

MISSISSIPPI RIVER AND TRIBUTARIES
YAZOO BASIN, MISSISSIPPI
BIG SUNFLOWER RIVER MAINTENANCE PROJECT

ENVIRONMENTAL ASSESSMENT

1. In accordance with the Procedures for Implementing the National Environmental Policy Act (33 CFR, Part 230, 3 February 1988), this Environmental Assessment (EA) assesses cumulative impacts and additional studies on water quality, sediments, an endangered plant (pondberry (*Lindera melissifolia*)), and freshwater mussels. This assessment tiers from Supplement No. 2 to the Final Environmental Impact Statement (FSEIS No. 2), Flood Control, Mississippi River and Tributaries, Yazoo Basin, Mississippi, Big Sunflower River Maintenance Project.

PROJECT NEED AND AUTHORITY

2. The proposed Big Sunflower River maintenance work is designed to reduce flooding by restoring channel capacities to 1962 postproject flowlines. The proposed maintenance work consists of sediment removal and vegetative control on all or parts of the Big Sunflower River, Little Sunflower River, Dowling Bayou, Bogue Phalia, and Bogue Phalia Cutoff from points downstream of Highway 82 to their confluence with the Yazoo River (Plate 1).

3. Following the 1927 flood of the lower Mississippi River Valley, the Federal Government initiated the Flood Control Act (FCA) of 15 May 1928. Subsequent legislation modified the 1928 Act and resulted in the development of the Mississippi River and Tributaries Project.

Included in this project was the Big Sunflower River Basin Project. This project was authorized by the FCA of 22 December 1944, as amended by FCA's approved 24 July 1946 and 17 May 1950.

4. The primary purpose of the Big Sunflower River Basin project was to alleviate flooding in the basin through channel improvements on the Big Sunflower, Little Sunflower, Hushpuckena, and Quiver Rivers and their tributaries, and on Hull Brake-Mill Creek Canal, Bogue Phalia, Ditchlow Bayou, Deer Creek, and Steele Bayou. The authorized channel improvement works were incorporated into the Mississippi River and Tributaries Project by the FCA of 24 July 1946. The 1946 Act also altered the project to include upstream and downstream extensions as required. The FCA of 1950 modified local cooperation by changing project right-of-way requirements from a non-Federal to Federal expense. The FCA of 23 October 1962 authorized improvements to Gin and Muddy Bayous in the Quiver River Basin. Additional work in the Steele Bayou area and water control structures in nine lakes for fish and wildlife purposes were authorized by the FCA of 27 October 1965. Expanded flood damage reduction work in Steele Bayou, Main Canal, and Black Bayou was approved by Congressional Public Works Committees on 15 and 17 December 1970 (USAED 1975).

5. The Board of Mississippi Levee Commissioners and Yazoo-Mississippi Delta Levee Board have been responsible for minor maintenance of the Big Sunflower River such as vegetation control, removal of drift material, and removal of sedimentation at the mouth of small tributaries

and local drainages since the original work was completed in the 1960's. However, local sponsors are not responsible for major maintenance. Surveys and engineering data indicate that the lower reaches of the Big Sunflower River (river mile (RM) 6.9-75.6), Holly Bluff Cutoff, Little Sunflower River (RM 7.0-27.7), Dowling Bayou (RM 0.0-8.0), Bogue Phalia (RM 0.0-24.2), and Bogue Phalia Cutoff have experienced loss of design capacity and therefore require major maintenance. Current stages within the lower Big Sunflower River Basin are 1 to 3 feet above the 1962 design flowline due to vegetation growth and sedimentation (USAED 1993a). Major maintenance, which is the responsibility of the Corps of Engineers, is proposed to restore channels to authorized design capacities. The proposed maintenance work would restore channel capacities of the Big Sunflower River to the 1962 postproject flowline, thereby reducing current headwater flooding.

ALTERNATIVES

6. The no-action alternative would not provide any reduction in the current flooding problems of the lower Big Sunflower River Basin. Current adverse flooding impacts to rural residences, cropland, and other agricultural interests would continue at the current level or perhaps increase. Flood-related health, safety, and social welfare problems of area residents would continue, as would flood damages to rural roads, bridges, and other structures.
7. The first structural alternative (Alternative 1) included use of a hydraulic dredge to excavate the entire 8.42 million cubic yards of material from the channels to be pumped to confined

disposal facilities (CDF's) and thin layer disposal (TLD) sites. The CDF's and TLD sites would be set back from channel banks and located to minimize impacts to bottom-land hardwoods and cotton land. CDF's will be constructed to contain an approximate 6-foot depth of dredged material. The dike embankment for the CDF's will be obtained within the proposed disposal facilities. Thin layer disposal will require about three times more land area than do the CDF's. However, based on a study by the U.S. Army Engineer Research and Development Center (ERDC), portions of the site would be available for agricultural purposes after the material has drained. The facilities will be constructed to contain approximately 3 feet of dredged material. In hydraulic dredging, the optimum distance between CDF's and the dredge is 1 mile. The channel clearing and snagging reaches, totaling 28.3 miles, would be done by dragline. Approximately 1,138 acres of agricultural land and 160 acres of bottom-land hardwoods would be directly impacted (cleared) by this alternative. In addition, waterfowl, wetlands, and fisheries habitat would be indirectly impacted by hydrologic changes due to this alternative.

8. The second structural alternative (Alternative 2) consisted of excavating the entire 8.42 million cubic yards of channel material and the 28.3 miles of channel clearing and snagging by dragline. The location for placement of the excavated material would be along top bank adjacent to the channel. Clearing of the material would be required and would necessitate clearing 1,140 acres of bottom-land hardwoods. In addition, waterfowl, wetlands, and fisheries habitat would be indirectly impacted by hydrologic changes due to this alternative.

9. An alternative (Alternative 3) of combining hydraulic dredging and dragline to excavate 8.42 million cubic yards of material was studied in detail. A hydraulic dredge would be used to excavate 7.75 million cubic yards, and a dragline would be used to excavate 0.67 million cubic yards. Confined disposal facilities and up to 75 percent TLD sites would be utilized as described in the hydraulic dredging alternative. Generally, the dragline would be used where rights-of-way currently exist, where channels are too shallow to float a dredge/barge, or where numerous, low clearance bridges make it inefficient to operate a hydraulic dredge. Approximately 4,038 acres of agricultural lands and 443 acres of bottom-land hardwoods would be directly impacted by CDF's or TLD sites under this alternative. Most of the directly impacted agricultural land is expected to remain productive or be improved. In addition, waterfowl, wetlands, and fisheries habitat would be indirectly impacted by hydrologic changes due to this alternative.

10. A nonstructural alternative was evaluated for comparative purposes. This alternative consisted of acquiring perpetual flowage easements on land currently being impacted by flooding in the Big Sunflower River Basin. The purpose of this approach was to purchase the easement in lieu of maintenance and allow the land to continue to flood. The cost of this alternative was more than twice as expensive as performing the proposed maintenance and was not cost effective. Because this alternative was not feasible, it was not studied in more detail.

ENVIRONMENTAL SETTING

GENERAL

11. The Big Sunflower River Basin encompasses 2,100 square miles of the Yazoo River Basin in northwest Mississippi (USAED 1975). The proposed maintenance work is located in the southern half of the Big Sunflower Basin within portions of Sunflower, Washington, Humphreys, Sharkey, and Yazoo Counties (see Figure 1-1, FSEIS No. 2). Agriculture is the dominant land use and a major economic resource. Important ecological resources are the remaining privately owned bottom-land hardwood tracts and associated wetland areas, the Delta National Forest, Twin Oaks Wildlife Management Area (WMA), Lake George WMA, and wildlife and waterfowl found in these areas.

WATERFOWL RESOURCES

12. A waterfowl technical appendix (Appendix E, FSEIS No. 2) evaluates the impacts of the proposed maintenance project on waterfowl. The seasonal carrying capacity in the project area is approximately 4,536,878 average annual duck-days (based on the caloric value of available foods) on 26,651 average annual acres of flooded foraging habitat present between 1 November and 28 February.

TERRESTRIAL RESOURCES

13. General cover types within the project area include agricultural land, forest land, and scattered small residential communities. The northern part of the project area (above Delta National Forest) is dominated by agricultural land with scattered bottom-land hardwoods and cypress/tupelo tracts. The southern portion is largely composed of forest land (Delta National Forest, Twin Oaks WMA, and other large contiguous blocks), but also contains small communities (Wakely 1995). Agricultural lands and community areas provide limited habitat for a few species (with the exception of waterfowl, see Appendix E, FSEIS No. 2). Forested areas provide the optimum and most stable terrestrial habitat. An evaluation of the proposed maintenance project's impacts to forested terrestrial habitats was conducted by ERDC and is included as Appendix F in the FSEIS No. 2. This evaluation focused on the impacts to bottom-land hardwoods and a representative group of its associated wildlife species (woodpeckers, owls, songbirds, squirrel, wood duck, and mink). Cypress/tupelo cover types exist within the project area, but would not be impacted by the project. The evaluation used the U.S. Fish and Wildlife Service's (FWS) Habitat Evaluation Procedures (HEP) to quantify impacts of the project. Habitat Suitability Index (HSI) values ranged from 0.65 to 0.86 for barred owls, Carolina chickadees, pileated woodpeckers, and mink (riverine habitat) indicating above average habitat quality for those species. The wood duck and mink (forested wetland) HSI values were 0.0 which indicates unsuitable habitat.

WETLAND RESOURCES

14. Wetlands within the project area provide multiple functions including wildlife habitat, short- and long-term water storage, water velocity reduction and sediment detention, nutrient removal, prevention of shoreline erosion, and export of organic carbon to downstream aquatic ecosystems (Spencer and Schneider 1996). A technical valuation of the proposed maintenance project's impacts on wetlands within the project area was conducted by ERDC and is included as Appendix G, FSEIS No. 2. The project area contains 33,831 acres of frequently flooded agricultural lands and 175,075 acres of forested wetlands for a total of 208,906 wetland acres (Appendix G, Table 10, FSEIS No. 2). Frequently flooded agricultural lands have been cleared of forest vegetation and generally contain drainage ditches, fill, or perhaps small levees. Forested wetlands within the project area consist of bottom-land hardwood wetlands and cypress tupelo swamps.

FISHERIES

15. Existing information on fisheries population, abundance, and habitat relationship in the project area was minimal. Consequently, data concerning fisheries abundance, distribution, and habitat were collected between April and September 1993. An aquatic HEP quantified baseline flood plain and riverbank habitat and assessed project impacts to these habitats. The HEP study used the blacktail shiner, ghost shiner, smallmouth buffalo, channel catfish, flathead catfish,

largemouth bass, white crappie, and freshwater drum as evaluation species. For specific methodologies and details of the evaluation, see Appendix H, FSEIS No. 2.

16. A total of 48 fish species were collected during the study. Fishes collected were taxonomically dominated by minnows (13 species), sunfishes (12 species), and catfishes (7 species). Other dominant fish species collected include mosquito fish, orange spotted sunfish, gizzard shad, ghost shiner, blacktail shiner, white crappie, bluegill, and freshwater drum.

FRESHWATER MUSSELS

17. In September-October 1993, a study was conducted by ERDC on the Big Sunflower River (Appendix I, FSEIS No. 2). Searches for mussels were made at several locations within the project area, but were concentrated within specific reaches suspected to provide suitable habitat. Four reaches downstream from Lock and Dam No. 1 (unimproved RM 62-33.7) and one reach upstream from the dam (unimproved RM 62.2-149.2) were extensively surveyed. A total of 28 species of mussels were collected during the entire survey. The beds downstream of Lock and Dam No. 1 yielded 20 species and were dominated by *Amblema plicata plicata* (threeridge mussel). The threeridge comprised 68 percent of the mussel specimens and was followed at 19 percent by *Plectomerus dombeyanus* (bankclimber). Several species not commonly collected from southern streams were found. They included *Lampsilis hydiana*, *Uniomrus declivis*, *U. tetralasmus*, *Pleurobema pyramidatum*, and *P. coccineum*.

18. Supplemental information is now being added to Appendix I, FSEIS No 2. This supplemental information on freshwater mussels was collected by additional mussel surveys on the Big and Little Sunflower Rivers during the years 2000 and 2001. No Federally listed threatened or endangered species were collected. However, two live individuals of the state-listed sheep nose (*Plethobasus cyphus*) and the pyramid pigtoe (*Pleurobema pyramidatum* also referred to as *P. rubrim*) were collected. The former species was only found in the upper river; the latter species was found in the upper and mid-river, although it was most common in the upper river. The rabbitsfoot (*Quadrula cylindrical cylindrical*), also a state-listed species, was not collected alive although several shells were collected in the upper river. No sampling performed to date has found the rabbitsfoot or the sheep nose downstream of Highway 82, the upper limits of the Big Sunflower River Maintenance Project on the Big Sunflower River. The former two species were found in the upper Big Sunflower River north of the Highway 82 Bridge at Indianola, Mississippi, but not in the lower river. The pyramid pigtoe has been found in the upper and lower Big Sunflower River.

19. Several high density beds of mussels were located upriver of the Highway 82 bridge at Indianola. Beds characterized by moderate to high density were found at Waypoints 21, 22, 26, 27, 29, 31, and 33. As described above, all three of the state-listed endangered species have been found in these beds. Typically, the fauna at these sites was comprised mainly by three species. In the upper river, the fauna was dominated by the bank climber (*Plectomerus dombeyanus*), the bleufer (*Pleurobema pyramidatum*), followed by *Plethobasis cyphus* and then *Q. cylindrical cylindrical*. Density throughout most of the river (outside of the mussel beds) is moderate (Appendix I, FSEIS No. 2).

THREATENED AND ENDANGERED SPECIES

20. The FWS identified the following threatened and endangered species of concern: pondberry (*Lindera melissifolia*), pallid sturgeon (*Scaphirhynchus albus*), and Louisiana black bear (*Ursus americanus luteolus*). Pursuant to Section 7 of the Endangered Species Act, biological assessments (BA) for each species were prepared and are presented in Appendix K, FSEIS No. 2. Pondberry is a low-growing, deciduous shrub ranging in height from 0.5 to 2 meters (1.5 to 6.5 feet). In general, pondberry occupies bottom-land hardwoods, depressions, margins of sandy sinks and swamps and swamp depressions, regions of sandy sinks and ponds, and swamps and swampy depressions. The supplement to Appendix K, SEIS No. 2 (this supplemental BA) for pondberry will update the 1991 pondberry profile and the 1996 BA. The pallid sturgeon requires large, turbid, free-flowing riverine habitat with rocky or sandy substrate and is one of the largest fish found in the Missouri, Middle and Lower Mississippi, Platte, Kansas, and Yellowstone Rivers. This sturgeon has experienced a dramatic decline throughout its approximately 3,550-mile range over the past 20 years. The FWS has determined the Louisiana black bear to be a threatened species within its historic range. This range includes southern Mississippi, Louisiana, and east Texas. Since the turn of the century, bear habitat has been significantly altered or eliminated throughout much of its range. Black bears are primarily animals of heavy wooded areas. Preliminary estimates of home range size indicate adult males may utilize from 1,500 to 40,000 acres. These acreages include combinations of forested and open lands.

SPECIES OF SPECIAL CONCERN--BATS

21. There could be as many as 14 species of bats utilizing the lower Big Sunflower River Basin. None of these bats are considered endangered or threatened. These bats are nocturnal and venture out of daytime roosts when the weather is warm enough to feed in the evening or night on insects. Roosts that can be used include such places as crevices, buildings, garages, culverts, bridges, hollow trees, foliage of trees, loose bark on trees, and Spanish moss. Feeding areas can include areas above ponds and streams, areas near treetop level at the forest edge, zones among the canopy, and over clearings. This information about roosting and feeding activities has been used to assess the project's effect on bats.

WATER QUALITY

22. Detailed information on water quality can be found in Appendix L, FEIS No. 2 and supplement to Appendix L. Overall, water quality in the Big Sunflower River Basin is in compliance with state water quality standards for priority pollutants, but does not meet the state benchmarks for aquatic life. The basin's streams and lakes are largely affected by extensive agricultural development. Data collected throughout the basin indicate that the surface waters are high in turbidity and have high concentrations of nitrates and phosphorous. Other identified pollutants are mercury, DDT, and other pesticides. Water and sediment data collected within the basin indicate a greater tendency for pesticides to be found in the sediments than in the surface waters. The pesticides most frequently detected in the sediments were DDT, DDD, DDE,

endosulfan (A&B), endosulfan-sulfate, endrin, endrin aldehyde, aldrin, G-BHC, B-BHC, D-BHC, and heptachlor epoxide (Appendix P). Comparison to historical data reveals that the levels reported and the frequency of detection of pesticides are considerably lower than those reported 10 to 15 years ago.

RISK ANALYSIS

23. A risk analysis has been prepared for this supplemental EA by Menzie-Cura & Associates, Inc. (see Appendix O, FSEIS, No. 2). This risk assessment addresses the potential aquatic, ecological, and human health effects from exposures to DDT, DDD, and DDE originating from sediments of the Big Sunflower River Basin. It relies on measured and estimated concentrations of these chemicals in sediment, water, soil, and fish tissue. It estimates and compares potential exposure and risk in the Big Sunflower River Basin under two general long-term conditions. The analysis and conclusions in this assessment depended heavily upon a bioaccumulation model, the FISHRAND model. This model relied on the results of several fate and transport models that provided predicted sediment and water exposure concentrations under the long-term conditions.

CULTURAL RESOURCES

24. A literature review supplemented by a comprehensive cultural resources inventory within affected waterways of the Big Sunflower River Maintenance Project was conducted by Panamerican Consultants, Inc., for the Vicksburg District from August to mid-December 1993.

The study area, consisting of 500-foot (150-meter) corridors beyond top bank, was divided into four sections, each representing a different part of the project's area of potential effects (APE). The study identified 624 historic and prehistoric sites within the project's APE. Fifty-two (about 8 percent) of these sites were either listed, previously determined eligible, or considered potentially eligible for the National Register of Historic Places (NRHP). An additional eight (about 1 percent) sites were not fully evaluated during the study, and their NRHP eligibility is unknown. The results of this study will be coordinated with the Mississippi State Historic Preservation Office to ensure that adverse impacts to cultural resources within the project APE are avoided. All sites eligible for listing in the NRHP would be avoided, where practical, or mitigated. For additional information concerning cultural resources, see Sections 3.8 and 5.2.6 of Volume 1, FSEIS No. 2.

SOCIOECONOMIC RESOURCES

25. The following paragraphs describe the socioeconomic characteristics of the region of influence (ROI) for the Big Sunflower River Maintenance Project. The ROI is composed of Humphreys, Sharkey, Sunflower, Washington and Yazoo Counties and the cities of Holly Bluff, Anguilla, Indianola, Leland, Greenville, and Rolling Fork. The parameters presented in this section include population, housing, employment, and land use in the ROI.

26. The population in the ROI totaled 145,508 in 1990 which exhibits a decline from the 1980 total of 156,432 persons. Washington County accounts for 47 percent of the total population,

followed by Sharkey County with 23 percent and Yazoo County with 17 percent. Greenville is the largest city in the ROI and serves as a trade center to the Delta Region. Additional cities near the project location include Leland, Indianola, Anguilla, Panther Burn, and Rolling Fork. The majority of the ROI population resides in rural areas. The only exception is Washington County, which is 70 percent urban.

27. Total part-time and full-time employment in the project area is 63,801 jobs (U.S. Department of Commerce 1991b). This represents a 3 percent increase from 1985. The three leading employment sectors include services (accounting for 20 percent of total employment), manufacturing (19.5 percent) and government/government services (19 percent). The leading income sectors follow those of employment. Manufacturing comprised the largest share of total income, about 14 percent (U.S. Department of Commerce 1991c). However, it was followed closely by the government and services sectors with 12 and 11 percent, respectively. Income from farming (10 percent) should also be noted because it is considerably higher than the national average of 1 percent.

28. Transportation by road, rail, air and water is available in the ROI. The main roadways are U.S. Highways 61, 49E and 49W and the Great River Road (State Highway 1). U.S. Highway 82 and State Highways 8 and 12 provide the major east-west routes. Water transportation is possible by way of the Mississippi River and the Yazoo River.

29. The majority of the land area in the ROI is utilized for agricultural activity. It is estimated that there are a total of 459,167 acres of soybean production, 404,149 acres in cotton, 82,914 acres in rice, 70,712 acres in wheat, 22,888 acres in grain sorghum, and 15,125 acres in corn production in the five ROI counties. In addition, approximately 420,800 acres within the ROI are classified as forest/timberland.

30. Farmland is the dominant land use with 1,054,715 acres within the five-county area in agricultural production. A request was made to the Natural Resources Conservation Service's (NRCS) Soil Scientist to quantify the amount of important farmland potentially impacted by the proposed maintenance alternatives. This request was made pursuant to coordination requirements of the Farmland Protection Policy Act. A copy of the Farmland Impact Rating completed by the NRCS and the Vicksburg District is included in Appendix D, FSEIS No. 2.

ENVIRONMENTAL CONSEQUENCES

WATERFOWL RESOURCES

31. A waterfowl appendix (Appendix E, FSEIS No. 2) contains the evaluation of the proposed maintenance project on waterfowl. The selected plan, Alternative 3, would result in the conversion of 443 acres of bottom-land hardwoods and 4,038 acres of agricultural lands. Of this amount, 2,204 acres are considered to have waterfowl foraging potential. The selected alternative (Alternative 3) would reduce winter migratory waterfowl foraging capacity by 481,200 duck days or approximately 10 percent of existing baseline conditions.

TERRESTRIAL CONDITIONS

32. Impacts of each project alternative were determined by calculating the net change in average annual habitat units (AAHU's) between with-project and without-project conditions for each evaluation species (Appendix F, FSEIS No. 2). Implementing the selected alternative would result in the loss of 1,739 AAHU's. Complete compensation for these project-induced habitat losses would require 822 acres of reforestation. There would be no loss of wood duck habitat within the forest with any alternative, and losses to mink would be greatest under alternatives that involve streambank clearing.

WETLAND RESOURCES

33. A total of 995 Functional Capacity Units (FCU's) from forested wetlands and 160 FCU's from cleared wetlands would be lost without compensation measures (Appendix G, FSEIS No. 2). The FCU's lost represent 0.6 percent of forested wetlands and 0.5 percent of frequently flooded agricultural lands. It has been determined that the purchase and reforestation of 1,912 acres of farmed wetlands would be required to compensate for all the wetland FCU's that would be lost by implementing the recommended alternative.

FISHERY RESOURCES

34. The HEP was used to quantify changes in fish spawning and rearing habitat for preproject and postproject conditions. Spawning and rearing habitat is defined as an area used by fish for deposition of fertilized eggs, incubation of eggs, and development of larvae. Riverbanks were mapped from the water surface up to a bank elevation corresponding to the mean stage height during the reproductive season of the 5-year period from 1989-1993. Implementation of the recommended alternative would result in the loss of 5,472 HU's of flood plain habitat and the loss of 36.1 HU's of riverbank habitat. These losses would be compensated for by the purchase and reforestation of 1,907 acres of frequently flooded agricultural lands and the provision of 7.5 acres of riverbank habitat.

FRESHWATER MUSSEL RESOURCES

35. Channel maintenance will take place in the lower river, downstream of the Highway 82 bridge. Therefore, mussels in this upper reach should be virtually unaffected by activities in the lower reach. The mussels in the high-density beds could be directly affected. Virtually anywhere in the river one can find low-density assemblages of mussels in shallow water along the shore. Dredging will be mainly restricted to the thalweg, so the majority of these mussels should be unaffected. Direct effects include either being killed by the dredge or being disposed of in an upland disposal site. Indirect effects, which might not necessarily be lethal, include stress caused by elevated suspended sediments or burial. Mitigation measures will be placed in

the Big Sunflower River to reduce these adverse impacts to mussels (Appendix I, FSEIS No. 2). These measures would include structures such as dikes, low water weirs, substratum improvement, and fish attractors. In addition to the habitat improvement structures, the dredging plan will be modified to protect as much mussel habitat as possible by establishing no work reaches and avoidance areas.

THREATENED AND ENDANGERED SPECIES

36. The BA's determined that the project is not likely to have adverse effects on any of the species. Since preparation of the initial BA for pondberry, supplemental information on this species has been considered, and a new supplemental BA has been prepared for this species. This BA supplements Appendix K, FSEIS No. 2. This original BA was prepared using 1996 data. Some additional surveys were conducted by the Corps in 2000, and the FWS conducted some recent studies in 2001. Dr. Dale Magoun performed a statistical analysis and reaffirmed that the project is not likely to have an adverse effect on pondberry. He found that the frequency of flooding as measured did not adversely affect pondberry characteristics. Pondberry characteristics analyzed included number of clumps, number of stems, number of dead stems, number of females or mature fruit, stem height, and stem diameter. Dr. Magoun concluded that there will be no flooding effects on pondberry from the Big Sunflower River Maintenance Project; hence, the project is not likely to affect pondberry. Appendix D of the supplemental BA contains the statistical analysis performed by Dr. Magoun.

SPECIES OF SPECIAL CONCERN--BATS

37. The compensation measures for the Big Sunflower River Maintenance Project, which included the purchase and reforestation of 1,912 acres of frequently flooded cleared lands, will affect habitat for bats in the area. After these lands become woodlands, there will be more woodlands in the project area than exist under existing conditions. These impacts would adversely affect to a minor degree the southeastern myotis, the eastern small-footed bat, and the eastern red bat that feed over cleared areas; however, 11 species that use woodlands will benefit from these measures. These species are the little brown myotis, northern long-eared myotis, eastern pipistrelle, big brown bat, Rafinesques big-eared bat, Seminole bat, Honry bat, northern yellow bat, silver-haired bat, evening bat, and Brazilian free-tailed bat.

WATER QUALITY

38. The major impacts to water quality associated with the proposed project will come from channel dredging operations. Possible impacts due to channel dredging are increases in turbidities, shifts in aquatic species, and the potential for increased bank instabilities. The majority of these impacts will be temporary and will persist only during the construction period. Previous dredging operations have shown that once construction operations stop, the elevated turbidity and solids levels begin returning to preproject levels within a few days.

39. Earlier this year the State issued a fish consumption advisory for the Yazoo Basin. The advisory was not a result of increases in fish tissue levels, but was a result of a change in policy regarding fish consumption advisories. In response to this change, the Vicksburg District initiated bioassays for DDT accumulation and toxicity. In addition, the District contracted a risk assessment to determine the potential risk due to dredging to human health and the aquatic environment (Appendix O). The bioassays determined that the current levels of total DDT in the sediment bioaccumulate but to levels that are not toxic and do not cause growth inhibition in the test organisms. The risk assessment determined that dredging would not increase risk to human health or to the aquatic environment, but that short-term benefits would begin to accrue immediately following dredging and remain for several years post dredging.

RISK ANALYSIS

40. The Comparative Ecological and Human Health Risk Assessment indicated that predicted effects of dredging and disposal on water quality, sediment concentrations, and biological body burdens were minimal and would be under all circumstances for the likely range of model assumptions. The ecological assessment indicated that generally there is no potential risk to the fish community in Items 1, 2, 5, 6, 7, and 10, based on the measurement endpoints, invertebrate body burdens and fish body burdens of DDT, DDD, and DDE under the no dredging or dredging conditions. In Item 8, there is potential for risk to the fish community based on body burdens in invertebrates and body burdens in all modeled fish species. The predicted dredging conditions in Item 8 neither ameliorate nor exacerbate this potential risk. There is potential risk to wildlife in

Items 1, 6, 7, 8 and 10 based on the measurement endpoint, doses of DDT, DDD, and DDE to osprey and in all items based on the measurement endpoint, doses of DDT, DDD, and DDE to mallard duck. The dredging conditions ameliorate this risk in Item 6 for osprey and Item 2 for the mallard duck. There is no potential risk to mammals, as represented by mink in any of the items under either long-term conditions evaluated.

41. The human health risk showed generally that there is potential for risk to anglers consuming fish from the rivers in the Big Sunflower River Basin and the proposed dredging project neither exacerbates nor ameliorates these risks.

CUMULATIVE EFFECTS

42. The cumulative effects of all likely actions in the project impact zone have been assessed. The use of the scoping process, accepted evaluation methods, effects of water resource projects on ecological resources, and an analysis of past, present, and future actions on the project impact zone were all used to determine the cumulative effects on significant resources. These effects are discussed more fully in Appendix N of this EA.

SECTION 404(b)(1) CONSIDERATIONS

43. As required by Section 404(b)(1) of the Clean Water Act, an evaluation assessing the short- and long-term impacts associated with the discharge of dredged and fill materials into the waters

of the United States has been made for the Big Sunflower River Maintenance Project (Appendix A, FSEIS No. 2.). The project was found to be in compliance with the 404(b)(1) guidelines promulgated by the Environmental Protection Agency.

COMPLIANCE SCHEDULE

44. The relationship of the maintenance work to requirements of environmental laws, Executive Orders, memorandums, land use plans, and permits was evaluated (Table EA-1).

CONSULTATION AND COORDINATION

45. The Draft and Final Supplemental Environmental Impact Statements were sent to everyone on the project mailing list for their review and comments. There was a tremendous volume of public comment and review letters received in response to the draft EIS. All comment letters were thoroughly examined by the Vicksburg District. Where appropriate, revisions to the SEIS and supporting documents were made in response to suggestions or questions present in the public comment letters.

TABLE EA-1
RELATIONSHIP OF THE PROPOSED ACTION TO
ENVIRONMENTAL PROTECTION STATUTES AND REQUIREMENTS

Item	Compliance
<u>Federal Statutes</u>	
Archeological and Historic Preservation Act, as amended, 16 U.S.C. 469, <u>et seq.</u>	Full Compliance
Clean Air Act, as amended, 42 U.S.C. 7401, <u>et seq.</u>	Partial Compliance
Clean Water Act, as amended (Federal Water Pollution Control Act), 33 U.S.C. 1251, <u>et seq.</u>	Partial Compliance
Coastal Zone Management Act, as amended, 16 U.S.C. 1451, <u>et seq.</u>	Not Applicable
Endangered Species Act, as amended, 16 U.S.C. 1531, <u>et seq.</u>	Full Compliance
Estuary Protection Act, 16 U.S.C. 1221, <u>et seq.</u>	Not Applicable
Federal Water Project Recreation Act, as amended, 16 U.S.C. 460-1(2), <u>et seq.</u>	Full Compliance
Fish and Wildlife Coordination Act, as amended, U.S.C. 661, <u>et seq.</u>	Full Compliance
Land and Water Conservation Act, as amended, 16 U.S.C. 4601, <u>et seq.</u>	Not Applicable
Marine Protection, Research and Sanctuaries Act, 22 U.S.C. 1401, <u>et seq.</u>	Not Applicable
National Historic Preservation Act, as amended, 16 U.S.C. 470a, <u>et seq.</u>	Full Compliance
National Environmental Policy Act, as amended, 42 U.S.C. 4321, <u>et seq.</u>	Partial Compliance
Rivers and Harbors Act, 33 U.S.C. 401, <u>et seq.</u>	Not Applicable
Watershed Protection and Flood Prevention Act, 16 U.S.C. 1001, <u>et seq.</u>	Full Compliance
Wild and Scenic Rivers Act, as amended, 16 U.S.C. 1271, <u>et seq.</u>	Not Applicable
Farmland Protection Policy Act	Not Applicable
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<u>Executive Orders, Memorandums, etc.</u>	
Flood Plain Management (Executive Order 11988)	Full Compliance
Protection of Wetlands (Executive Order 11990)	Full Compliance
Environmental Effects Abroad of Major Federal Actions (Executive Order 12114)	Not Applicable
Analysis of Impacts of Prime and Unique Farmlands (CEQ Memorandum, 30 August 1976)	Not Applicable
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<u>State and Local Policies</u>	
Mississippi Water Quality Standards	Partial Compliance

Notes: The compliance categories used in this table were assigned based on the following definitions:

- a. Full Compliance. All requirements of the statute, executive order, or other policy and related regulations have been met for this stage of planning.
- b. Partial Compliance. Some requirements of the statute, executive order, or other policy and related regulations remain to be met for this stage of planning.
- c. Not Applicable. Statute, executive order, or other policy not applicable.

CONCLUSION

46. This EA provides supplemental information to Supplement No. 2 to the FSEIS that was prepared for the Big Sunflower River Maintenance Project. This supplemental information does not significantly change the magnitude, duration, and cumulative effects of adverse impacts reported in Supplement No. 2. The Record of Decision for the Big Sunflower River Maintenance Project may be revised to reflect the information contained in this EA. Based on the information contained in this draft EA, it is recommended to the District Commander that an SEIS is not required and a Finding of No Significant Impact is appropriate.