e.g.*, Robinson and Marks 1994; Doppelt et al. 1993). Still, regardless of new legislation, the natural resources and environmental theme can either be integrated into the Basin's existing watershed management framework or begin developing an independent watershed management framework.

Together these three themes can coalesce federal, state, and local authority for comprehensive watershed and river basin management; individually, they can not. An examination of agricultural nonpoint source pollution issues demonstrates the difficulties in integrating the themes and the inadequacy of a single theme to address watershed wide problems in that: 1) environmental nonpoint source pollution standards may not correspond to agricultural standards; 2) EPA's regulatory approach to water quality may be difficult to integrate with USDA's mostly voluntary programs in a jointly administered program; and 3) land-based practices would need to be integrated with and compared to in-stream alternatives and the Corps' flood control activities (Braden *et al.* 1982). Likewise, water resource projects' potential adverse fish and wildlife impacts could be mitigated through local agencies' adoption of an ESA Habitat Conservation Plan, consistent with a watershed or river basin management plan to improve critical habitats without the need to establish or enlarge fish and wildlife refuges.

The ideal watershed management framework emphasizes local participation in the planning process so that local agencies and residents can plan and implement effective watershed management plans with state and federal agencies' support and assistance (Hunt 1994). The Yazoo Basin's assorted local and regional agencies have a long history of partnering with the Corps and USDA on water resource projects and programs. These same agencies have legal authority necessary to address priority environmental issues like nonpoint source pollution. The CWA even recognizes the states' primary responsibilities and rights to prevent, reduce, and eliminate pollution and to plan the development, use, restoration, preservation, and enhancement of land and water resources (33 U.S.C. § 1251(b)).

Nationally, many of the USDA's PL 534 and PL 566 projects are nearing the end of their "evaluated life" and need, or will shortly need, substantial repair, rehabilitation, replacement or decommissioning (USDA 1997). A reevaluation of these projects in the Yazoo Basin would provide an opportunity to examine how to better integrate the natural resources and environmental management theme into basin-wide planning. The Basin's water-based administrative infrastructure is not perfect and natural resources and environmental issues were not their primary function, but they are in place and can play a pivotal role in integrated watershed and river basin management. The issue is simply will they be allowed to play this role, or will the natural resources and environmental theme go "Back to the Future" to create another watershed/river basin management administrative framework?

REFERENCES

Ballweber, J. A. 1995. Prospects for comprehensive, integrated watershed management under existing law. Water Resources Update 100: 19-23.

Ballweber, J. A. 1995b. Legal and policy regimes affecting river fisheries in the delta region of Western Mississippi. Mississippi State University.

Blodgett, J. 1990. Closing Remarks. *In:* The role of ground water research in Agricultural policy development and implementation. Reston, Virginia. Agricultural Research Institute. 62-68.

Braden, J. B., D. L. Uchtman, and D. R. Prutton. 1982. Administrative coordination in the implementation of agricultural nonpoint pollution controls. Final Report. University of Illinois at Urbana-Champaign Illinois Water Resources Center. Urbana, Illinois. Research Report No. 171.

Doppelt, B., M. Scurlock, C. Frissell and J. Karr. 1993. Entering the watershed a new approach to save America's river ecosystems. Washington, D.C. Island Press.

Environmental Protection Agency. 1997. Memorandum. New policies for establishing and implementing Total Maximum Daily Loads (TMDLs), EPA Office of Water, Oceans and Wetlands. <http://www.epa.gov/OWOW/tmdl/ratepace.html>

_____. 1994. Section 319 success stories. 841-S-94-004.

_____. 1994b. The watershed protection approach 1993/1994 activity report. EPA840-S-001.

Environmental Law Institute. 1997. Enforceable state mechanisms for the control of nonpoint source water pollution. Washington, D.C.

General Accounting Office. 1996. Water quality a catalog of related federal programs. GAO/RCED-96-173. Washington, D.C.

_____. 1994. Ecosystem management additional actions needed to adequately test a promising approach. GAO/RCED-94-111. Washington, D.C.

_____. 1991. Need for greater EPA leadership in controlling nonpoint source pollution. GAO/T-RCED-91-60. Washington, D.C.

Harrison, R. W. 1961. Alluvial empire. Delta fund in cooperation with the Economic Research Service, USDA. Distributed by Pioneer Press, Little Rock Arkansas.

Harrison, R. W. and J. F. Mooney, Jr. 1993. Flood control and water management in the Yazoo-Mississippi Delta. Mississippi State University, Social Science Research Report Series 93-5. Mississippi State, Mississippi.

Helms, D. 1988. Small watersheds and the USDA: legacy of the Flood Control Act of 1936. In: Rosen, H and M. Ruess (Editors), 1988. The flood control challenge: past, present, and future. Public Works Historical Society, Chicago, Illinois.

Holmes, B. H. 1987. Legal authorities for federal (USDA) state and local soil and water conservation activities. USDA Economic Research Service, Washington, D.C.

_____. 1979. History of federal water resources programs and policies, 1961-70. USDA Miscellaneous Publication No. 1379.

Houck, O. A. 1997. On the Law of Biodiversity and Ecosystem Management. Minnesota Law Review 81:869-979.

Hunt, C. E. 1994. Improving the Effectiveness of Flood Damage Reduction Policies Through an Integrated Approach to Watershed Management. Water Resources Update 97:21-24.

Light, S. S. and J. R. Wodraska. 1990. Forging a New State-Federal Alliance in Water Management Institutional Challenges in Water Management. Natural Resources Journal 30: 477-484.

Markell. D. L. 1994. States as innovators: It's time for a new look to our 'Laboratories of Democracy' in the effort to improve our approach to environmental regulation. Albany Law Review 58(2): 347-411.

Mississippi Water Resources Management Planning Council. 1995. A Water Management Plan for the State of Mississippi. Mississippi Department of Environmental Quality, Office of Land and Water. Jackson, Mississippi.

Mississippi Water Resources Planning Task Force. 1992. Final report.

Peterson, J. W. 1993. PL-566 - A watershed management solution. In: Proceedings: Third National Watershed Conference, May 16-19, 1993. The National Watershed Coalition. 209-212.

Robinson, A. and R. Marks. 1994. A Clean Water Act Blueprint for the Mississippi. Izaak Walton League of America and Natural Resources Defense Council.

Ruhl, J. B. 1998. While the cat's asleep: The making of the "new" ESA. Natural Resources and the Environment. 12(3):187-226 (inclusive).

_____. 1995. Biodiversity conservation and the ever-expanding web of federal laws regulating nonfederal lands: Time for something completely different? University of Colorado Law Review. 66(3) 555-673.

Sage, A. L., and M. C. Jarman. 1984. A legal analysis of water management for Mississippi. University, Mississippi. Mississippi Law Research Institute, University of Mississippi Law Center.

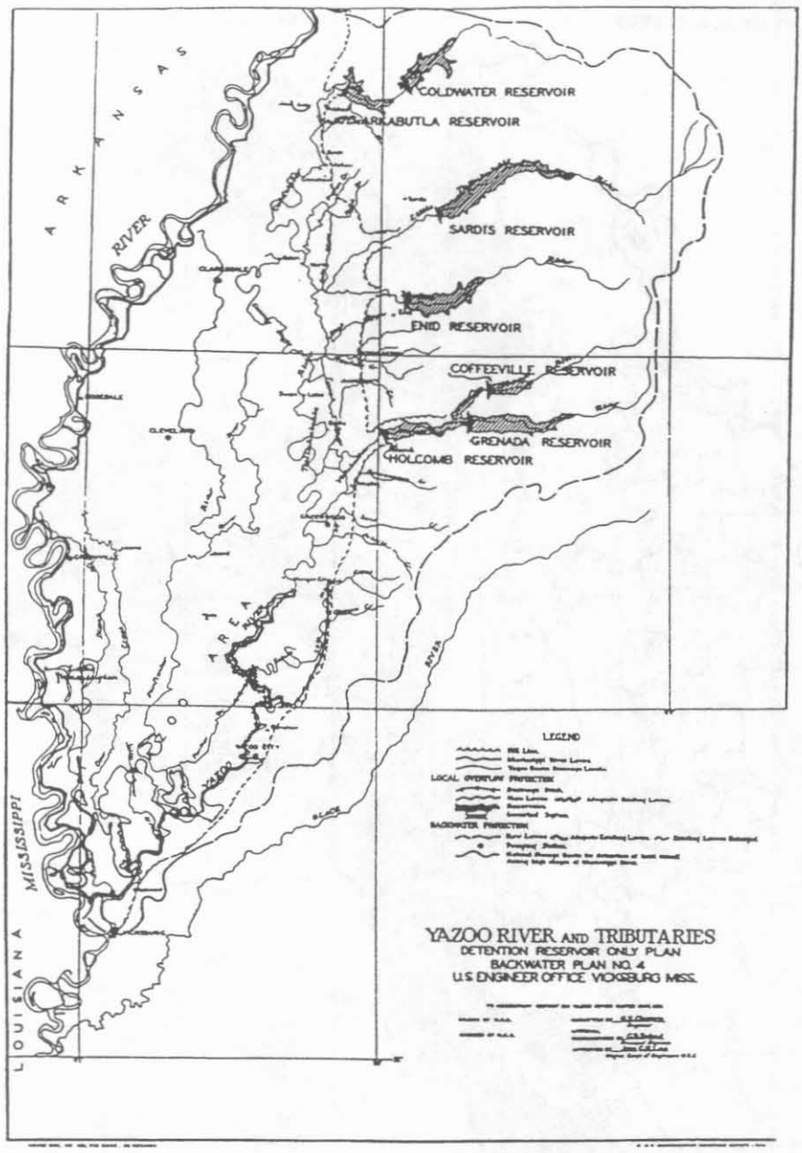
U.S. Congress. 1934. Yazoo River, Miss. House Document No. 198, 73rd Cong. 2d Sess.

United States Department of Agriculture. 1975. Yazoo-Mississippi River Basin Study Mississippi. Jackson, Mississippi

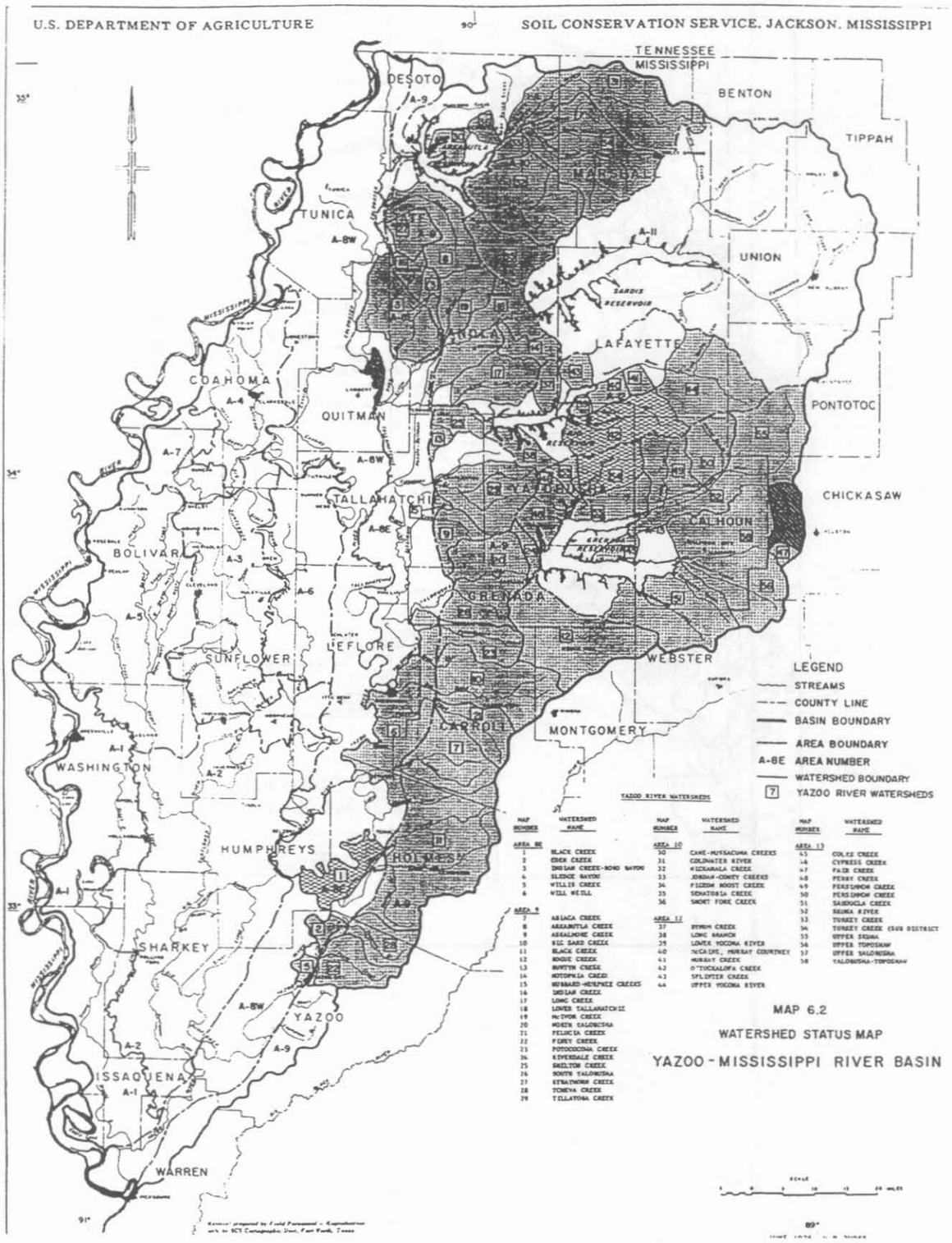
_____. 1997. The NRCS watershed program['s] role in locally-led conservation: A strategy for the 21st Century [Draft for comment]. <http:www.nhq.nrcs.gov/CCS/ /CCS/Watrshd.html>

U.S. Forest Service. 1988. The Yazoo-Little Tallahatchie flood prevention project: A History of the Forest Service's role. Forestry Report R8-FR-8.

Map 1: A 1934 U.S. Army Corps of Engineers Yazoo River Basin flood control alternative. From: House Document 198, 73rd Cong. 2d Sess. 1934.



MAP 2 YAZOO RIVER PL 534 WATERSHEDS (USDA, 1975)



MAP 3 PL 566 AND LITTLE TALLAHATCHIE WATERSHED PROJECTS (USDA, 1975)