

## Appendix 1

### Clean Water Act Section 404(c) Review of Yazoo Backwater Area Pumps Project Response to Comments

#### I. Introduction

On March 19, 2008, EPA Region IV published a Proposed Determination (PD) to prohibit, restrict, or deny the specification, or the use for specification, of certain waters of the United States in Issaquena County, Mississippi, as a disposal site for dredged or fill material in connection with the construction of the proposed Yazoo Backwater Area Pumps Project. The Yazoo Backwater Area Pumps Project is a U.S. Army Corps of Engineers (the Corps) Civil Works project designed to address flooding concerns in a 630,000 acre area situated between the Mississippi and Yazoo Rivers in west-central Mississippi (the Yazoo Backwater Area). From March 19, 2008, to May 5, 2008, a public comment period was opened to seek comment on various aspects of the PD. EPA specifically asked for information on: wetlands, fisheries, wildlife, water quality, environmental justice, municipal and other water supplies, recreation, alternatives, mitigation and potential benefits of the project. Notice of the PD and of a public hearing on the document was published in the Delta Democrat-Times on March 19, 2008, the Clarion Ledger and Deer Creek Pilot on March 20, 2008, and the Vicksburg Post on March 22, 2008.

EPA Region IV conducted the public hearing at the Vicksburg Convention Center on April 17, 2008. Approximately 500 people were in attendance for the five-hour hearing. A total of 67 people provided oral statements, including one representative from the Corps' Vicksburg District and four individuals representing the Board of Mississippi Levee Commissioners ("Mississippi Levee Board" or "project sponsor"). Of the remaining 62 people who provided oral statements, 32 people spoke in opposition to the proposed pumps project, 29 spoke in favor of the pumps project and one person did not specify a position. Several of these speakers urged EPA to move promptly to prohibit the project. Representatives of U.S. Senator Thad Cochran and Mississippi Governor Haley Barbour urged EPA to stop the section 404(c) process pending further discussions on appropriate means of flood control for this area of the Mississippi Delta.

The response to EPA's PD has been impressive. EPA received approximately 47,600 comment letters including approximately 1,500 individual comment letters and 46,100 mass mailers.<sup>1</sup> Of these 47,600 comments, 99.91 percent urged EPA to prohibit the proposed pumps project and approximately 0.084 percent supported construction of the proposed pumps project. Looking at the 1,500 individual letters, 97.29 percent urged EPA to prohibit the proposed pumps project and 2.52 percent supported construction of the proposed pumps project. Within the state of Mississippi, approximately 461 residents submitted written comments during the public comment period or spoke at the public hearing. Of these, 417 expressed support for EPA's proposal and 43 favored construction of the pumps. EPA Headquarters received two additional comment letters from private citizens living within the project area on July 26, 2007; both letters expressed support for the proposed project. By analyzing

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<sup>1</sup> Public comments received in response to EPA Region IV's Proposed Determination may be viewed and downloaded at [www.Regulations.gov](http://www.Regulations.gov), Docket Number EPA-R04-OW-2008-0179. See: <http://www.regulations.gov/fdmspublic/component/main?main=DocketDetail&d=EPA-R04-OW-2008-0179>

zip codes and other address data, when available, we were able to determine that a total of 31 residents of the Yazoo Backwater Area expressed an opinion on the project either at the public hearing, in written comments, or both. Of these 31, four expressed support for EPA's position, 26 expressed support for construction of the pumps and one did not express an opinion.

Commenters in support of EPA's position echoed EPA's concerns regarding the extensive level of anticipated adverse environmental impacts associated with the proposed project. These impacts are described in more detail in the Recommended Determination (RD) and in this Final Determination (FD). Additionally, numerous commenters in support of EPA's position expressed concerns that the project would allow more intensive agricultural practices on marginal farmland that would in turn increase farm subsidy payments and that taxpayers would bear the burden of any economic gains from the project. Numerous commenters also questioned whether such a substantial amount of federal taxpayer money is needed to address the "limited" flooding that occurs within the "sparsely" populated project area, and whether the money allocated to construct and operate the pumps would be better spent addressing the more pressing needs of the region, such as economic development opportunities.

Those in support of the proposed project, including a number of local county officials and the project sponsor, believe the project would alleviate flooding damages and is part of a long standing commitment to residents of the project area. These commenters stressed that the pumps are the final piece of a larger flood control plan for the Yazoo Backwater Area, and that the previously completed flood control structures (such as the connecting channel) were designed with pumps in mind. Those in support of the proposed project also stated that periodic flooding contributes to the poor economy of the area because of public service interruption, road damage, people moving away from the area, and agriculture/crop damage. They noted that flooding does not yield to emergency services or school buses, and destroys many kinds of infrastructure. They believe that without the flood protection provide by the pumps, future economic development of the South Delta Region is seriously diminished. Some of these commenters cited the flooding that occurred this past spring in Mississippi and their belief that the pumps could have been used to diminish the damaging effects of these floods. Further, several commenters including the project sponsor and the Corps also suggested that the project would improve water quality and enhance wildlife habitat.

All of the comment letters received by EPA during this section 404(c) review were reviewed and carefully considered. However, the very large number of comments makes it impractical to respond to each commenter individually. Thus, we have responded to the major issues raised by the public collectively during the section 404(c) process. This is a sensible approach for several reasons. First, although the number of commenters is high, similar issues were raised repeatedly and can best be treated as a group. Second, we believe that many comments, particularly those on environmental issues, have been addressed in the analysis contained in the RD and this FD. Finally, several issues were raised which are either beyond the authority or expertise of EPA or not pertinent to the decision.

Section II summarizes the comments articulated in the mass mailers received on the proposal and includes responses to these comments. Section III summarizes the most frequently raised issues in the individual comment letters we received and our responses to these comments. Whereas 42 of the over 47,600 comment letters EPA received expressed support for the proposed project (all of the mass mailers as well as 97.29 percent of the individual comment letters urge EPA to prohibit the proposed pumps project), comments in support of the pumps project are not captured in either sections II or III. Thus, in section IV we have included a summary of the key comments raised by those in support of the proposed project including those raised by members of the public, the project sponsor, and the Corps. Section IV also includes our responses to comments raised by the project sponsor and the Department

of the Army during the final consultation period initiated by EPA Headquarters on July 2, 2008, upon receipt of EPA Region IV's RD and administrative record.

## II. Mass Mailer Comments

We received 46,037 mass mailers from 7 different groups, including Sierra Club, the Gulf Restoration Network, American Rivers and the National Wildlife Federation (NWF). The sponsoring organizations for the remaining three mass mailer campaigns are unknown and account for a total of 7,026 comment letters. The NWF and American Rivers campaigns contributed over 26,000 and 10,000 letters respectively. Two thousand, two hundred and seventy-nine (2,279) mass mailers were received from the Sierra Club, and the Gulf Restoration Network contributed 146 mass mailer comment letters.

1. Comment: All of the mass mailers:
  - a. Voice strong support for EPA's veto of the Yazoo Pumps project;
  - b. Urge the Administrator of EPA to complete a section 404(c) veto of the Yazoo Pumps project;
  - c. Emphasize the very large size – 200,000 acres – of the area that would be affected by the proposed project; and,
  - d. Focus on the intensive, negative effects that the project would have on the Yazoo Backwater wildlife and wildlife habitat as a primary reason for supporting a prohibition of the project.

Response: We agree and believe the RD and administrative record supports EPA's Final Determination to prohibit the discharge of dredged or fill material associated with the construction of the proposed Yazoo Backwater Area Pumps Project, i.e., Plan 5 in the U.S. Army Corps of Engineers' Final Supplement Environmental Impact Statement (FSEIS) for the Yazoo Backwater Area Project, as well as FSEIS Plans 3, 4, 6, and 7, and Modified Plan 6 (proposed by the Corps after publication of the FSEIS). This prohibition is based on unacceptable adverse effects on fishery areas and wildlife. However, neither the PD, RD, nor the Final Determination (FD) cite impacts to 200,000 acres. Rather, our analysis relies on the adverse impacts to between approximately 28,400 and 118,400 acres of wetlands (i.e., the range of wetland impacts associated with the prohibited projects) as identified in the FSEIS. In addition, EPA believes that the Corps did not evaluate the proposed project's adverse impacts on up to 24,000 acres of wetlands outside the FSEIS's wetland assessment area. .

2. Comment: Most mass mailer campaigns also specifically state that the proposed project would be a waste of \$220 million in taxpayer dollars.

Response: Evaluations of the cost effectiveness of the proposed project are beyond the scope of EPA's analysis in this section 404(c) review.

3. Comment: The majority of the mass mailers also specifically mention that the wetlands that would be affected by the proposed project serve as a flyway for 20 percent of the nation's duck populations and for other migratory birds.

Response: We agree. The RD describes the importance of wetlands in the project area to ducks and other migratory birds.

4. Comment: The NWF campaign specifically urges the Administrator to resist political pressure and pressure from special interests in making his decision to move ahead with the veto.

Response: The section 404(c) procedures outlined in EPA's regulations at 40 CFR part 231 and utilized in this instance ensure an open and transparent review process.

5. Comment: Many of the mass mailers mention the value of the Yazoo Backwater Area to fish and other wildlife species, as well as its water quality and flood retention benefits.

Response: We agree. The RD describes the value of the wetlands in the Yazoo Backwater Area to fish and other wildlife species, as well as the water quality enhancement and flood retention benefits of these wetlands.

6. Comment: Both the American Rivers and Sierra Club letters emphasize that Federal Emergency Management Agency (FEMA) data do not support claims that the project would address residential flooding in the project area.

Response: As discussed in the RD and FD, we do not feel that the analysis in the FSEIS adequately describes which communities in the Yazoo Backwater Area will be protected and which will remain subject to flooding if the project is completed, and whether the communities would be protected against 1-year, 2-year, or 100-year floods.

7. Comment: The American Rivers mass mailer references the U.S. Fish and Wildlife Service's (FWS) opinion that the project is "ecologically unsound," and that the Department of the Interior (DOI) has concluded that the project would cause unacceptable, adverse impacts to fish and wildlife.

Response: We agree. The RD and administrative record support the conclusion that the project would result in unacceptable adverse impacts on fishery areas and wildlife, which is the basis for the EPA's final decision under section 404(c).

8. Comment: The Gulf Restoration Network post-card mass mailer specifically addresses the inadequacy of the proposed mitigation plan for the project.

Response: We agree. The RD and FD discuss at length EPA's concerns with the proposed mitigation.

### **III. Most Frequently Raised Issues in Individual Comment Letters**

Many important issues were raised in the 1,589 letters received from individuals. Of these 97.29 percent urged EPA to prohibit the proposed pumps project and 2.52 percent supported construction of the proposed pumps project. Of the individual letters supporting EPA's position, more than 115 letters were from organizations who submitted comments. Support for EPA's position also came from 541 wetland and aquatic scientists and professionals, including 144 Ph.D's; the Society of Wetland Scientists, and the Association of State Floodplain Managers. Comments supporting EPA's position were also submitted by a former Administrator for EPA, four former EPA Assistant Administrators for Water spanning the time frame from 1989 - 2003, and a former Deputy Assistant Secretary of the

Army for Civil Works. There are 16 distinct, substantive issues that were raised by at least 100 individuals or more. These issues are discussed below, in approximate order of most mentioned to least mentioned.

1. Comment: Expression of general support for EPA's veto of the proposed Yazoo Pumps project. The overwhelming majority of the individual letters (1,544) received stated their support for the section 404(c) action by EPA.

Response: We agree and believe the RD and administrative record supports EPA's Final Determination to prohibit the discharge of dredged or fill material associated with the construction of the proposed Yazoo Backwater Area Pumps Project (i.e., FSEIS Plan 5), as well as FSEIS Plans 3, 4, 6, and 7, and Modified Plan 6, based on unacceptable adverse effects on fishery areas and wildlife.

2. Comment: The Yazoo Backwater Area Pumps project is not economically justified or cost effective. Almost 1,300 commenters, including both private citizens and non-governmental organizations, stated that the nation cannot afford the economic consequences of the Yazoo Pumps and that this project would be an irresponsible use of tax dollars. A number of commenters also stated that the project would drain wetlands that taxpayers are already paying to protect and that the costs either outweigh the benefits, or that the funds would be better used for other programs such as alternative energy, public transportation, education, public health and safety. Close to 300 commenters cited EPA's economic analysis of the project in stating that the project is not economically justified.

Response: Evaluations of the cost effectiveness of the proposed project are beyond the scope of EPA's analysis in this section 404(c) review.

3. Comment: The proposed project would result in unacceptable, adverse environmental effects and loss of wetlands functions. Most of those in favor of EPA's position comment on the general adverse environmental impacts of the proposed project. Overall, these commenters oppose the project because of the ecological significance of wetlands and because of the extent of the ecological destruction that will be caused by this project. Many commenters noted that the wetlands that would be impacted by the proposed project contain some of the richest natural resources in the nation and that the ecological services performed by the wetlands would be lost as a result of the project. Many commenters worry that if the project occurs it would be one of the most notorious wetlands drainage projects in U.S. history. Additional commenters noted that parts of the wetlands that would be affected are wildlife refuges and national forests or are enrolled in the Wetlands Reserve Program. Many others quote the FWS as saying the project is "ecologically unsound" and "totally contrary to the Service's goal for a balance between economic and environmental sustainability." In total, close to 1,200 individual comment letters cited adverse environmental impacts as their reason for supporting an EPA veto of the proposed project.

Response: We agree and believe the RD and administrative record supports EPA's Final Determination to prohibit the discharge of dredged or fill material associated with the construction of the proposed Yazoo Backwater Area Pumps Project (i.e., FSEIS Plan 5), as well as FSEIS Plans 3, 4, 6, and 7, and Modified Plan 6, based on unacceptable adverse effects on fishery areas and wildlife.

4. Comment: The pumps would violate federal regulations. Over 1,000 individuals asserted that the pumps would be a violation of current federal policy. Specifically these commenters state that the project violates section 404 of the Clean Water Act because of the magnitude and severity of the environmental impacts.

Response: We agree. As stated in the RD and FD, EPA does not believe that impacts of this magnitude are consistent with the requirements of the Clean Water Act, including those established pursuant to section 404(c).

5. Comment: The project would only benefit special interests or a select few residents. Several hundred private citizens encouraged EPA to resist political pressures from special interest groups and continue to prohibit the Yazoo Backwater Area Project. Many other private citizens stated that the only residents in the Delta who will profit from the project are planters, bankers, and owners of agribusinesses.

Response: The section 404(c) procedures outlined in EPA's regulations at 40 CFR part 231 and utilized in this instance ensure an open, and transparent review process. EPA notes that the Corps estimates that approximately 80 percent of the recommended project benefits on an annual basis accrue as a result of agricultural benefits (both crop and non-crop) (Table 7-74, FSEIS Appendix 7).

6. Comment: The pumps would have adverse impacts on wildlife and wildlife habitat. Approximately 700 commenters stated that the pumps would negatively impact fish and wildlife, or wildlife habitat. A portion of these commenters also mentioned that the project area serves as important habitat for the Louisiana Black Bear. Several hundred additional citizens stated that the wetlands affected by the Yazoo Backwater Area Project include numerous national wildlife refuges. DOI and a few hundred individuals noted that the Yazoo Backwater Area Project would damage wetlands that are along the Mississippi River Flyway, a critical migration route for 20 percent of the nation's duck population and for many other migratory birds. Several hundred private citizens state that the wetlands in the Yazoo Backwater Area support critically important floodplain fisheries.

Response: We agree. The RD and administrative record support the conclusion to prohibit the discharge of dredged or fill material associated with the construction of the proposed Yazoo Backwater Area Pumps Project (i.e., FSEIS Plan 5), as well as FSEIS Plans 3, 4, 6, and 7, and Modified Plan 6, based on unacceptable adverse effects on fishery areas and wildlife. However, with regard to the project area serving as important habitat for the Louisiana Black Bear, in an August 10, 2006, letter, the U.S. Fish and Wildlife Service concurred with the Corps "not likely to adversely affect" determination for the Louisiana Black Bear. EPA's FD is based on its conclusion that the proposed project will have unacceptable adverse effects on important fish and wildlife resources in the project area beyond any potential affect on threatened and endangered species.

7. Comment: Wetlands reduce flood damages. Several hundred private citizens made the general statement that wetlands in the Yazoo Backwater Area reduce flood damages by absorbing, storing, and slowly releasing floodwaters.

Response: We agree. The RD and FD discuss the important flood water storage functions provided by wetlands in the Yazoo Backwater Area and how these would be reduced by the proposed project.

8. Comment: FEMA data demonstrates that the Yazoo pumps will not effectively address the limited residential flooding in the area. Close to 400 commenters stated that they favored EPA's position because of this FEMA data. A number of these commenters also stated that there are more cost-effective ways to address the limited residential flooding and that few insurance policies and claims have been made due to flooding in the area.

Response: As discussed in the RD and FD, EPA does not believe that the FSEIS adequately describes which communities in the Yazoo Backwater Area will be protected by the project, and which will remain subject to flooding if the project is completed, and whether the communities would be protected against 1-year, 2-year, or 100-year floods. As stated in the RD and FD, EPA believes, based on the record to date, that the Corps has not sufficiently considered potential alternatives that would avoid and minimize the proposed project's significant adverse impacts to aquatic resources pursuant to 40 CFR 230.10(a). Specifically, we believe that an alternative may be available that would provide a less environmentally damaging and more sustainable approach to floodplain management in the Yazoo Backwater Area.

9. Comment: The FWS opposes the pumps because they are ecologically unsound. Approximately 300 commenters cited the FWS' conclusions that the pumps are "ecologically unsound" and "totally contrary to the Services' goal for a balance between economic and environmental sustainability".

Response: We have reviewed the extensive comments provided by DOI/FWS regarding the proposed project. DOI/FWS concurred with the PD and the RD incorporates many of the comments provided by DOI/FWS regarding the proposed project's anticipated adverse impacts to fisheries and wildlife.

10. Comment: The pumps would cause significant harm to recreation within the Yazoo River Basin. Approximately 100 citizens felt that the installation of the pumps would have significant negative impacts on recreation within the Yazoo Basin. Some of these commenters additionally stated that wetlands are a major part of tourism in the area, and that increased nature tourism in the area would help improve the areas economy more than agricultural improvements.

Response: EPA carefully considered all of the comments regarding the project's anticipated impacts to recreation. Although EPA does not cite impacts to recreation as a basis for the section 404(c) determination, the RD and FD note that these impacts would likely be significant.

#### **IV. Comments Provided by Those in Support of the Proposed Pumps Project**

##### **A. Public comments**

Of the over 47,600 comment letters received on the PD, 42 letters stated their support for the Yazoo Pumps project, including letters from the Board of Mississippi Levee Commissioners (the project sponsor), the Vicksburg District Corps of Engineers (the Corps), and a number of local county officials. Specific comments provided by the project sponsor and the Corps are discussed in Section B below, most of the remaining comments from the public focused on expected benefits of the proposed project, including agricultural development, flood protection, and enhancement of wildlife habitat, fisheries and wetlands and associated hunting, fishing and other recreation.

1. Comment: Agricultural development – A number of commenters state that the project will preserve and expand the agricultural productivity of the Lower Delta for the production of crops such as corn, soybeans, and rice. One individual specifically states that this is important, especially given that commodity prices are at record highs and are straining food supplies to struggling peoples. Another private citizen states that a veto of the pumps would jeopardize U.S. farmers.

Response: In the FSEIS the Corps notes that there are no intensification benefits to any of the alternatives evaluated in the final array of alternatives for the Yazoo Backwater Reformulation Study. All of the agricultural benefits are based on "inundation reduction."<sup>2</sup> All crop benefits result from a reduction of loss of production costs and increased expected net returns resulting from adoption of irrigation and earlier planting dates for the existing cropping pattern. This is possible because the alternatives analyzed reduce the extent, frequency, and duration of flooding, encouraging farmers to plant earlier and allowing them to make investments so they might irrigate later during periods of the growing season when water might be needed (FSEIS, Appendix 7, Page 7-41). In its comments on the PD, the Corps states that trends in cropping patterns in Sharkey and Issaquena Counties show that while acre and crop shifts have occurred to take advantage of market trends, the total number of acres planted remained fairly constant or decreased in the past 10 years.

2. Comment: Flood protection – A number of commenters, including a few local county officials, believe the project would alleviate flooding damages and is part of a long standing commitment to residents of the project area. These individuals stressed that the pumps are the final piece of a larger flood control plan for the Yazoo Backwater Area, and that the previously completed flood control structures (such as the connecting channel) were designed with pumps in mind. Those in support of the proposed project also stated that periodic flooding contributes to the poor economy of the area because of public service interruption, road damage, people moving away from the area, and agriculture/crop damage. They noted that flooding does not yield to emergency services or school buses, and destroys many kinds of infrastructure. They believe that without the flood protection provided by the pumps, future economic development of the South Delta Region is seriously diminished. A number of the commenters cited personal or family experiences from the large flood of 1973. A few commenters cited the flooding that occurred this past spring in Mississippi and their belief that the pumps could have been used to diminish the damaging effects of these floods.

Response: EPA has, since its initiation of the section 404(c) review, stated its support of the goal of providing improved flood protection for the residents of the Mississippi Delta; however,

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<sup>2</sup> Inundation reduction benefits are on cropland where there is no change in cropping patterns, and intensification benefits are on cropland where there is a project-induced change in cropping patterns resulting from the reduced threat of flooding. FSEIS, Appendix 7 page 7-41,

it believes that this vital objective can be accomplished in a manner that ensures effective protection for the area's valuable natural resources. In light of existing information, EPA believes that there are likely to be less environmentally damaging practicable alternatives available to achieve the improved flood protection goals of the proposed Yazoo Backwater Area Project. The devastating effects of flooding experienced in other parts of the country this summer highlight the importance of improved flood protection in the Yazoo Backwater Area. Improving flood protection and conserving vital wetland, fish and wildlife resources are mutually achievable goals for a project in the Yazoo Backwater Area. EPA strongly believes that proceeding to completion of the section 404(c) action is consistent with both of these important goals because it provides for greater public involvement, greater transparency, and more complete information on which to make decisions. EPA remains fully committed to participating in discussions with other federal and state agencies, and the public, to identify a project alternative that satisfies both of these basic goals.

3. Comment: Enhancement of wildlife habitat, fisheries and wetlands and associated hunting, fishing and other recreation – Many of the commenters who support the project state that the pumps will be environmentally beneficial to the area, stating that wildlife has been displaced, killed, or damaged due to the rising floodwaters. They argue that the pumps will have a positive impact on wildlife, future hunting and fishing, tourism, and general recreation in the Lower Delta. Commenters do not believe the project will result in significant change in flora or fauna because the pumps would not completely drain and/or fill wetlands; only reduce flood duration. A few commenters state that the pumps would not impact—and could possibly improve—activities such as wildlife observation/photography, hunting, bird watching, and fishing. A few commenters point out that the project's reforestation component (i.e., the non-structural component) would help reduce erosion and reduce the amount of suspended sediment thereby improving water quality and provide substantial benefits to fish and wildlife.

Response: As noted in the RD and FD, EPA is aware of the concerns expressed by a few commenters regarding the effects of flooding on wildlife populations, particularly mammals, and the belief that flood control would benefit these wildlife species. There is an extensive amount of literature, including references cited in the RD, documenting that despite selective pressures from regular and sometimes extensive flooding, bottomland hardwoods provide a greater amount of habitat diversity than other habitats. Many mammals typical of bottomland hardwood habitats are mobile and can usually move away from rising waters. However, small ground dwelling species (e.g., mice, voles, shrews) cannot as easily escape from flooding and thus do not have high populations in these bottomlands. Flood waters can have disruptive effects on mammal populations by temporarily altering feeding and shelter habitats. For example, deer and bear will move out of bottomland hardwood areas during high water during which time food resources may be limited. However, as floodwaters recede, mammalian species typical of these areas will return to take advantage of the diverse feeding, breeding and shelter opportunities provided by bottomland hardwood wetlands. The RD and FD describe in great detail how the proposed project would adversely impact fisheries and wildlife in the Yazoo Backwater Area and how these impacts would adversely affect fisheries and wildlife related recreation. The RD and FD also describe in great detail how the project's adverse impacts were underestimated in the FSEIS and how environmental benefits of the non-structural component of the project were not substantiated in the FSEIS.

4. Comment: Geographic importance of commenters – A few private citizens state that those affected by the high waters should be instrumental in approving this project, not agencies and other individuals who do not live in the Lower Delta.

Response: By contrast, many other commenters argue that since there is no local cost-share requirement for this project and it would be fully federally funded by the U.S. taxpayers, that all comments are worthy of consideration regardless of their geographic origin. The section 404(c) procedures outlined in EPA's regulations at 40 CFR part 231 and utilized in this instance ensure an open and transparent review process. EPA has reviewed and considered all comments it received on the proposed section 404(c) action. We do note that within the state of Mississippi, approximately 463 residents submitted written comments or spoke at the public hearing. Of these, 417 expressed support for EPA's proposal and 45 favored construction of the pumps (one did not express a position).

#### B. The Board of Mississippi Levee Commissioners, the U.S. Army Corps of Engineers Vicksburg District and the Department of the Army

The Board of Mississippi Levee Commissioners (the project sponsor) provided written comments on the PD in a letter dated May 2, 2008, as well as the RD in letters dated July 8, 2008, July 22, 2008, August 1, 2008, and August 15, 2008. In addition, the project sponsor met with the Assistant Administrator for Water and EPA Headquarters staff on July 25, 2008, where they expressed many of the views and concerns identified in their letters. The U.S. Army Corps of Engineers Vicksburg District (the Corps) also provided comments on the PD. In addition, the Department of the Army (DOA) provided comments on the RD and the Assistant Secretary of the Army (Civil Works) met with the Assistant Administrator for Water, on July 23, 2008, where many of the views and concerns identified in the DOA's correspondence were expressed. Since the project sponsor, the Corps and DOA provided similar comments, below is a consolidated list of comments raised in their communications with EPA as well as our responses.

1. Comment: EPA has not acknowledged the full project history and context. The project sponsor noted that the PD and the RD fail to adequately describe the history of the project from its authorization in 1941 to 1982.

Response: The Project History section of the RD has been revised in the FD to reflect the project's history and context as well as modifications to the project which occurred between its authorization and 1982 (See Section II B of the FD).

2. Comment: EPA has failed to acknowledge project modifications made by the Corps since 1982 to reduce project impacts. The 2007 project represents an 80 percent reduction in wetland impacts as compared to the 1982 project. It is unclear why EPA is threatening to veto the 2007 project when it did not make similar threats against the much more environmentally damaging 1982 project.

Response: EPA recognizes the considerable work that has been done by the Corps and project sponsor to reduce the scale of the project and the extent of associated impacts since the 1982 project. For example, the pump capacity has been reduced from 17,500 cfs back down to its pre-1982 level of 14,000 cubic feet per second (cfs) and the pump-on elevation has been increased from 80 to 87 feet, National Geodetic Vertical Datum (NGVD). We also recognize

the significant efforts that have been made to improve the mitigation and reforestation components of the project. The Corps and project sponsor deserve recognition for these improvements and for the coordination with EPA and others since 1982. However, EPA evaluated the current 2007 proposal, as presented in the FSEIS, and concluded that adverse impacts to wetlands and their associated fish and wildlife habitat remain significant and unacceptable. EPA also is not convinced that the corrective actions proposed by the Corps in February 2008 (as discussed below) would reduce impacts to an acceptable level. We also note that the 2007 Yazoo Backwater Area pump project proposal would impact significantly more wetlands than any other project reviewed under section 404(c) of the CWA. Estimated impacts to wetlands as a result of the 2007 Yazoo Backwater Project are more than eight times greater than the total combined acreage of wetland impacts associated with all eleven section 404(c) actions (i.e., approximately 6,800 acres) completed by EPA since 1972.

The analysis developed by the Corps showing an 80 percent reduction in project impacts between the 1982 and 2007 projects is noteworthy. However, we find the argument that, based on this analysis, we should not veto the 2007 project because we did not initiate section 404(c) review for the more environmentally damaging 1982 project, unsound. According to the 1983 Final EIS (FEIS), the 1982 project would have adversely impacted approximately 17,500 acres of wetlands. EPA raised significant concerns regarding this level of impacts at that time; and we stressed the need to reduce those impacts through the identification of less damaging alternatives and more commensurate mitigation. The Corps has since re-evaluated the impacts associated with the 1982 project using its current impact assessment methodologies and has determined “post-hoc” that the 1982 project would likely impact approximately 137,000 acres of wetlands, almost eight times more than was estimated in the 1983 FEIS. Despite the 1983 FEIS’s significant underestimation of adverse impacts, EPA’s objections to the 1982 project were strenuous.

3. Comment: In 1982, the FWS suggested that raising the pump-on elevation and reducing the pump capacity would alleviate the impacts to fish and wildlife. In fact, the FWS supported either a 17,500 cfs pump station with a pump-on elevation of 83 feet, NGVD or a 15,000 cfs pump station with a pump-on elevation of 85 feet, NGVD. Since that time, the Corps has raised the pump-on elevation to 87 feet, NGVD reduced pump capacity to 14,000 cfs, and added a non-structural component to reforest cleared agricultural land. Thus, it is inconsistent for FWS to raise concerns regarding the project now.

Response: According to the FWS, its position regarding the project in 1982 was based on the Corps 1982-1983 estimates of the extent of wetland impacts associated with the 1982 project. After re-evaluating the impacts of the 1982 project, in February 2008, the Corps acknowledged that the wetland impacts associated with the 1982 project would be almost eight times greater than what was identified in the project's 1983 FEIS. According to the FWS, it raised significant concerns regarding the proposed project in its comments on both the 2000 Draft Supplemental EIS (DSEIS) and the 2007 FSEIS, which includes more thorough evaluations of the project’s impacts than the 1982 Draft EIS (DEIS) and 1983 FEIS. The FWS thoroughly reviewed EPA’s PD and RD and concurs with the findings and conclusions made in both documents.

4. Comment: The full project area environment must be considered. The project sponsor maintains that the flood regime of the Lower Delta is not natural due to the Mississippi River and Tributaries (MR&T) projects and that current flooding, and the functions it supports,

should not be compared to historic backwater events. The project sponsor also expressed concerns over the flooding of cleared land.

Response: EPA is aware of the cumulative effects of the hydrologic alterations that have occurred in the Lower Mississippi Valley. The RD and FD discuss the MR&T projects that have been completed in the project area. This discussion includes the effects of the backwater levees completed in 1978, which precludes Mississippi and Yazoo River water from interacting with the Yazoo Backwater Area during flood events. However, the area's wetlands and wildlife habitat were developed and are still maintained by backwater flooding. The RD and FD thoroughly discuss how the Hydrogeomorphic (HGM) Guidebook and Habitat Evaluation Procedure (HEP) models used by the Corps define the functions of the Yazoo Backwater Area's riverine backwater wetlands in the context of reference standards (i.e., optimal wetland and habitat conditions given the current, post-backwater levee conditions in the Yazoo Backwater Area). EPA agrees with this approach to assessing impacts and the functions and habitat characteristics ascribed, by the Corps, to riverine backwater wetlands.

This assessment approach, and EPA's interpretation of the results, evaluated the flooding of cleared land. The HGM approach assesses impacts as a change in function (looking at several functions) provided by each land cover type. In other words, neither the Corps nor EPA assumed cleared land was functioning at reference standard levels in the analysis of impacts. However, wetlands in agricultural production (i.e., "cleared" lands) still provide some level of wetland function (see Tables 3 and 7 of the FD). We are also still very much concerned about the impacts to the almost 30,000 acres of mature forested wetlands in the project area (see Table 6 of the FD).

5. Comment: EPA misrepresents the nature of project flood water removal.

Response: As discussed in the RD, EPA's assessment of the Corps' hydrologic information indicates that the pumps will operate when water levels at the Steele Bayou structure reach (or are anticipated to reach) 87 feet, NGVD. As flood waters rise above this elevation they will be evacuated at a maximum flow rate of 14,000 cfs. This evacuation of floodwater will slow, or prevent, the rise of floodwaters to typical levels. As a result, the FSEIS indicates that the current elevation of the 2 year return flood will only flood once every 5-10 years (in other words, land that now floods every other year would flood once every 5 or 10 years). If backwater is prevented from rising to current levels at the same frequency and duration, then the Corps' and EPA's assessment of impacts indicates that wetland and fish and wildlife habitat functions will be impacted. Over time these impacts will be significant to the Yazoo Backwater Area.

6. Comment: EPA's RD is arbitrary and capricious, not in accordance with law, does not satisfy the Administrative Procedures Act (APA), and fails to demonstrate compliance with section 404(c).

Response: The CWA requires that exercise of the final section 404(c) authority be based on a determination of "unacceptable adverse effect" to municipal water supplies, shellfish beds, fisheries, wildlife, or recreational areas. In making this determination EPA takes into account all information available to the Agency, including any written determination of compliance with the Section 404(b)(1) Guidelines (40 CFR part 230). EPA's regulations at 40 CFR part 231.2(e) define "unacceptable adverse effect" as:

*Impact on an aquatic or wetland ecosystem which is likely to result in significant degradation of municipal water supplies or significant loss of or damage to fisheries, shellfishing, or wildlife habitat or recreation areas. In evaluating the unacceptability of such impacts, consideration should be given to the relevant portions of the Section 404(b)(1) Guidelines (40 CFR Part 230).*

According to the Corps, the Yazoo Backwater Area contains between 150,000 to 229,000 acres of wetlands, as well as an extensive network of streams, creeks, and other aquatic resources. The RD (and FD) incorporates extensive information collected on the Yazoo Backwater Area, which demonstrates that the project area includes some of the richest wetland and aquatic resources in the Nation. These resources include a highly productive floodplain fishery, substantial tracts of highly productive bottomland hardwood forests that once dominated the Lower Mississippi River Alluvial Valley (LMRAV), and important migratory bird foraging grounds. Wetlands in the Yazoo Backwater Area provide important habitat for an extensive variety of wetland dependent animal and plant species, including the federally protected Louisiana black bear and pondberry plant. In addition to serving as critical fish and wildlife habitat, project area wetlands also provide a suite of other important ecological functions. These wetlands protect and improve water quality by removing and retaining pollutants, reduce flood damages by storing floodwaters, maintain stream flows, and support aquatic food webs by processing and exporting significant amounts of organic carbon.

The RD and FD conclude that construction and operation of the proposed project (i.e., Plan 5 in the FSEIS), as well as FSEIS Plans 3, 4, 6, and 7, and Modified Plan 6, would dramatically alter the timing, and reduce the spatial extent, depth, frequency, and duration of time project area wetlands flood. These large-scale hydrologic alterations would significantly degrade the critical ecological functions provided by approximately 28,400 to 118,400 acres of wetlands (i.e., the range of wetland impacts associated with these Plans) in the Yazoo Backwater Area, including those functions that support wildlife and fisheries resources.

EPA has been an active participant in the review of this project for the past thirty years and has consistently raised concerns during this period regarding the project's anticipated extensive and unacceptable adverse environmental impacts. When the Corps published the DSEIS for the proposed project in September 2000, EPA concluded that the project was environmentally unsatisfactory and noted that it was a candidate for further action under CWA section 404(c).

The Corps published the FSEIS for the project in November 2007. Since no substantive modifications had been made to the proposed pumps project after the 2000 DSEIS, EPA initiated review of the project pursuant to CWA section 404(c) on February 1, 2008. Following an initial consultation period with the Corps and the Mississippi Levee Board, on March 19, 2008, EPA issued a PD to prohibit or restrict the use of certain waters of the United States as disposal sites for dredged or fill material in connection with the construction of the proposed Yazoo Backwater Area Pumps Project based on anticipated unacceptable adverse impacts to wildlife and fisheries pursuant to CWA section 404(c) (73 Federal Register 14806). EPA solicited public comments on the Proposed Determination and held a public hearing in Vicksburg, MS, on April 17, 2008. On July 2, 2008, EPA Region IV submitted to EPA Headquarters its RD to prohibit the specification of certain wetlands and other waters of the United States within Humphreys, Issaquena, Sharkey, Warren, Washington, or Yazoo County,

in the state of Mississippi, as a disposal site for the discharge of dredged or fill material for the purpose of construction of the proposed Yazoo Backwater Area Project, or any similar pump project in the Yazoo Backwater Area that would result in an unacceptable adverse effect on fishery areas and wildlife.

This FD represents the last step of EPA's section 404(c) review of the Yazoo Backwater Area Pumps Project. EPA prepared this FD based on an evaluation of the RD, and review and consideration of the administrative record, including information in the Corps' FSEIS, public comments received in writing and at the public hearing, and submissions by other federal and state agencies. The FD also reflects the careful review and full consideration of written information that was subsequently submitted and made part of the record, as well as information conveyed to EPA by the Department of the Army and the project sponsor during the EPA Headquarters section 404(c) consultation process.

The administrative record developed in this case fully supports the conclusion that the proposed project would significantly degrade critical ecological functions provided by wetlands in the Yazoo Backwater Area, including temporary storage of surface water, nutrient cycling, organic carbon export, pollutant filtering/removal, and maintenance of biologically diverse plant and animal habitat. The proposed project would alter the timing, and reduce the spatial extent, depth, frequency, and duration of time project area wetlands flood. These alterations would adversely impact the spawning, rearing and foraging habitat of approximately 58 species of backwater dependent fish identified by the FWS. The proposed hydrologic alterations would also adversely impact approximately 42 species of birds that FWS reports are dependent on bottomland hardwood wetlands and their associated flood regime for fulfillment of specific life requisites. These species utilize the flooded wetlands of the project area for feeding and nesting, as well as providing essential nutrition during migratory flights. Further, the proposed hydrologic alterations will adversely impact approximately 21 species of amphibians and 32 species of reptiles by disrupting their reproductive cycles and feeding opportunities and thereby reducing overall productivity. Whereas many mammals are not as dependent on the flood pulse as other species, reduction of flooding is likely to impact food resources for these animals (e.g., insects, crayfish, amphibians, acorns and fruits). In light of the cumulative impacts on bottomland hardwood wetlands in the project area, further degradation of resources for these animals is detrimental. EPA believes that impacts to these functions and species at the scale associated with this project will result in significant degradation (40 CFR 230.10(c)) of the Nation's waters, particularly in light of the extensive historic wetland losses in the Lower Mississippi River Alluvial Valley and specifically the Yazoo Backwater Area. We do not believe the proposed compensatory mitigation would reduce these adverse impacts to an acceptable level.

Based on a careful consideration of all information available to EPA, including a detailed examination of the RD, the administrative record and all comments submitted, the Agency has made a final determination that the discharge of dredged or fill material into wetlands and other waters of the U.S. in connection with the construction of the Yazoo Backwater Area Project will have an unacceptable adverse effect on fishery areas and wildlife in the project area. As a result of this finding of an unacceptable adverse effect on fishery areas and wildlife in the Yazoo Backwater Area, the Agency, in the FD, has prohibited the discharge of dredged or fill material associated with the construction of the proposed Yazoo Backwater Area Pumps Project (i.e., FSEIS Plan 5), as well as FSEIS Plans 3, 4, 6, and 7, and Modified Plan 6, based

on unacceptable adverse effects on fishery areas and wildlife. EPA's final determination is in full compliance with the requirements of both the CWA and APA.

7. Comment: EPA has not explained its failure to utilize the interagency elevation procedures outlined in the Memorandum of Agreement Between the Environmental Protection Agency and the Department of the Army Pursuant to CWA Section 404(q), August 11, 1992 (1992 MOA), Part III, Elevation of Policy Disputes, since EPA's section 404(c) review is clearly an inter-agency policy dispute between the Corps and EPA over appropriate flood damage protection methods.

Response: As previously stated EPA has significant concerns regarding the anticipated adverse environmental impacts associated with the proposed project and has worked closely with the Corps for several decades to address these concerns. Therefore, we do not feel that it is accurate to characterize EPA's concerns with the proposed project as a policy dispute with the Corps regarding appropriate flood damage protection methods. A policy elevation pursuant to the 1990 MOA would not have been the appropriate mechanism to address the significant effects of this proposal, since the MOA makes it clear that such a policy elevation would not delay the Corps' decision to move forward with the subject project as currently proposed, the results of such a policy elevation would only be applicable to future projects.

8. Comment: EPA should have used the procedures for a referral of the project to the CEQ rather than pursuing review under CWA section 404(c).

Responses: CWA section 404(c) is an independent statutory authority for EPA review of the proposed project and should not be confused with EPA's obligation under section 309 of the Clean Air Act to comment on environmental impact statements prepared for section 404 projects and to refer such projects to CEQ when it finds them to be environmentally unsatisfactory. Both of these review options are available to EPA. After the Corps released the FSEIS in November 2007, the Office of the Assistant Secretary of the Army (Civil Works) (ASA (CW)) released a memo on November 17, 2007, extending the time period for referring this project to CEQ until November 2008. The memo specifically notes that this extension is to allow additional time for either a referral to CEQ or for EPA to conduct a review of the project pursuant to CWA section 404(c). EPA elected to pursue a review of this project pursuant to section 404(c) because the section 404(c) review procedures provide for greater public involvement and more opportunities to work with the Corps and project sponsor to evaluate the proposal.

9. Comment: CWA section 404, including section 404(c), does not apply to this project because it is exempt pursuant to section 404(r).

Response: After considering this issue both before and after initiation of our section 404(c) review, EPA has concluded that the Yazoo Backwater Area Pumps Project is not exempt under CWA section 404(r). Congress, in the 1977 Amendments to the Clean Water Act, provided a mechanism under CWA section 404(r) in which certain federal projects specifically authorized by Congress may, in limited circumstances, be exempted from most CWA requirements. Such projects may qualify for an exemption only if the federal agency that proposes to construct the project performs an analysis of the effects of the discharge of dredged or fill material associated with the project equivalent to that provided under the guidelines promulgated by EPA under CWA section 404(b)(1). This analysis, must be included in an environmental impact statement

(EIS) prepared for the project pursuant to the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4321 *et seq.*). The EIS must then be submitted to Congress before the actual discharge of dredged or fill material in connection with the construction of the project occurs, and prior to either authorization of the project or an appropriation of funds for construction. EPA has no evidence that an EIS for the proposed project was ever submitted to Congress, let alone before the actual discharge of dredged or fill material in connection with the construction of the project occurred, and prior to either authorization of the project or an appropriation of funds for construction.

Prior to initiating the section 404(c) review on February 1, 2008, the Agency consulted with the Corps and carefully reviewed the requirements, preconditions, and legislative history of section 404(r). Based on the information available at the time, EPA determined that 404(r) was not applicable to the Yazoo Backwater Area Project. EPA would not have initiated its section 404(c) review of the proposed project if it had believed that the preconditions for qualification under section 404(r) had been met. In response to comments, regarding the applicability of section 404(r) raised by the project sponsor, U.S. Senators Cochran and Wicker and Mississippi Governor Barbour, EPA consulted with the Corps and carefully re-examined the potential applicability of section 404(r) to the proposed project. As a result of this re-examination EPA continues to believe, based on the information available, that the statutory preconditions that would have to be satisfied in order for the project to be covered by the limited exemption established at section 404(r) have not been met. Thus EPA has statutory authority under section 404(c) to prohibit the specification of the subject wetlands and other waters of the United States as described in the FSEIS as a disposal site for dredged or fill material for the purpose of construction of the proposed project.

First, the project sponsor stated in its July 22, 2008 comments that the memorandum from the Congressional Research Service (CRS) reached a conclusion that the proposed project is exempt from the requirements of section 404 by virtue of section 404(r). This is not true. The CRS memorandum, requested by U.S. Senators Cochran and Wicker, merely provides an overview of the text and legislative history of section 404(r). The CRS analysis states “[b]ecause your request instructs us to assume that this precondition [i.e., environmental impact statement timely submitted to Congress] was met in connection with the particular project prompting your request, we say little more about it.” The CRS memorandum merely assumes the critical precondition in this case was satisfied, thus it could not and did not reach a conclusion regarding the applicability of section 404(r) to the proposed project. The CRS memorandum, in its discussion of the text and legislative history of section 404(r), provides an accurate if not exhaustive description of the meaning of section 404(r). Most relevant in the current circumstances, the CRS analysis, on page 2, correctly emphasizes that all of the prerequisites contained in section 404(r) must be satisfied for the exemption to apply to a particular federal project: “the exemption applies only if the effects of the dredged-or-fill material discharge from the project were considered in an environmental impact statement timely submitted to Congress. This precondition seeks ‘to ensure that the Congress will have full information on the impacts of the discharge...when it determines whether or not to authorize the project or to appropriate funds for its construction.’”

Enclosed in the project sponsor’s July 22, 2008 comments was an “evaluation” of section 404(r) where the project sponsor discusses at length the legislative history of section 404(r). The project sponsor repeatedly cites 404(r) legislative history that highlights the statutory requirement that an EIS be submitted to Congress before the actual discharge of dredged or fill

material and prior to either authorization of the project or an appropriation of funds for construction for section 404(r) to be applicable to a federal project. For example, on pages 3-4 in the evaluation, the project sponsor states: "A written statement, by Senator Chafee, co-sponsor of the Legislation, was submitted by Senator Baker. Senator Chafee emphasized that the exemption was 'limited' by the requirement that the Corps provide detailed information to Congress in its NEPA documents. Senator Chafee was seeking to assure colleagues who did not support the exemption, such as Senators Stafford and Gravel, that the exemption did not excuse compliance with substantive environmental policies, but that the work of 'reviewing' federal Projects would lie with Congress.

'In order to qualify for the exemption, an adequate environmental impact statement on the project must have been submitted to Congress prior to authorization of the project or appropriation of funds and, in all cases, prior to actual discharge...Congress must have adequate siting, engineering, and environmental information on each proposed Federal project, as well as on modifications recommended by reviewing agencies, in order to review available alternatives to and potential adverse impacts of the proposed discharges, and to weigh those impacts and alternatives against the benefits of the project...A great deal of responsibility is being placed in our Committee to insure that these Federal projects...will be conducted in an environmentally sound matter. I would hope that other Committees which have jurisdiction over Federal projects would also adopt strong review procedures for this new provision.' Clean Water Act Legislative History Vol. 3, at 502-03 (Statement of Sen. Chafee)"

The text and legislative history of section 404(r) that the project sponsor emphasized in its comments to EPA demonstrates the statutory obligation and importance of compliance with all of the requirements of section 404(r), including the requirement of an EIS for the proposed project timely submitted to Congress. If a federal project is not going to be evaluated by a federal agency through the section 404 process consistent with the 404(b)(1) guidelines, Congress wanted to be assured that the environmental impacts of that federal project were still going to be evaluated. Requiring the EIS to be submitted to Congress prior to the actual discharge of dredged or fill material in connection with the construction of the project and prior to either authorization of the project or an appropriation of funds for construction allows Congress to take action to prevent the project if it has concerns with those environmental impacts.

In its comment letter on the PD, the project sponsor refers to the "Corps' submission of its Final Report and Final Environmental Impact Statement to Congress in 1982" and states that it "*appears* that the 1982 Final EIS and Report were provided to members of Congress, and Congress subsequently authorized funds for construction and the 1982 Project was discussed in certain Congressional debates" (emphasis added). Additionally, the project sponsor in its comments to EPA on August 15, 2008 stated "we believe there is a '*track record*' that the 1982 EIS was submitted to Congress" (emphasis added). In the July 25, 2008 meeting between the project sponsor, the Department of the Army and EPA, the project sponsor presented EPA with documents it alleged demonstrated the submission of the Final EIS to Congress, however those documents did not present any evidence of a Final EIS, that included consideration of the section (b)(1) Guidelines, completed pursuant to NEPA having been submitted to Congress. The documents discuss fish and wildlife mitigation reports completed pursuant to the Fish and Wildlife Coordination Act of 1958. Contrary to what the project sponsor has stated, EPA, after consultation with the Corps, has no information that would demonstrate the Final EIS in

question was ever submitted to Congress in 1982. In fact, there is a question of whether the Final EIS could have ever been submitted to Congress in 1982 because the final mitigation plan, included in the Final EIS submitted to EPA in March 1983, was not approved by the Corps HQ until the spring of 1983 with a Record of Decision signed in July of 1983. The available records indicate that the Corps could not have submitted the Final EIS to Congress even in 1983. The Corps did not respond to EPA's May 13, 1983 comments on the Final EIS until July 12, 1984. This is the same date that the Chief of Engineers submitted to the Secretary of the Army his report on the "Yazoo Backwater Project, Mississippi- Fish and Wildlife Mitigation" which had been prepared in accordance with the Fish and Wildlife Coordination Act of 1958. The letter concluded that "A copy of your letter and this reply will accompany my final report to the Secretary of the Army" indicating the coordination process was not completed until at least the summer of 1984. During the Agency's consultation with the Department of the Army on this issue it was unable to identify any information documenting that the Final EIS was submitted to Congress. Additionally, there is no information available that the Corps has sought to exempt discharges associated with this project from CWA requirements pursuant to section 404(r). The Corps has worked hard to evaluate the proposed project under the requirements of NEPA and the CWA, and has recognized the applicability of the requirements of the CWA, including the section 404(b)(1) guidelines and state water quality certification under CWA section 401. Further, the project sponsor has not provided any information to demonstrate that the Final EIS was submitted to Congress.

While there is no evidence the Final EIS was "submitted" to Congress, even if the Final EIS had been submitted to Congress, the information and analysis it contained were not adequate to satisfy section 404(r). The purpose of providing the EIS to Congress is to ensure that the Congress has the full information on the environmental impacts of the project before making a decision whether or not to authorize the project or to appropriate funds for its construction. EPA's comments on both the 1982 Draft EIS as well as the Final EIS note the deficiencies in the NEPA documentation. The Corps' recent reevaluation of the impacts associated with the 1982 version of the project validates the concerns raised by EPA in 1982 and 1983. According to the section 404(b)(1) evaluation included in the Final EIS, the 1982 project would have adversely impacted approximately 17,500 acres of wetlands. EPA raised significant concerns regarding this level of impacts at that time; and we stressed the need to reduce those impacts through use of less damaging alternatives and more commensurate mitigation. Now, 25 years later, the Corps has reevaluated the impacts associated with the 1982 project using its current impact assessment methodologies and has determined "post-hoc" that the 1982 project would actually impact approximately 137,000 acres of wetlands, almost eight times more than was estimated in the FEIS. EPA's objections to the 1982 project highlight the inadequacies of the Corps' 1982/1983 NEPA analysis. The Corps' recent reevaluation of the 1982 project's wetland impacts underscore the fact that if the Final EIS was submitted to Congress it clearly did not contain an adequate analysis of the project's impacts and Congress did not have adequate information on the environmental impacts as required by section 404(r).

If the Corps had submitted the Final EIS to Congress, it would have followed procedures outlined in CEQ's *Guidance on Applying Section 404(r) of the Clean Water Act to Federal Projects Which Involve the Discharge of Dredged or Fill Materials into Waters of the U.S., Including Wetlands*, dated November 17, 1980. In light of the level of EPA's concerns with the proposed project in 1982, pursuant to section III.3 of this policy, the Corps would have included the written conclusions of EPA in or attached to the Final EIS, clearly identified, circulated with the following statement, and submitted to the Congress prior to requesting

appropriation of funds and prior to actual discharge.

“The EPA has determined that this project as proposed is not consistent or otherwise in compliance with the Section 404(b)(1) Guidelines of the Clean Water Act.”

No information has been provided that the Corps took these actions consistent with the CEQ’s 1980 guidance regarding 404(r). Contrary to what the project sponsor stated in its August 15, 2008 comments, EPA sees no reason why CEQ’s 1980 guidance on applying section 404(r) does not apply to the Corps and EPA.

Additionally, even if all of the statutory requirements of 404(r) had been met for the 1982 project, the project sponsor and the Corps have argued strenuously that extensive, substantive modifications have been made to the 1982 project and that the 2007 proposal represents a significantly different project. Significant modifications include large changes to the capacity of the pumping station, pump-on elevation and compensatory mitigation and addition of a non-structural reforestation component. Further, the environmental and socio-economic context within which this project occurs has changed dramatically over the 25 years since the 1982 project was evaluated; necessitating the need for the Corps’ expansive evaluation of the 2007 project published in the November 2007 FSEIS. All of these factors suggest that if 404(r) is to apply to the project currently under evaluation, than consideration of an exemption pursuant to 404(r) should not be focused on the NEPA documentation associated with the substantially different 1982 project but rather on the 2007 project.

The project sponsor requested information from EPA regarding section 404(r) under the Freedom of Information Act (FOIA) on August 7, 2008. While EPA will respond to the project sponsor’s request, the Agency does not feel it is necessary or appropriate to delay this Final Determination until EPA has responded to their request. Section 404(r), while having potential implications on the use of section 404(c) by EPA to review federal projects is not a part of the section 404(c) review process and in this case EPA has already determined that section 404(r) is not applicable to the proposed project. EPA cannot produce documentation to the project sponsor to prove that section 404(r) does not apply as the Agency cannot prove that an event did not occur, (i.e., prove the Corps did not submit the Final EIS to Congress), nor is EPA under any obligation to do so. Based on consultation with the Corps, the Department of the Army and review of all available information, EPA has no evidence that an EIS for the proposed project was ever submitted to Congress, let alone before the actual discharge of dredged or fill material in connection with the construction of the project occurred, and prior to either authorization of the project or an appropriation of funds for construction. Based on that determination EPA continues to believe, based on the information available, that the statutory preconditions that would have to be satisfied in order for the project to be covered by the limited exemption established at section 404(r) have not been met. Thus EPA has statutory authority under section 404(c) to prohibit the specification of the subject wetlands and other waters of the United States as described in the FSEIS as a disposal site for dredged or fill material for the purpose of construction of the proposed project.

10. Comment: The RD overreaches EPA’s authorities under CWA section 404(c) and would preclude the project sponsor and Corps from implementing flood damage reduction features for the South Delta.

Response: The prohibition included in the FD would not apply to all future flood control activities affecting waters within the counties identified. This prohibition extends to the discharge of dredged or fill material associated with the construction of the proposed Yazoo Backwater Area Pumps Project (i.e., FSEIS Plan 5), as well as FSEIS Plans 3, 4, 6, and 7, and Modified Plan 6, based on unacceptable adverse effects on fishery areas and wildlife.

While EPA has the authority to take action under 404(c) as recommended by EPA Region IV (i.e., a prohibition encompassing a six county area and "...any similar pump project...")<sup>3</sup> we have modified the scope of the RD because we recognize that the prohibited projects are feasible only within the geographic area identified by the FSEIS. The adverse effects associated with the prohibited projects are the result of a combination of operational factors including the capacity of the pumping station and its associated pump-on elevations. While this FD only prohibits the construction of FSEIS Plans 3 through 7 and Modified Plan 6, the data supporting this FD indicates that derivatives of the prohibited projects that involve modifications to the operational features or location of these proposals would likely result in unacceptable adverse effects and would generate a similar level of concern and review by EPA. Further, narrowing of the scope of the prohibition underscores our sincere interest to work collaboratively with interested parties to consider alternative forms of flood protection for the Yazoo Backwaters Area while ensuring effective protection for the area's valuable natural resource.

EPA's final action does not preclude the opportunity for discussions and coordination with state and federal interests to evaluate flood protection alternatives. We believe the section 404(c) process has helped to focus such discussions on those options that provide flood protection to Delta residents while protecting the area's valuable natural resources.

11. Comment: The RD overstates project impacts. The RD suggests that all 67,000 acres of wetlands that would be impacted by the proposed project are high quality wetlands and impacts to these 67,000 acres represent "total wetland destruction." The Corps' functional analysis indicates that project impacts to these wetlands are not significant.

Response: Both the RD and FD clearly acknowledge the current land use and quality of the 67,000 acres of wetlands that would be impacted by the proposed project. Table 5 of the RD (Table 6 in the FD), which contains data from the FSEIS, clearly indicates the land cover types of the 67,000 acres of wetlands that would be adversely impacted by the proposed project. Further Tables 2 and 9 of the RD (Tables 3 and 7 in the FD) provide the baseline and with project Functional Capacity Indices (FCIs) estimated in the FSEIS for each of the land cover types. The PD, RD and FD fully recognize that the baseline conditions of the 67,000 acres of wetlands that would be impacted by the proposed project differ depending upon land cover type and that the degree of the impacts to these 67,000 acres of wetlands will vary depending upon a number of factors including their location and elevation. EPA's consistent position is that the Corps has significantly underestimated the degree and nature of the impacts to these 67,000 acres of wetlands.

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<sup>3</sup> Past section 404(c) actions completed by EPA have included waters within the entire project area that would be affected by the project and were not simply restricted to the waters that would be directly impacted by the proposed discharge of dredged or fill material or the specific activity proposed (see, for example, Bayou Aux Carpes; Lake Alma; Henry Rem, Marion Becker, et. al. and Senior Corporation; Russo Development; and M.A. Norden Company).

These underestimates are due to modeling assumptions and other factors used by the Corps in its analysis with which we professionally disagree. These disagreements are highlighted in the PD, RD, and FD and have been extensively discussed with the Corps. Because the project's impacts have been underestimated, EPA does not believe that the proposed compensatory mitigation (i.e., 10,662 acres of reforestation) is adequate to offset impacts (See sections IV.D and E, as well as Appendices 6 and 8 of the FD for our complete discussion). In addition, the RD and FD note that the FSEIS does not evaluate potential impacts to approximately 24,000 acres of wetlands on the "without project" 2-year floodplain.

12. Comment: EPA's analysis becomes even more questionable when it attempts to add some 24,000 acres of wetlands that it says will be impacted by the project on top of the 67,000 acres estimated by the Corps. EPA's Environmental Monitoring and Assessment Program methodology (EMAP) is not linked to land use, and the RD does not indicate whether this acreage will see reduced wetland hydrology or eliminated wetland hydrology. It is not appropriate to compare or consider together the Corps' impact estimates with those generated by EMAP.

Response: EPA's PD, RD and FD are based on the 67,000 acres of effects on wetlands associated with the proposed project estimated by the Corps in the FSEIS. The RD and FD conclude that this level of impact will likely result in unacceptable adverse impacts to wetlands and their associated fisheries and wildlife resources in the Yazoo Backwater Area. The FD also clarifies that the impacts associated with FSEIS Plans 3, 4, 6, and 7 and Modified Plan 6 (between approximately 28,400 – 118,400 acres of wetland impacts) would also result in unacceptable adverse effects on wetlands and their associated fisheries and wildlife resources in the Yazoo Backwater Area. EPA is not basing its FD on any additional wetland impacts it believes may occur as a result of the proposed project. The RD and FD reference the potential for these additional impacts because we believe they are significant. As noted in the RD and FD, the specific EMAP evaluation is a conservative estimate of wetland impacts because it looks only at hydrologic impacts as a result of the change in flood frequency (e.g., in this evaluation EMAP did not evaluate hydrologic impacts resulting from changes in flood duration). Further, the EMAP evaluation was developed using the FSEIS' Flood Event Assessment Tool (FEAT)/Flood Event Simulation Model (FESM) modeled assessment areas so discussion and comparison of the EMAP results with those developed solely by the Corps is appropriate.

In conducting the impact assessment for the FSEIS, the Corps used the FEAT/FESM modeled 5 percent duration area (GIS polygon) to depict the extent of wetlands. The Corps analysis indicated that as a result of the pump, 67,000 acres from approximately 88.6' NGVD down to 87' NGVD would experience altered flood durations as a result of construction and operation of the proposed project. However, the 5 percent duration "polygon" did not experience a change in flood frequency. In other words, the FEAT/FESM wetlands still flood regularly but not for as long. This is well documented in the FSEIS.

EPA has maintained, based on the EMAP survey that wetlands occur outside the Corps FEAT/FESM 5 percent area. The EMAP survey statistically established this during the field survey in which the 3-parameter approach recommended in the Corps Wetland Delineation Manual was used to verify wetland status. A portion of the wetland acres found outside the Corps 5 percent boundary occur within the 2 year frequency floodplain. EPA looked at these

additional wetland acres and compared the with- and without-project conditions to establish how many acres would lose the 2 year flood frequency. Table 8 in the RD (See Appendix 5 in the FD), and which appears again in the Corps' comments submitted on August 1, 2008, represents the number of acres losing the more frequent floods. This Table does not include the Corps' 67,000 acres of altered duration. Table 8 shows the change in flood frequency on wetland acres outside the Corps FEAT/FESM wetland boundary. Therefore the Corps estimate and the EPA estimate are separate. However, the EMAP estimated that 24,000 acres are located in the 2-year floodplain and were not evaluated by the Corps. As discussed in the RD and FD, impacts to these wetlands associated with the proposed project would eliminate or significantly degrade functions currently provided by these wetlands.

EPA's EMAP approach is linked to landuse in that the original samples were drawn using landuse/landcover maps. As discussed in meetings with the Corps both before and after field sampling in 2005, the landuse targeted for sampling was "forested". EMAP specifically targeted forested sites to place sample points within. As for the reduction in hydrology, the previous two paragraphs discuss the use of FEAT/FESM polygons which were used to show with- and without-project conditions. EPA's conclusion that up to 24,000 acres of wetlands were not evaluated by the Corps due to their location on the 2-year floodplain versus the FEAT/FESM 5 percent duration polygon is based on the Corps flood data and EMAP sample points. EPA disagrees that it is inappropriate to compare the impact figures from EMAP to those from FEAT/FESM analysis as EMAP was integrated with FEAT/FESM from the beginning.

13. Comment: The PD made the argument that the 26,300 acres of land that the Corps estimates will "lose" wetland jurisdictional status will be cleared for agriculture. Since this argument (i.e., the claim that the project will induce new land clearing) was so "vehemently" forwarded in the PD, we are surprised that dropping the point "*sub silent[i]o*" in the RD has not changed EPA's position at all.

Response: As described in the PD, RD and FD, construction and operation of the proposed pumps would dramatically alter the timing, and reduce the spatial extent, depth, frequency, and duration of time wetlands in the project area are inundated. These large-scale hydrologic alterations would significantly degrade the critical ecological functions provided by approximately 67,000 acres of wetlands in the Yazoo Backwater Area, including those functions that support wildlife and fisheries resources. It is these hydrologic alterations and their associated impacts to fisheries and wildlife resources that are the focus of EPA's review. The potential for additional wetland acres to be converted to agriculture as a result of the project was mentioned, briefly, in the PD. Despite the fact that many of the public comment letters we received in response to the PD, including those in support of the project, indicated a belief that the project would result in further agricultural intensification in the Yazoo Backwater Area, the focus of EPA's final decision is the unacceptable adverse effects associated with the project's large-scale hydrologic alterations to 28,400 – 118,400 acres of wetlands (i.e., the range of wetland impacts associated with the prohibited projects) and their associated fisheries and wildlife resources.

14. Comment: The potential impacts of the pumps are more than offset by the Corps' proposed 55,600 acres of reforestation, which would provide additional fish and wildlife habitat and benefit water quality. EPA's uncertainty regarding the proposed mitigation and reforestation is unfounded.

Response: EPA disagrees. As thoroughly discussed in Sections IV.D and E, as well as Appendices 6 and 8 of the FD:

- The Corps has not demonstrated that the 67,000 acres of impacts to wetlands associated with the proposed pumping station could be adequately offset by the 10,662 acres of reforestation that the Corps has proposed as the project's compensatory mitigation.
- The environmental benefits associated with the 40,571 acres of reforestation that would serve as the non-structural component of the proposed project (i.e., up to 55,600 acres less the 10,662 acres the Corps proposes to use as compensation for this project and the 4,367 acres it proposes to use as compensation for impacts associated with already implemented aspects of related projects) have not been substantiated.

As discussed extensively in the RD and FD, EPA's concerns with the proposed compensatory mitigation and reforestation components focus on:

- The fact that the proposed pumping station would cause significant hydrologic alterations to the same locations that are targeted as potential mitigation/reforestation sites limiting or precluding successful wetland restoration and enhancement efforts;
- No mitigation/reforestation sites have been specifically identified, precluding effective evaluation of the merits of and planning for mitigation/reforestation efforts;
- If sites can be found, reliance on willing sellers would likely result in a noncontiguous patchwork of fragmented mitigation/reforestation sites that cannot deliver the ecological benefits predicted by the FSEIS;
- EPA does not believe that hydrology could be assured to replace wetland and wildlife habitat function lost as a result of the project. Since hydrologic impacts will occur in the 2-5 year floodplain as well as within the FEAT/FESM area, appropriate sites to replace lost or degraded wetland and wildlife functions will diminish. Without the appropriate hydrology, any amount of reforestation would not result in the "restoration" of wetland functions;
- The FSEIS states that if suitable sites in the target area cannot be found, sites elsewhere in the Delta Region or the state may be used. Thus, wetland functional losses may not be replaced within the same watershed where impacts occur, or even within the Yazoo River Basin, heightening concerns regarding significant degradation of the Yazoo Backwater Area aquatic resources;
- There are no plans to monitor or ensure that hydrology is reestablished at either mitigation or reforestation sites. The Corps has proposed to monitor the growth of trees for 1-2 growing seasons on a site specific basis and then monitor via remotely sensed data. The Corps has also proposed potentially having ERDC conduct an assessment of the reforested sites using HGM. However, the monitoring plans do not contain the specificity nor the level (or presence) of hydrologic monitoring required to document re-establishment of the functions for which the Corps is claiming benefit; and
- Potentially disruptive silviculture is allowed on reforestation sites.

Further, significant portions of the reforestation feature (as much as 10 percent of the 55,600 acres) may not be replanted, but rather used for waterfowl management areas (e.g., as water impoundments or food plots. All of these concerns apply to the other prohibited projects as well.

15. Comment: The project sponsor has asked that the project be withdrawn. In light of that, why does EPA still believe it necessary to continue with the CWA section 404(c) process?

Response: EPA initiated its review of the Yazoo Backwater Project under section 404(c) based on longstanding concerns about the project's anticipated adverse environmental effects and our belief that the FSEIS did not identify a recommended plan that would effectively achieve the goals of appropriate flood control and environmental protection. At the time the project sponsor offered to withdraw the project, after the section 404(c) Initiation Letter was forwarded to the project sponsor and the Corps, we believed that to be consistent with the Clean Water Act and our regulations it was necessary to continue with our section 404(c) review in order to provide the public with an opportunity to participate in the review of the project. We believe that public participation is critical to ensure that our review is fair, transparent, and timely. To this end, we published in the *Federal Register* a notice of our PD, which established a public comment period that extended to May 5, 2008. We also held a public hearing on our proposed section 404(c) action on April 17, 2008 in Vicksburg, MS.

EPA received approximately 47,600 comment letters including approximately 1,500 individual comment letters and 46,100 mass mailers. Of these 47,600 comments, 99.91 percent urged EPA to prohibit the proposed pumps project and approximately 0.084 percent supported construction of the proposed pumps project. In addition, approximately 500 people attended the public hearing. A total of 67 people provided oral statements, including one representative from the Corps' Vicksburg District and four individuals representing the project sponsor. Of the remaining 62 people who provided oral statements, 32 people spoke in opposition to the proposed pumps project, 29 spoke in favor of the pumps project and one person did not specify a position.

EPA believes that completion of the section 404(c) review process has resulted in valuable information and discussions with stakeholders that will help inform and facilitate the preparation of timely recommendations for alternative flood control proposals. Completion of the section 404(c) process, EPA feels, has also helped to focus future discussions with stakeholders on options that will provide flood protection to Delta residents without unacceptable adverse effects to valuable natural resources in the Yazoo Backwater Area.

16. Comment: The Corps has taken an exhaustive look at nonstructural alternatives, including those proposed by EPA, FWS, and others, and all were considered to be impracticable. Yet EPA still argues that a nonstructural alternative with fewer environmental impacts exists.

Response: EPA acknowledges that the FSEIS carried forward a range of alternatives for consideration. However, EPA remains concerned over the absence of both an in-depth and balanced evaluation of the effects of both structural and non-structural alternatives. EPA acknowledges that such a solution would likely require participation by other organizations with expertise in floodplain management (e.g., FEMA) and may necessitate additional Congressional authorization and funding. EPA is fully committed to participating in discussions with other federal and state agencies, and the public, concerning the best way to provide flood protection while protecting wetlands and other natural resources.

17. Comment: If EPA prohibits the proposed project it should provide an alternative.

Response: EPA's primary responsibility is to utilize its expertise to review the proposed project to ensure consistency with the requirements of the CWA, including, in the context of section 404(c), determining whether there are unacceptable adverse effects on municipal water supplies, shellfish beds and fishery areas (including spawning and breeding areas), wildlife, or

recreation areas. A section 404(c) review does not involve a balancing of environmental benefits against non-environmental costs such as the benefits of the foregone project (See 44 FR 58078). EPA Headquarters has determined that the RD and administrative record developed in this section 404(c) review support the conclusion that the proposed Yazoo Backwater Area Project would result in unacceptable adverse effects on fishery areas and wildlife. EPA has based its FD solely on environmental harms to fishery areas and wildlife in the Yazoo Backwater Area and such a determination is appropriate given the structure and language of the CWA and case law (See *James City County v. EPA*, 12 F.3d 1330, 1335-1336 (4th Cir.1993)). In some cases, there may be no alternative available and utilization of 404(c) may prevent a project entirely; however, the adverse effect on municipal water supplies, shellfish beds and fishery areas, wildlife, or recreational areas may be so great as to still be “unacceptable” (See 44 FR 58078). This FD prohibits the construction of the proposed project(i.e., FSEIS Plan 5), as well as FSEIS Plans 3, 4, 6, and 7, and Modified Plan 6. It does not, however, apply to all future flood control activities affecting waters within the Yazoo Backwater Area. Further, EPA believes strongly that this final action does not preclude the opportunity to begin discussions and coordination with state and federal interests to evaluate alternative flood protection measures that are consistent with this FD. EPA remains fully committed to working with the Corps, the project sponsor, other federal and state agencies and the public to develop an alternative that provides needed flood control efforts and effective environmental protection. EPA supports the Governor of Mississippi’s recommendation to convene an intergovernmental working group to explore alternatives to the current Yazoo Backwater Area Project that satisfy both flood control and environmental objectives. We believe this group should begin discussions as soon as possible. EPA believes that the information and analysis resulting from this section 404(c) review will be valuable to the working group and help to inform discussions and facilitate the preparation of timely recommendations.

18. Comment: There is no documentation in the RD to demonstrate that the wetlands and aquatic resources in the Yazoo Backwater Area are some of the richest in the Nation.

Response: The FSEIS states, “[t]he lands in the lower Mississippi Delta are noted for high value fish and wildlife resources. The area serves as an integral part of the economic and social life of local residents and sportsmen from around the Nation” (FSEIS, Main Report, Appendix 1 Mitigation, page 1-29). Further, the RD contains a lengthy description of the richness of the wetland and aquatic resources found in the Yazoo Backwater Area. This discussion has been clarified and can be found in Section III of the FD. It states, in part, that despite long-term man-made alternations and disturbances, comparison of the species richness (i.e., the number of species in a given area) in the Yazoo Backwater Area with that of larger southeastern United States and Lower Mississippi Valley bottomland hardwood ecosystems, demonstrate that the project area still includes some of the richest wetland and aquatic resources in the Nation. For example:

- The Coastal Plain of the southeastern United States, which encompasses portions of 11 states, including Mississippi, is documented to contain an estimated 575 terrestrial and semi-aquatic vertebrate species that occur in lowland communities (Echternacht and Harris, 1993). Of these species, 130 are amphibians, 112 are reptiles, 231 are birds, and 102 are mammals. By comparison, the Yazoo Backwater Area, which is a fraction of the size of the Coastal Plain of the southeastern United States, is documented to contain an estimated 363 terrestrial and semi-aquatic vertebrate species.

- The Mississippi Lowland Forest ecoregion, which coincides with the LMRAV, is documented to contain an estimated 372 terrestrial and semi-aquatic vertebrate species, including 35 amphibians, 52 reptiles, 223 birds, and 62 mammals.<sup>4</sup> By comparison, the Yazoo Backwater Area which is a fraction of the size of the Mississippi Lowland Forest ecoregion, is documented to contain an estimated 363 terrestrial and semi-aquatic vertebrate species.

19. Comment: The PD and the RD do not make any linkage between use of the South Mississippi Delta by any of the species included in its species lists. Nor has it established that the proposed project would result in any harm to those species.

Response: The species lists used by EPA in the PD, RD and FD clearly note which species have been documented in the project area. Section IV of the FD includes an extensive discussion of the proposed project's anticipated impacts on fisheries and wildlife. As discussed in section IV of the FD, the proposed project would degrade critical ecological functions provided by wetlands in the Yazoo Backwater Area including temporary storage of surface water, nutrient cycling, organic carbon export, pollutant filtering/removal, and maintenance of biologically diverse plant and animal habitat. The proposed project would alter the timing, and reduce the spatial extent, depth, frequency, and duration of time wetlands in the project area are inundated. These alterations would adversely impact the spawning, rearing and foraging habitat of approximately 58 species of backwater dependent fish identified by the FWS. The proposed hydrologic alterations would also adversely impact approximately 42 species of birds that FWS reports are dependent on bottomland hardwood wetlands and their associated flood regime for fulfillment of specific life requisites. These species utilize the flooded wetlands of the project area for feeding and nesting, as well as providing essential nutrition during migratory flights. Further, the proposed hydrologic alterations will adversely impact approximately 21 species of amphibians and 32 species of reptiles by disrupting their reproductive cycles and feeding opportunities and thereby reducing overall productivity. Whereas many mammals are not as dependent on the flood pulse as other species, reduction of flooding is likely to impact food resources for these animals (e.g., insects, crayfish, amphibians, acorns and fruits). In light of the cumulative impacts on bottomland hardwood wetlands in the project area, further degradation of resources for these animals is detrimental. EPA believes that impacts to these functions and species at the scale associated with this project will result in significant degradation (40 CFR 230.10(c)) of the Nation's waters, particularly in light of the extensive historic wetland losses in the lower Mississippi Valley and specifically the Yazoo Backwater Area. The FWS, the nation's authority on fish and wildlife resources, concurred on both EPA's PD and RD.

20. Comment: The RD contains extensive general descriptions of wetlands and their functions, with citations to many sources that, when examined, address locations other than the project area. The RD presents this general information regarding wetlands, wildlife and other matters to imply or "prove" that the proposed project will significantly impact those resources.

Response: The PD, RD and FD are based on EPA's review of the best available science, which includes information contained in the FSEIS as well as additional literature and technical documents describing wetland, fisheries and wildlife resources in the Yazoo Backwater Area

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<sup>4</sup> World Wildlife Fund Mississippi Lowland Forest species list:  
<http://worldwildlife.org/wildfinder/searchByPlace.cfm?ecoregion=NA0409>

and in similar riverine backwater wetland systems. Further, EPA's PD, RD and FD are based on site investigations conducted by EPA staff over the past 5 to 10 years. As described in detail in the PD, RD, FD and FSEIS, EPA participated in numerous site visits, technical meetings and forums, and reviews associated with the wetland and fish and wildlife resources found in the Yazoo Backwater Area and how these resources would be impacted by the proposed project since the 1980's. EPA participated in the field investigations associated with the development of the Yazoo Basin HGM Guidebook. Moreover, between 2003 and 2005, EPA, in conjunction with technical staff from the Corps, FWS and Natural Resources Conservation Service, conducted its EMAP study which involved extensive field investigations throughout the Yazoo Backwater Area.

21. Comment: EPA is being inconsistent by criticizing the project's conservation (i.e., reforestation) measures on the one hand and suggesting that there are less damaging "non-structural" (i.e., conservation) alternatives available on the other hand.

Response: We disagree. EPA has and continues to support non-structural approaches to address flood management needs in the Yazoo Backwater Area. At the same time, EPA has significant concerns with the HGM and HEP impact analyses for the proposed project included in the FSEIS. EPA believes that certain modeling assumptions and other factors used by the Corps in the application of these assessment tools lead to a significant underestimation of the proposed pumping station's adverse impacts on the aquatic ecosystem, as well as a significant overestimation of the environmental benefits attributed to the project's conservation efforts. These concerns are discussed in detail in the FD (see section IV and Appendices 6 and 8).

22. Comment: EPA's PD and RD are misleading and flawed and EPA did not consider or include comments provided by the project sponsor or the Corps in the RD.

Response: The comments on the PD provided to EPA by the Corps and the project sponsor are part of the administrative record for the RD as required under 40 CFR 231.5(e). In total, EPA received approximately 47,600 public comment letters in response to the PD. All of these comment letters, including those provided by the Corps and project sponsor, were fully considered by the Regional Administrator in preparing the RD (see, for example, pgs. 12, 54, and 66), consistent with EPA's regulations at 40 CFR 231.4(a). EPA received numerous comment letters and supplemental information after the close of the public comment period, all of which were accepted and are included in the 47,600 figure, above, and are part of the administrative record as well. Of the 47,600 public comment letters received, 1,589 were individual letters and 97 percent of these letters support EPA's proposal to prohibit the project. One hundred percent of the approximately 46,000 mass mailers also support EPA's position.

EPA's FD is based on an evaluation of RD and careful review and consideration of the administrative record, including information in the Corps' FSEIS, public comments received in writing and at the public hearing, and submissions by other federal and state agencies. The FD also reflects the careful review and full consideration of written information that was subsequently submitted and made part of the record, as well as information conveyed to EPA by the Department of the Army and the project sponsor during the EPA Headquarters section 404(c) consultation process.

23. Comment: Ninety seven (97) percent of the comment letters received (46,100) were "spam generated (mass mailers) click & send generated e-mails from all over the world." These

people were deceived by misinformation and do not know the facts on the project. These comments should not be considered. Only comments with substance should be recognized.

Response: The section 404(c) procedures outlined in EPA's regulations at 40 CFR part 231 and utilized in this instance ensure an open, and transparent review process. It would not be appropriate for EPA to selectively dismiss or ignore comments provided based on commenting mechanism (i.e., mass mailer or form letter) or geographic origin within the United States. To the best of our knowledge, all of the mass mailers originated from within the United States. As noted in Section II of this document, all seven varieties of mass mailers raised issues of substance germane to our review of the Yazoo Backwater Area Project. Of the 1,589 individual letters received, 97 percent support EPA's proposal to prohibit the project. EPA has reviewed and considered all comments it received on the proposed section 404(c) action. EPA has given very careful attention to the issues raised in the 42 letters we received in support of the proposed project including those provided by the project sponsor and the Corps.

24. Comment: It is very "suspect" that EPA relies on a 2005 Draft Hydrologic Analysis developed by Nutter and Associates, Inc., which was not provided to the Corps before completion of the FSEIS. We remain concerned that we have not been provided with all of the pertinent documentation about this draft report....The data in Appendix 6 references the Draft Nutter Study. This study developed a stage duration curve without consideration that the 14 days of hydrology had to be consecutive during the growing season. We have previously commented that EPA erred in treating the available data differently than the Corps, by not accepting the documentation that the 1973 flood was a hundred year event. Use of altered flood frequency biases the remainder of the Draft Report. EPA is willing to use the Corps data, even though 35 years of the 55 year period of record was developed by the Corps using their hydraulic models, but then rejects the Corps' modeling of what constitutes a 100 year event. The Corps did careful modeling because it was 1978 before the Yazoo Backwater Levee was closed and actual stages of the landside of the Steele Bayou Structure were taken. EPA has failed to explain why it relied on Corps data but did not rely on the Corps' determination of flood frequency.

Response: As thoroughly discussed in our May 30, 2008, and June 19, 2008, correspondence to the project sponsor regarding this issue, EPA's PD, RD, and FD rely principally upon the information contained in the Corps' Draft and Final SEIS's for this project, on the EMAP study conducted by EPA in conjunction with the Corps and other federal agencies, and on our understanding of the project based on EPA/Corps discussions over many years.

EPA disagrees that it "rejected" the Corps' 100-year floodplain modeling. EPA has accepted the Corps' 100-year floodplain modeling and, in fact, used the Corps' delineation as the study area boundary for the EMAP survey. EPA has also relied on the Corps' determination of flood frequency and the change to that frequency as a result of the project. The Corps has based their hydrologic, and by association, their wetland "delineation" on the minimum hydrologic criterion from the Corps Wetland Delineation Manual of 14 days of continuous inundation required for fulfillment of the hydrology parameter of the 3-parameter approach. A flood analysis using the 14 day consecutive flooding criterion, allowed the District to remotely estimate wetland extent (FEAT/FESM assessment area). However, wetland functions, and their characterization, operate under varied flow durations, some shorter and some longer than 14 days. EMAP established, using all three parameters in the Corps Wetland Delineation Manual, that wetlands occurred outside of the modeled FEAT/FESM wetland boundary. These wetlands flood, according to analyses conducted by the Corps as well as EPA's contractor

(Nutter and Associates, Inc.), albeit perhaps not for 14 consecutive days. However, as a result of the flooding (for any duration), fish and wildlife species can gain access to the wetlands and materials from the wetlands can be transported downstream.

25. Comment: The PD does not mention the proposed project modification offered by the Corps and the project sponsor during the meeting on February 29, 2008.

Response: Both the PD and the RD mention the consultations that took place after EPA initiated the section 404(c) review of the proposed project. The PD and RD note that during the 15-day response period following the February 1, 2008, section 404(c) initiation letter (which was extended to March 3, 2008), EPA met with representatives from the Corps and project sponsor. In addition, EPA had a number of conference calls with the Corps during this consultation period to discuss specific technical concerns we had with the Corps' analysis (many of which are discussed in the PD and RD). The Project History section of the FD has been lengthened to include an expanded discussion of the two proposed alternatives provided by the Corps during initial consultation, some of which is included here.

EPA Region IV held a meeting with the Corps, the project sponsor, and the FWS on February 29, 2008, during the initial consultation period. At this meeting, the Corps proposed two alternatives to the project (i.e., FSEIS Plan 5) in an attempt to reduce project impacts to an acceptable level. One of these alternatives was Plan 6 from the FSEIS and the second was described by the Corps as a modification of Plan 6 (i.e., Modified Plan 6). As described in Table 1 of the FD, both new alternatives include the same 14,000 cfs pumping station as the proposed project. However, both of these alternatives include modifications to the pump-on elevation and amounts of proposed reforestation and compensatory mitigation as compared to Plan 5. Plan 6 also changes the Water Management feature while Modified Plan 6 changes the Mitigation Acquisition feature. As noted in the FSEIS, Plan 6 reduces impacts to wetlands from 67,000 to approximately 48,000 acres. While the Corps had not developed precise estimations of wetland impacts associated with its Modified Plan 6, it noted that this value would likely fall between 28,408 and 48,066 acres, the impact estimates for FSEIS Plans 7 and 6 respectively. EPA Region IV evaluated Plans 6 and 7 during its review of the FSEIS pursuant to NEPA and considered the Corps' Modified Plan 6 based on the information provided by the Corps during the February 29, 2008, meeting. However, EPA found that both alternatives proposed by the Corps during initial consultation generate the same concerns as Plan 5. These include the magnitude of the impacts to wetlands and their associated fisheries and wildlife resources, the inadequacy of the compensatory mitigation to reduce these impacts to an acceptable level and the uncertainty of the proposed reforestation to provide the level of environmental benefits contemplated by the Corps. The Regional Administrator was not satisfied that no unacceptable adverse effect would occur, or that adequate corrective action would be taken to prevent an unacceptable adverse effect. Thus, EPA Region IV took the next step in the section 404(c) process – publication of a PD in the Federal Register.

26. Comment: EPA analysis of public comments received on the PD fails to identify whether commenters (or how many commenters) reside in the Project Area. We suggest that if EPA reviews the Corps' record, and considers comments submitted there, it will find additional information and well-supported responses to comments "critical" of the Project.

Response: As noted in the RD and the FD, out of the over 47,600 comment letters EPA received on its PD, only 42 expressed support for the proposed pumps project. Within the state

of Mississippi, approximately 463 residents submitted written comments or spoke at the public hearing. Of these, 417 expressed support for EPA's proposal, 45 favored construction of the pumps, and one did not express a position. By analyzing zip codes and other address data, when available, we were able to determine that a total of 31 residents of the Yazoo Backwater Area expressed an opinion on the project either at the public hearing, in written comments, or both. Of these 31, four express support for EPA's position, 26 support construction of the pumps and one did not express an opinion. As previously noted, EPA has reviewed and considered all comments it received on the proposed section 404(c) action.

In addition to reviewing all of the material in the DSEIS and FSEIS, EPA requested a complete copy of the Corps' administrative record for the proposed project in a letter dated June 4, 2008. However, in its response, dated June 16, 2008, the Corps indicated that "to date we have not assembled an Administrative Record of the Yazoo Backwater project. Undertaking the preparation of the Administrative Record for the project would be very time consuming and is not undertaken until some type of litigation is filed."

27. Comment: The RD failed to explain why the project sponsor and the Corps had to meet the May 2 comment deadline on the PD and the FWS comments received sometime on or after June 11 were not only considered, but included as an appendix to the RD.

Response: EPA received a number of comments on the PD after the May 5, 2008, comment deadline. EPA considered all of these comments as it developed its RD and FD. The project sponsor continued to coordinate closely with EPA after the close of the comment period on the PD on May 5, 2008, providing additional written comments on the PD in letters dated May 15, 2008, June 10, 2008, and June 19, 2008. Further, following release of the RD, the project sponsor provided written comments on the RD in letters dated July 8, 2008, July 22, 2008, August 1, 2008, and August 15, 2008. In addition, the project sponsor met with the Assistant Administrator for Water and EPA staff, on July 25, 2008, where they expressed many of the views and concerns identified in their letters. The Corps also continued to coordinate with EPA on the section 404(c) review after the comment deadline on the PD. The Corps provided additional written comments on the PD in a letter dated May 21, 2008, and written comments on the RD in a letter dated July 15, 2008 (although this letter was later rescinded by the Vicksburg District, EPA responded to all of the issues it raised in our letter dated July 23, 2008, to the Assistant Secretary of the Army for Civil Works. EPA met with the Assistant Secretary of the Army for Civil Works to discuss the RD on July 23, 2008, and, on August 1, 2008, the Assistant Secretary of the Army for Civil Works submitted two letters to EPA in response to the RD. All of these comments provided by the project sponsor, the Corps, and the Assistant Secretary of the Army for Civil Works have been fully considered by EPA in the development of its RD and/or FD and are part of the administrative record.

Regarding the June 2008, FWS report, upon its receipt by EPA, it was placed in the project's docket at [www.Regulations.gov](http://www.Regulations.gov), Docket Number EPA-R04-OW-2008-0179.<sup>5</sup> EPA included the June FWS report in Appendix 4 of the RD because we found the report to be germane to our review and because it confirmed our own analysis and findings concerning the level of impacts that would result from the proposed project, upon which EPA's section 404(c) determination is based.

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<sup>5</sup> See: <http://www.regulations.gov/fdmspublic/component/main?main=DocketDetail&d=EPA-R04-OW-2008-0179>

28. Comment: The historical composition of the LMRAV is not being evaluated as part of this project nor does this make up the base condition for this evaluation.

Response: EPA's review of this project was conducted using the CWA Section 404(b)(1) Guidelines, which require that the project under review be evaluated within the context of cumulative impacts (40 CFR 230.11(g)). Thus, historic wetland losses in the project area, the entire Mississippi Delta, as well as the LMRAV are relevant and have been considered.

29. Comment: A review of the web site identified in footnote 4 (page 17 of the RD) where species numbers for the Mississippi Lowland Forest were taken reflects that this information includes parts of Missouri, Arkansas, and Louisiana all the way to the Gulf of Mexico.

Response: We are aware this information includes data from parts of Missouri, Arkansas, and Louisiana. The purpose for citing this data is to illustrate the high species richness of the Yazoo Backwater Area. The number of species found in the Yazoo Backwater Area is comparable to the number of species found in the much larger geographic range of the Mississippi Lowland Forest ecoregion.

30. Comment: The proposed project will change management of water in the Yazoo Backwater Area during times of low flow (i.e., maintain water elevations at the Steele Bayou Structure between 70.0 – 73.0 feet, NGVD). Retaining additional water behind the Steele Bayou Structure during low flow periods will benefit fish and wildlife.

Response: EPA agrees. However, construction of a pumping station is not necessary to achieve these benefits to fish and wildlife by operation of the Steele Bayou Structure. These benefits could be achieved by altering the management of the existing Steele Bayou flood gates.

31. Comment: The species list for amphibians, reptiles and other faunal groups were generated from the entire Mississippi Lowland Ecoregion and are not specific to the Yazoo Backwater Area.

Response: EPA disagrees. The FSEIS did not contain comprehensive species lists for the Yazoo Backwater Area; thus, EPA developed these species lists and included them in the PD, RD and FD. As noted in the master list of species compiled by EPA for the Yazoo Backwater Area (see Appendix 2 of the FD), this list of faunal species is based on collection or observation records in the Yazoo Backwater Area by the Corps, FWS, Mississippi Museum of Natural Science, and/or Mississippi Natural Heritage Program.

32. Comment: EPA has not considered the reality that flooding can also harm forests. Forestry owners in the project area claim flooding of timber resources impacts tree seedling survival and early summer floods adversely impact mature forests.

Response: EPA has considered both the potential positive and negative affects of flooding on forests in the Yazoo Backwater Area. As noted in the RD, the fauna as well as the flora of the Yazoo Backwater Area developed as a result of and are sustained by the cycles of periodic flooding which characterize riverine backwater wetlands such as those in the project area. When considered over longer time horizons, the positive effects of flooding that sustains

riverine backwater wetlands outweigh shorter term negative effects. As noted in the RD and FD, the scientific literature strongly suggests that bottomland hardwood forests shift over time to more drought tolerant/less flood tolerant species composition when backwater flooding is significantly reduced or eliminated. This shift is important because a change in plant community not only signals a change in hydrology, but also in the habitat resources available to wildlife. For example, a shift from hard mast trees (e.g., oaks) to soft mast trees (sweetgum and red maple) represent a loss of the food value of acorns. The plants also provide the structure for animal habitat. A diverse habitat is one with many layers of plants (i.e., herbs, shrubs, young trees, old trees, dead trees, etc.). If the hydrology is altered the forest structure could be altered, which in turn would alter wildlife habitat.

33. Comment: All references to downstream flooding impacts are completely untrue and highly misleading. With all pumps running the maximum impact to the Mississippi River would be one inch at Vicksburg.

Response: The Corps has determined that construction and operation of the pumps would increase flooding downstream. The Corps' estimates suggest that these increases in downstream flooding may be small. However, many commenters on the PD noted that even small increases in downstream flooding should not be dismissed as inconsequential.

34. Comment: EPA's project review, PD and RD are scientifically flawed. The PD and RD lack objectivity, are inconsistent, ignore the findings of other agencies, and are not founded on appropriate science. EPA has based its conclusions on limited studies rather than the full body of scientific information available. EPA relies on scientific literature and technical documents developed outside the Yazoo Backwater Area.

Response: As noted in the RD and FD, in addition to the information provided in the FSEIS, EPA compiled and reviewed an extensive array of relevant scientific and technical documents in the development of its PD, RD and FD. The RD and FD and its' appendices cite over 80 scientific and technical documents and the administrative record for the RD contains over 100 additional scientific and technical reference documents. Many of the documents cited in the RD and FD, and listed as references in the administrative record, were developed by the Corps, FWS and other federal and state natural resource agencies. We also note that the FWS, the nation's authority on fish and wildlife resources, concurred on both EPA's PD and RD.

When the Corps developed its HGM Guidebook for the Yazoo River Basin, upon which the entire wetland impact analysis contained in the FSEIS is based, it relied upon the best available scientific literature from inside the Yazoo Basin and Yazoo Backwater Area as well as relevant documents from similar systems outside the project area. EPA's analysis in the PD, RD, and FD took the same approach and relied on similar and in many cases the same literature and technical documents.

35. Comment: The mitigation plan is more detailed than the two previous plans in the Yazoo Basin and is sufficiently detailed and robust.

Response: EPA disagrees with the characterization that the mitigation plan is suitably robust and detailed. As discussed in the PD, RD and FD, the Section 404(b)(1) Guidelines prohibit discharges that would cause or contribute to significant degradation of the waters of the U.S. As discussed in the RD and FD, we have shown that this project would cause or contribute to

significant degradation of wetlands and other waters of the U.S. If the project is going to rely on mitigation to reduce impacts to an acceptable level, there must be a very robust and detailed mitigation plan which would inform whether in fact the impacts could reliably be reduced to avoid significantly degrading the Nation's waters. These plans should include a number of critical details regarding the mitigation project(s) including: clearly articulated project goals and objectives; project site selection criteria; site protection instruments (e.g., conservation easements); detailed quantitative and qualitative baseline information describing both the impact and compensation sites; a detailed discussion of the mitigation project's credit determination methodology and results; a maintenance plan; ecological performance standards used to evaluate the degree to which the compensation projects are replacing lost functions and area; detailed monitoring requirements; a long-term management plan describing necessary long-term stewardship of the compensation sites and who is responsible for performing this stewardship; an adaptive management plan; and financial assurances to ensure project construction, implementation, and long-term management.

Another critical element of these plans is the site specific mitigation work plans. These plans include detailed written specifications and work descriptions for the compensatory mitigation project, including, but not limited to: geographic boundaries of the project; construction methods, timing, and sequence; source(s) of water, including connections to existing waters and uplands; methods for establishing the desired plant community; plans to control invasive plant species; the proposed grading plan, including elevations and slopes of the substrate; soil management; and erosion control measures.

Despite the extensive anticipated environmental impacts associated with the proposed project, no specific compensation project sites have been identified or secured. Thus, the mitigation plan included in the FSEIS lacks most of the aforementioned details. In particular, it lacks accurate information regarding baseline conditions at compensation sites, as well as substantiated information regarding potential environmental benefits likely to accrue at these sites if reforestation activities are successfully implemented. Without these details it is not possible to determine that the potential adverse environmental impacts of a project would be successfully minimized and compensated for to avoid significantly degrading the Nation's waters.

The information that is included in the FSEIS describing compensatory mitigation raises more concerns. The Corps commits to completing 10,662 acres of compensatory mitigation prior to initiating operation of the pumps and notes that this minimum may not be located in the target area or even the greater Yazoo – Mississippi Delta. This raises significant concerns that important wetland functions will not be replaced in the watershed. The FSEIS indicates that no requirements will be included to implement hydrological modifications or to otherwise ensure that the mitigation projects will result in fully functioning wetland systems. This is of particular concern since the Corps envisions mitigation projects being located in areas whose hydrology will be impacted by the proposed pumping station. This is inadequate and is one of many weaknesses in the mitigation plan, which makes it impossible to conclude that impacts will be reduced permanently below the threshold of significant degradation.

36. Comment: There's a demonstrated track record of successful mitigation in the Yazoo Basin, including a monitoring program since 2000.

Response: In response to our comments on the 2000 DSEIS, the Corps initiated a monitoring program of existing compensatory mitigation projects in the area. The limited data collected from this newly created monitoring program do not assuage the significant doubts raised by the lack of detail in the proposed project's mitigation plan. Moreover, the Corps' monitoring data lacks any field verification (e.g., monitoring wells) that wetland hydrology has been established at previous mitigation sites, which EPA believes is a serious omission. According to most evaluations of compensatory mitigation success, one of the most frequent reasons for project failure is failure to establish the target hydrologic regime at the compensation site (see: National Research Council. 2001, *Compensating for Wetland Losses Under the Clean Water Act*. National Academy Press).

37. Comment: EMAP identified 130,914 acres of wetlands in the FEAT area and the Corps identified 189,600 acres for the mitigation analysis. Since EPA lauds EMAP, it should acknowledge that the Corps' methods must be more conservative, since the Corps found more wetlands.

Response: As noted in the FSEIS, the RD and FD, the Corps estimates that the Yazoo Backwater Area contains between 150,000 to 229,000 acres of wetlands. EPA's EMAP analysis estimated this total to be approximately 212,000 acres, within the Corps' range. EPA's PD, RD and FD are based on the adverse impacts to wetlands identified by the Corps in the FSEIS.

38. Comment: We believe the plant species information included in Appendix 3 of the RD is not specific to the project area.

Response: The plant species data contained in Appendix 3 of the RD was collected at the EMAP sampling points in the Yazoo Backwater Area. This sampling data was collected by EPA, the Corps, FWS and NRCS in June 2003, and incorporated into the 2005 EMAP report. The 2005 EMAP report is included in both the FSEIS (Appendix 10, Supplement A) and the FD (Appendix 5).

39. Comment: More than half of the FWS National Wildlife Refuges shown on the map [i.e., Figure 3 of the RD] are outside the Yazoo Backwater Project area.

Response: RD Figure 3, as well as the text describing it, is very clear regarding the fact that four FWS National Wildlife Refuges are in the Yazoo Backwater Area.

40. Comment: The statistics related to hunting and angling revenue in the RD are state-wide and have no direct correlation to the Project Area or the impacts of this project. The economy of the Project Area is not supported by year around activity generated by the bottomland hardwood resource in the Project Area. EPA has ignored all of the data in the Corps' record concerning the economy of the Project Area, which is dependent on agriculture.

Response: EPA is aware that these are statewide statistics. These statistics were included to provide context. EPA has fully considered all of the information in the FSEIS. EPA does not cite impacts to recreation as a basis for the section 404(c) determination. Rather, EPA's FD is based on unacceptable adverse effects on wildlife and fishery areas in the Yazoo Backwater Area.

41. Comment: EPA has failed to acknowledge that virtually every hunting club in the Study Area favors the completion of the Recommended Plan.

Response: EPA received seven comment letters from organizations who represent hunters and anglers who utilize the Yazoo Backwater Area and/or resources downstream of the Yazoo Backwater Area: five support EPA's position while two support the proposed project. Those supporting EPA's position cite mostly resource conservation concerns whereas those supporting the pumps project voice mainly flooding concerns.

42. Comment: Until the references for Table 4 of the RD are available for review, we cannot determine the accuracy of this list, other than by comparing this list to the species contained on the Yazoo National Wildlife Refuge (NWR) list and the unpublished 2002 report of the Yazoo NWR list.

Response: After release of the RD, the project sponsor did not make any subsequent requests for information from EPA. When EPA became aware that the project sponsor was interested in reviewing information cited in the RD, a CD was delivered to the project sponsor on July 22, 2008, containing all of the documents cited in EPA's RD as well as nearly all of the documents cited in the June 11, 2008, FWS report (Appendix 4 of the RD) (this correspondence also indicated that two of the sources were lengthy books available from local libraries and another was available on the internet and provided the specific website URL). In total the CD contained nearly 100 documents. The three remaining documents were delivered to the project sponsor via email on August 1, 2008.

43. Comment: The FSEIS overstated the amount of jurisdictional wetlands in the Corps' assessment area.

Response: The FD is based on the adverse impacts to between approximately 28,400 – 118,400 acres of wetlands in the project area, as described in the FSEIS and additional information provided by the Corps. However, we independently evaluated the HGM assessment in the FSEIS and found that it understated the degree and nature of adverse impacts to these wetlands and their associated fish and wildlife resources.

44. Comment: It is disturbing that EPA waited until after the release of the FSEIS to indicate they thought there were flaws in the HGM analysis. The Corps' documents reflect that EPA was a part of the HGM analysis team. The Vicksburg District and ERDC worked closely with Region IV EPA in the development of the HGM process and specifically how it would be applied to this project. It is very clear the EPA was not up front with the Corps in that they waited until after the FSEIS was completed to raise issues...as to what wetland functions should duration be considered.

Response: EPA has consistently raised concerns regarding the assumptions incorporated into the HGM analysis, providing input to the Corps' on this issue since 2005. In addition to concerns raised in meetings between the Corps and EPA, EPA transmitted concerns regarding the HGM Assessment to the Corps in a letter to the Vicksburg District in December, 2005. EPA was not apprised of how the Agency's comments would be incorporated into the FSEIS. Despite several requests to review an advance copy of the document, EPA did not have an opportunity to review the FSEIS until it was published in November, 2007.

45. Comment: We believe that the reference to Table 10-6 of the FSEIS Engineering Appendix is incorrect. Neither Table 6-6 and 6-10 of the FSEIS Engineering Appendix tabulates information about frequency of flooding of lands above the 1-year frequency flood. As noted elsewhere, EPA seems to be basing its interpretations of impacts to wetlands on data that does not indicate flooding for consecutive days during the growing season.

Response: The correct citation for the FSEIS Table cited on page 47 of the RD is Table 6-14 on page 6-44 of the Engineering Appendix of the FSEIS. It supports EPA's point that this Corps data indicates a change in flood frequency above the 1-year floodplain while the FSEIS's HGM data does not. Also, EPA's assessment of impacts is not contingent upon consecutive days of flooding. Although the 1987 Corps Delineation Manual uses consecutive days of inundation and/or saturation to establish jurisdiction, the performance of wetland functions is not bound by the same criteria.

46. Comment: All jurisdictional wetlands resulting from backwater hydrology will remain in the with-project 2-year frequency flood and will remain in the riverine backwater subclass.

Response: As clearly stated in the FD, EPA's determination is based in unacceptable adverse effects to between approximately 28,400 – 118,400 acres of wetlands and their associated fisheries and wildlife resources identified in the FSEIS and information provided by the Corps. As extensively discussed in the RD and FD, EPA maintains that there are approximately 24,000 additional acres of wetlands outside the FSEIS's wetland assessment area that are connected to backwater flooding and will be adversely impacted by the proposed project. If these wetland areas had flooding reduced to a 5-year or greater return interval, which is indicated by the Corps' hydrologic data, then these wetlands could shift from the riverine backwater wetland subclass to the *flats* wetland subclass (see Table 1 of the RD; Table 2 of the FD). This change in HGM subclass would result in the complete loss, by definition, of the functions performed by riverine backwater wetlands (i.e., temporary storage of surface water, organic carbon export and pollutant removal and sequestration functions). These functions are lost because the floodwaters no longer reach these areas with the regularity comparable to reference riverine backwater wetlands. Flat wetlands do not perform the functions associated with the regular inundation by floodwaters in riverine wetlands.

47. Comment: A review of Jones and Taylor, 2005 has found that many reptiles and amphibians require "well-drained substrate on which to nest."

Response: EPA reviewed and cited Jones and Taylor, 2005, in the RD and FD. EPA identified reptile and amphibian species which occur in the Yazoo Backwater Area and depend on backwater flooding to meet one or more of their life history requirements and would be adversely impacted by the proposed project.

48. Comment: It is disingenuous for EPA to advocate for the benefits of flooded agricultural land, when it previously supported the Project's efforts to reforest this same kind of land.

Response: The commenter is mistaken. EPA has not advocated for the benefits of flooded agricultural land.

49. Comment: Twedt et al (1997) documents that shorebirds depend on artificially flooded agricultural fields for wintering habitat. Migrating waterfowl and other birds are very

dependent on flooded agricultural fields for foraging. The FWS private land program alone provides over 100,000 acres of artificially flooded agricultural fields as habitat in the Mississippi Delta.

Response: The RD describes the importance of wetlands in the project area to ducks and other migratory birds.

50. Comment: Junk et al (1989) reviews the Aquatic/Terrestrial Transition Zone (ATTZ). This report indicated that a moving littoral prevents prolonged stagnation resulting in high productivity. This would indicate that the long duration steady stages that accompany without-project conditions results in low productivity with a stagnant transition zone.

Response: EPA does not believe that the flooding which takes place in Yazoo Backwater Area will result in stagnation. In fact, Junk et al. (1989) discusses long- and short- duration flood pulses as driving river-floodplain ecosystems. Junk et al (1989) refers to long duration pulses as being typical of large rivers in unmodified watersheds and short-duration pulses being more typical of smaller or modified watersheds.

Historically, the lower Mississippi River has protracted flooding from February-July. Although some intermittency of floodplain inundation is possible in any given year, the height (many feet above bankfull) and the duration of the average hydrograph indicates the fish have evolved in a system with protracted floodplain inundation (4-5 months). Basic aquatic ecology principles challenge the statements about stagnant and hypoxic water. First, the floodplain inundation is appropriately described as a "moving littoral zone." As the floodwaters rise, the zone of inundation spreads across the floodplain. Initially, hypoxia is expected when the flow ceases and the organic matter decomposes. But after 1-2 weeks the standing water (rather than "stagnant" water) should begin to function like a lake, and phytoplankton will rapidly develop in the nitrogen- and phosphorus-rich water and produce ample oxygen. Thermal stratification is unlikely at the times and temperatures of inundation (April-May), so the entire water column can be expected to remain oxygenated.

51. Comment: The Mississippi Levee Board agrees with EPA that a total non-structural solution for the Yazoo backwater area would "require participation by multiple federal and state agencies, private industry, and non-governmental organizations, and may necessitate additional Congressional authorization." The Mississippi Levee Board totally disagrees with EPA that a "nonstructural approach could ultimately provide a better balance of federal objectives for addressing the needs of the Yazoo Backwater Area community for flood reduction and wetlands protection."

Response: EPA is committed to working with the Corps, the project sponsor, other federal and state agencies and the public to develop an alternative that provides needed flood control efforts and effective environmental protection. EPA supports the Governor of Mississippi's recommendation to convene an intergovernmental working group to explore alternatives to the current Yazoo Project that satisfy both flood control and environmental objectives. We believe this group should begin discussions as soon as possible. EPA believes that the information and analysis resulting from this section 404(c) review will be valuable to the working group and help to inform their discussions and facilitate the preparation of timely recommendations.

52. Comment: The FSEIS provides a comprehensive evaluation of impacts to wetlands. The Corps evaluated impacts to jurisdictional wetlands impacted by backwater flooding (189,000 acres). At the request of the FWS the FSEIS also provides a functional evaluation of those lands in the 2-year flood plain with durations of 2.5 to 5 percent, which is outside the jurisdictional duration for hydrology. EPA has not taken this information into account.

Response: EPA has taken into account the change in duration from 5 percent to 2.5 percent in the Corps' assessment area. These areas were included in the Corps' assessment and showed the decrease in water quality and wildlife habitat functions. The Corps has predicted that duration would be decreased an average of 15 days. In areas depicted by the Corps as flooding pre-project for 5 percent of the growing season (14 days) the pump project would diminish flooding considerably. These areas constitute the 26,000 acres estimated by the Corps as being impacted by the project. The Corps did not depict areas which flooded for 2.5 percent duration pre-project, it only showed areas flooding for 2.5 percent duration after the project. These areas represent the change in duration of pre-project acres which flooded for at least 7.5 percent but with the implementation of project are predicted to flood 2.5 percent. These acres are also included in the Corps' impact estimate. EPA has accepted the Corps' wetland acre impact estimates (67,000 acres) within the FEAT/FESM assessment area.

53. Comment: The catfish is not a "Noturus hildebrandi." The *Noturus hildebrandi* has not been collected by the Corps of Engineers or nor is it backwater dependent based on literature (See Table 3 Pages 27-29 COE or BW-USFME).

Response: *Noturus hildebrandi*, the least madtom (a member of the catfish family) was not collected by the Corps, nor is it listed as being a backwater dependent species in the column recording US Fish and Wildlife Service's list of such species in Table 3. However, the least madtom was collected in Yazoo County by the Mississippi Museum of Natural Science. The fact that the species was not collected by the Corps of Engineers does not equate to lack of occurrence. However, based upon further review, *Noturus hildebrandi* has been removed from the list included in the FD.

54. Comment: The use of the 5-year frequency as an arbitrary return period by (Smith and Klimas, 2002) for review of the backwater hydrology resulted from the fact that was the only flood scene available that covered the 2 year flood plain. Had a 2-year frequency flood scene been available at the time it would have been used by Smith and Klimas in lieu of the 5-year (Personal Conversation, J. Wanamaker). EPA's implication that a 5 year frequency has some particular weight is not supported by the citation.

Response: The use of the 5-year frequency flood return interval is not an arbitrary hydrologic break-point driven by the availability of imagery. The 5-year flood return interval is an ecologically significant flood frequency, above which, inundation by flood water has less effect on the wildlife habitat and export functions of the wetland and where flooding as a predominant water source diminishes and the influence of precipitation increases. The wetland character of riverine backwater wetlands are, in large part, maintained by flooding which occurs, on average, on a 2-year return. Where flooding becomes less frequent, at a 5-year return or greater, the wetland characteristics change as do the occurrence of certain functions (i.e., temporary storage of surface water, physical and biological removal of elements and compounds, organic carbon export) as well as the performance of other functions (i.e., nutrient cycling, maintenance of wildlife and plant communities). This is evidenced and documented in

the Yazoo HGM Guidebook by the distinction between the HGM riverine backwater subclass and the flats subclass. As a result of this change in predominant water source from flooding on a 2-year return to precipitation (the result of flooding less frequently) certain functions are lost and others are performed at different levels. The classification of wetlands in the Yazoo Backwater Area and the subsequent characterization of the functions performed are based largely on the predominant water source driving the ecology of those wetlands. The 5-year frequency flood represents the point at which the water source driving wetland function changes.

55. Comment: EPA states that the function “detains precipitation” is not expected to change significantly as a result of the Project. This function was evaluated and Table 2 indicates the functional value changes from 0.56 for agricultural land, peaking at 1.00 for middle aged forest and at 0.83 for mature forest. With the reforestation feature of the Recommended Plan, the project area will experience an increase in this functional value along with the other functions evaluated. We were unable to find your Table 2 at the location cited from the FSEIS.

Response: The detention of precipitation function is not expected to change as a result of the pumping portion of the project. Since this function is dependent on the presence of an organic soil horizon and microdepressional storage, EPA agreed with the Corps’ HGM assessment of impacts that the effect of the proposed pumps would not cause significant changes in this function.

Regarding the location of RD Table 2 in the FSEIS: Table 2 (Pg 20 of the RD) uses the FSEIS HGM Assessment, as the basis. The baseline data in Table 1, page 18 of the Corps' HGM Report (Smith and Lin, 2007), is found as an Appendix to the Wetland Appendix (Appendix 10, Supplement B) in the FSEIS. Table 1 in the HGM Report set the metric values which are used to set the index values for wetland condition without the Project. Using this data, (which assumed that only one of the 19 indicators used in the HGM models (flood duration) would change as a result of the project), and calculating the Functional Capacity Indices (FCI) using the Corps' formulas from the FSEIS and the Yazoo Guidebook, would yield the values shown in Table 2 of the RD. The Corps did not show the baseline FCI values in their report. They showed many tables which incorporated the FCIs multiplied by acreage, yielding Functional Capacity Units (FCU= FCI X acres). The FCIs are very informative all by themselves. The Corps did not show FCIs all by themselves, therefore EPA took their data and calculated the baseline FCIs. The results are in Table 2. The citation of "FSEIS HGM Assessment" on Table 2 was meant to attribute the baseline data to the Corps' FSEIS, not the entire Table.

56. Comment: In the portion discussing Floodwater Detention EPA suggests that water returning to the channel without Project would be slower than with Project. The fact is that when the Steele Bayou Structure is opened following a flood event without Project, the water levels fall faster than with Project. That is, EPA does not recognize that gravity flow in the channels is far faster than the floodwater. The speed of the natural, gravity flow has sufficient force to draw the floodwater back into the channels and contribute to bank caving of channels and exacerbate head cutting of tributary streams, which can increase the sediment loading of these streams increasing the nutrient loading, etc. The slow rate of flood water reduction by pumping when the Steele Bayou Structure is closed will reduce the volume and head of flood water that will evacuate by gravity flow when the Steele Bayou Structure is opened, helping to reduce adverse impacts of gravity flow flood water evacuation.

Response: EPA believes that floodwater will be detained in riverine backwater wetlands, as well as flooded agricultural fields, while the flood gates are closed without the project. It is the current duration of flooding for which the riverine backwater wetlands are adapted and provide the ecological service of storing/detaining floodwaters. The purpose of the pumps is to decrease the length of time/duration that these backwater flood events remain on the land surface by beginning to siphon-off floodwater as it reaches 87' NGVD. The accumulation of flood waters in forested riverine backwater wetlands slows the return of those waters to stream channels. Not allowing the accumulation of those floodwaters in the backwater area passes that water flow on downstream faster with the pump. Therefore, taking into account storage time of the water (i.e., duration of flooding), the passage of floodwaters to downstream channels is slower without the project.

57. Comment: The detain floodwater function for riverine backwater flooding does not require the use of duration. Backwater wetlands do not have depression storage, but detain floodwater by roughness from trees and bushes as water moves in and out of the wetland. It would be inappropriate to consider duration as part of this analysis.

Response: It is correct that the HGM Guidebook does not include duration of flooding as a variable due to the inability to estimate duration at the time of model development. However, the importance of flood duration to this function is indicated by the "independent measure of the function," or the measurement which could be used to verify the floodwater detention model, which can be found on page 48 of the Yazoo Guidebook. Specifically, the authors of the Guidebook indicate that a potential independent quantitative measure of this function is the volume of water stored per unit area per unit time ( $m^3/ha/$  time). The inclusion of time in the independent measure, and in the discussion on page 49 of the Guidebook, leads EPA to conclude that duration should have been included in the modified models prepared for this project. As also explained in the Guidebook, flood frequency and roughness are used in this model because of the relation to detention time and their ability to be rapidly estimated in the field.

58. Comment: The reference to the Sunflower River (which should be the Big Sunflower River) is highly misleading. Backwater flooding does not occur during periods of low flow on the Big Sunflower River. The Recommended Determination should not be mixing facts and issues that occur during non-flood periods of the year, with potential impacts of managing backwater flooding during other parts of the year.

Response: EPA is not suggesting that backwater flooding occurs along the Big Sunflower River during low flows. The RD's discussion of the effects of the pumps on the Floodwater Detention function is pointing out that reduction in the duration of flooding reduces the time water can infiltrate the soils. Water in soils can, albeit slowly, move to stream channels via subsurface flow and augment stream baseflows. As flood duration is decreased, water infiltration and shallow groundwater recharge is decreased, which means water delivered to channels, over time, is decreased. The Big Sunflower River was used as a documented example of a Backwater Area river which has reduced low flows.

59. Comment: Although pondberry is mentioned 4 times in the RD, there are no specific impacts to this plant mentioned that are not covered in the Endangered Species Appendix to the FSEIS. EPA's RD does not even acknowledge that the Corps has satisfied the Endangered Species Act consultation requirements.

Response: It is true that the RD does not specifically list impacts to the endangered pondberry. This is due to the lengthy discussion of the effects of this project in the FWS's Biological Opinion concerning the effects of the pumps on extant colonies of pondberry in the project area. EPA mentions the pondberry in the RD as an example of a plant species which is sensitive to the hydrologic regime and will, in the opinion of the USFWS, decline in areas where flood frequency is reduced.

60. Comment: The RD states that "reduced flood hydrology caused by the proposed project in late fall or early winter could delay and decrease detrital invertebrate populations." As noted elsewhere, it is wrong and misleading to suggest that the Project will have any impact on late fall or early winter hydrology conditions. Thus it is only hyperbole, far removed from fact, to state that the Recommended Plan would have "a cascading adverse effect on wetland functions."

Response: This conclusion is based upon Figure 6-51 from the Corps Engineering Summary (Appendix 6) which indicates the Steele Bayou floodgates can close and the pump could operate in December, January and February. In these late winter flooding situations, if the pumps were used, as predicted to occur by the aforementioned figure, wetland functions could be affected.

61. Comment: Neither the Levee Board nor the Corps made any claim that the Yazoo Backwater Levee and Steele Bayou Structure prevented the use of the backwater area for fish spawning and foraging. The comment made by the Levee Board was that these completed features prevented the backwater area from being used by the fisheries resources in the Mississippi River, which was the implication of the Proposed Determination. The Levee Board and the community are well aware of the fishery resources of the Project Area.

Response: EPA agrees with the project sponsor that fish are capable of moving into and out of the Yazoo Backwater Area freely when the Steele Bayou gates are open which may contribute to the diversity seen in species lists from the Mississippi Museum of Natural Science. However, EPA believes if flood waters are restricted during pump operation from extending out onto the floodplain by the pump, fish access to suitable habitat on these floodplains is restricted.

62. Comment: We have also pointed out earlier that the majority of the population impacted by this project is low-income minorities. These individuals cannot afford flood insurance now much less an expanded insurance program. This is a factor that EPA failed to address in its text on "Environmental Justice."

Response: An expanded flood insurance program is one of many flood control or flood damage mitigation options that were suggested by EPA as possible alternatives. As we have stated throughout our section 404(c) review, EPA fully supports the goal of improved flood protection for residents living and working in the Mississippi Delta, including those members of communities with potential environmental justice (EJ) concerns. EPA remains fully committed to participating in discussions with other federal and state agencies, and the public, to identify a solution for reducing flood damages in the Mississippi Delta.

63. Comment: The RD prohibits the construction of any pump in six counties, rather than “would effectively prohibit construction of the pumps as proposed” as stated in the section on Environmental Justice. EPA must clarify, particularly in addressing Environmental Justice, that the RD would leave the area flooded without structural relief.

Response: After evaluation of the RD and the full administrative record the Assistant Administrator for Water determined the discharge of dredged or fill material in connection with the construction of the proposed Yazoo Backwater Area Pumps Project (i.e., FSEIS Plan 5), as well as FSEIS Plans 3, 4, 6, and 7, and Modified Plan 6, would have an unacceptable adverse effect on fishery areas and wildlife. Based on these findings, the FD prohibits, pursuant to section 404(c) of the CWA, the specification of the subject wetlands and other waters of the United States as described in the FSEIS as a disposal site for the discharge of dredged or fill material for the purpose of construction of FSEIS Plans 3 through 7 and Modified Plan 6. Again, EPA remains fully committed to participating in discussions with other federal and state agencies, and the public, to identify a solution for reducing flood damages in the Mississippi Delta. The Agency supports the Governor of Mississippi’s recommendation to convene an intergovernmental working group to explore alternatives to the current Yazoo Project that satisfy both flood control and environmental objectives.

64. Comment: It seems the only consideration EPA gives to Environmental Justice is the impacts to subsistence fishing.

Response: The Agency considered, to the greatest extent practicable and permitted by law, any “disproportionately high and adverse human health or environmental effects” that may result from undertaking a section 404(c) action in the context of the Yazoo Backwater Area Project. This included an examination of the impacts, if any, of EPA’s section 404(c) action on municipal water supplies, shellfish beds and fishery areas, wildlife and recreational areas in the Yazoo Backwater Area. EPA fully considered the EJ analysis included in the FSEIS.

65. Comment: Both studies cited (Brown, Xu, and Toth, 1998) and (Brown and Toth 2001) were based on surveys made prior to the issuance of a fish advisory by MDEQ in June 2001. None of this data can be applied to the use of subsistence fishing by minorities today.

Response: EPA disagrees with the project sponsor that none of the data from the Brown, Xu, and Toth, 1998 and Brown and Toth 2001 studies are relevant to determining whether members of communities with potential EJ concerns in the Mississippi Delta participate in subsistence fishing. EPA received numerous comments from conservation organizations, private citizens and the FWS that members of communities with potential EJ concerns utilize the Yazoo Backwater Area for subsistence fishing and/or hunting. FWS, in its comments on EPA’s PD, stated: “[i]n 2007, 3,000 visits were associated with fishing within the affected area of Panther Swamp NWR. Most of this is subsistence angling by economically disadvantaged people in the local area. Further degradation of the fishery anticipated as a result of the project is expected to reduce quality fishing opportunities on Panther Swamp NWR and this will have a dramatic impact to the local anglers.” Based on the public comments, it does not appear the 2001 MDEQ fish advisory has stopped subsistence fishing in the Yazoo Backwater Area. The 1998 and 2001 studies on subsistence fishing and hunting in the Mississippi Delta provide evidence that subsistence fishing by minorities has historically occurred and supports EPA’s conclusion, based on the comments received by the FWS and several conservation organizations and individuals, that subsistence fishing does in fact occur presently in the Yazoo Backwater Area.

66. Comment: Fishing, including subsistence fishing, likely will be further impacted by increases in methyl mercury in fish studies conducted following the 2008 backwater flood.

Response: As discussed in more detail below (see response number 92), it cannot be concluded that the proposed project will indeed improve methyl mercury concentrations in fish tissue.

67. Comment: Unlike the PD, in this RD EPA states that it must independently comply with E.O. 12898. It purports to meet that duty with two paragraphs of the RD. This is insufficient compliance, as there is no evidence that EPA considered the nature of the population that will be impacted by its action. The failure to construct this Project (i.e., an EPA veto) will have a disproportionately high and adverse impact on low-income and minority populations. To the extent that EPA is relying on information about the population from the Environmental Justice study prepared by the Corps, EPA cannot conclude that its veto does not have a "disproportionately high and adverse" effect on low-income and minority populations. The Corps' data reflects that the population impacted by loss and damage of flooding is low-income and minority. The EPA veto denies this population protection from these flood impacts. The only evidence in the record is the Corps' Environmental Justice analysis, which confirms this conclusion. (Pg. 24-25 in MS Letter)

Response: An EPA action pursuant to CWA section 404(c) should also consider the EJ impacts of the Agency's action under E.O. 12898. Given the Agency's commitment to environmental justice, during the section 404(c) process it examined, to the greatest extent practicable and permitted by law, any "disproportionately high and adverse human health or environmental effects" that may result from undertaking a 404(c) action in the context of the Yazoo Backwater Area Project.

EPA does not disagree with the conclusion in the Corps' analysis that there are members of communities with potential EJ concerns that reside in the Yazoo Backwater Area. However, we do not feel that the analysis in the FSEIS adequately describes which communities in the Yazoo Backwater Area will be protected and which will remain subject to flooding if the project is completed. Thus, EPA questions whether there would be substantial economic development or flood control benefits that would specifically go to members of communities with potential EJ concerns in the Yazoo Backwater Area and disagrees that there will be a disproportionately high and adverse impact on low-income and minority populations from its action of preserving the fish and wildlife resources of the Yazoo Backwater Area by protecting important habitat.

Under CWA section 404(c), EPA is authorized to prohibit, restrict, or deny the specification of a defined area as a disposal site for the discharge of dredged or fill material into waters of the United States only when it determines that the discharge would have an unacceptable adverse effect on "municipal water supplies, shellfish beds and fishery areas (including spawning and breeding areas), wildlife, or recreational areas." Thus, when EPA examines whether there are any "disproportionately high and adverse human health or environmental effects," in the context of a section 404(c) action, EPA examines the potential effects prohibiting the discharge will have on the "municipal water supplies, shellfish beds and fishery areas, wildlife and recreational areas" ("404(c) resources") of the project area. EPA then examines whether those effects, if any, of the section 404(c) action on the 404(c) resources will have a "disproportionately high and adverse human health or environmental [effect]" on "minority

populations and low-income populations” of the project area. EPA examined the potential effects of prohibiting the proposed project on the 404(c) resources that are located in the Yazoo Backwater Area and what affect that would have, if any, on members of communities with potential EJ concerns. EPA’s section 404(c) action, by prohibiting the project, is preventing any impact to the 404(c) resources. With no project and no impact to the 404(c) resources, there is no disproportionately high and adverse human health or environmental effects on the minority or low-income populations of the project area as the environment of the Yazoo Backwater Area is maintained in its current state.

As stated above, EPA has questions on whether there would be substantial economic development or flood control benefits that would specifically go to members of communities with potential EJ concerns in the Yazoo Backwater Area. However, even if there were, economic development and flood control are outside the scope of 404(c) and thus outside the scope of EPA’s EJ review under EO 12898. EPA’s authority under 404(c) is limited to prohibiting, restricting, or denying the specification of any defined area as a disposal site for the discharge of dredged or fill material into waters of the United States whenever it determines that the discharge would have an unacceptable adverse effect on 404(c) resources. A section 404(c) review does not involve a balancing of environmental benefits against non-environmental costs such as the benefits of the foregone project (See 44 FR 58078). EPA wants to make clear that while economic development and flood control are outside the scope of section 404(c), and thus an EJ review conducted in the context of section 404(c), the Agency acknowledges the importance of providing improved flood protection to all community members in the project area, including members of communities with potential EJ concerns. As previously stated, EPA remains fully committed to participating in discussions with other federal and state agencies, and the public, to identify a solution for reducing flood damages in the Yazoo Backwater Area.

68. Comment: Adverse effects of the pumps will be relatively small. Using only acres does not provide an accurate measure of impact because it doesn’t account for the quality of the wetland or the magnitude of impacts. Corps’ functional analysis indicates small relative adverse effects.

Response: EPA agrees that a functional assessment is a more desirable method for evaluating and describing the level of project impacts than simply referring to the number of acres impacted. EPA encouraged the use of the HGM assessment method and HEP as tools to help evaluate wetland/aquatic resource functions for the FSEIS evaluations, and still supports the use of those tools. However, EPA’s consistent position is that the Corps has significantly underestimated the degree and nature of the impacts to affected wetlands identified in the FSEIS and by the Corps. These underestimates are due to modeling assumptions and other factors used by the Corps in its analysis with which we professionally disagree. These disagreements are highlighted in the PD, RD, and FD and have been extensively discussed with the Corps (See FD section IV and Appendices 6 and 8).

69. Comment: The PD is based on inaccurate estimates of the acres of wetlands impacted by the proposed project.

Response: EPA based the PD, RD and FD wetland acreage impacts on information contained in the Corps’ FSEIS for the Yazoo project. The FD clearly states that the determination is

based on the adverse impacts to approximately 28,400 – 118,400 acres of wetlands and their associated fisheries and wildlife resources identified in the FSEIS and by the Corps.

70. Comment: The fish species selected for the HEP assessment are representative of fish species whose life cycles would be affected by the proposed project.

Response: We disagree with the assertion that all species in the HEP analysis utilize the floodplain for spawning and foraging. For example, as indicated by Appendix 11 of the FSEIS, ghost shiners and speckled chubs spawn primarily in rivers. Threadfin shad generally spawn in open river channels.

71. Comment: Sufficient lands are available for the proposed reforestation, the majority of which are adjacent to existing bottomland hardwoods (i.e. the proposed reforestation will not result in fragmented habitat).

Response: EPA recognizes that a great deal of agricultural land in the project area could be reforested. However, the critical factor is the re-establishment of the hydrologic regime to those reforested acres to “fully” mitigate for lost wetland functions. The project does not ensure re-establishment of appropriate wetland hydrology but rather precludes it due to its large-scale hydrologic alterations to the Yazoo Backwater Area. Reforestation without re-establishment of wetland hydrology will not result in wetland restoration. A detailed discussion of this issue is provided in Appendix 8 of the FD.

72. Comment: The proposed conservation easements are the same as the very successful WRP in the Yazoo basin.

Response: Assuming that sites can be found, the conservation easements used to provide long-term site protection described in the FSEIS will not require landowners to ensure that sites are or will retain wetland characteristics and will allow potentially ecologically disruptive silvicultural practices in these areas. We also note that in its August 1, 2008, comments on the RD, the project sponsor raises questions regarding the success of WRP sites in the project area.

73. Comment: The veto action is unfair. The Yazoo pump station is relatively small when comparing capacity to drainage area. No other large pumps within 200 miles of the proposed Yazoo pumps have been vetoed.

Response: EPA has based its determination to prohibit the discharge of dredged or fill material associated with the construction of the proposed Yazoo Backwater Area Pumps Project (i.e., FSEIS Plan 5), as well as FSEIS Plans 3, 4, 6, and 7, and Modified Plan 6, based on unacceptable adverse effects on fishery areas and wildlife. The size of the proposed pumps relative to other pumps in other locations was not a factor in this determination.

74. Comment: The reason the green tree reservoirs may have a lower invertebrate population than a more naturally flooded area is probably because the flooding that occurs in these type of areas usually occurs annually and for long periods of time which probably reduces the primary productivity of these type forested areas as compared to forested areas that are not flooded annually on purpose. The adverse effects to vegetation that result in greentree reservoirs is one of the chief reasons these type impoundments have not been recommended in recent years. This project will not produce static flooding.

Response: EPA agrees that inadequate water management in greentree reservoirs has led to vegetational declines and lower invertebrate biomass. The authors of the cited studies comparing invertebrate populations between naturally flooded forests and greentree reservoirs between the winters of 1989-1991, considered areas in the Delta National Forest (not within greentree reservoirs) to be "naturally" flooded. They conclude, as do other authors cited in the RD and FD, that a variable hydrologic regime is conducive to viable invertebrate populations. This "natural" hydrologic regime is the current hydrologic regime and is not producing "static" flooding conditions as evidenced by not only the production of invertebrate biomass but also fishery productivity.

75. Comment: In discussing hydrology related to invertebrates, EPA compares flooded forests in the Delta National Forest to greentree reservoirs, omitting the fact that the time of the year that greentree reservoirs are flooded is during waterfowl hunting season, not during the spring and early summer when backwater floods are more common.

Response: EPA referenced studies related to greentree reservoirs to emphasize the point that invertebrate populations are generally more productive in conditions where the flooding regime is more variable. The proposed project will not only reduce the extent and depth of flooding but will also significantly reduce the variability of the flood regime. The studies cited in the RD controlled for the time of year (i.e., all samples were collected during the same season) to make comparisons accurate.

76. Comment: We believe FWS has provided only selective data to the EPA. For example, why did the FWS not provide the data from the annual bird counts taken at the specific refuges in the Project Area?

Response: EPA obtained relevant bird species information from the FWS list of bird species utilizing wildlife refuges in the Yazoo backwater Area:  
<http://www.npwrc.usgs.gov/resource/birds/chekbird/r4/yazoo.htm>. EPA used this information to compile a comprehensive list of bird species likely to occur in the Yazoo Backwater Area.

77. Comment: The Corps expressed concern regarding the evaluation of flood frequency and flood duration conducted by an EPA contractor based on daily stage data provided to the contractor by the Corps. The Corps states that their hydrologic analysis accounted for error and expressed the opinion that EPA did not read the report. The Corps continues to point out differences between the analysis technique employed by the EPA contractor and that used by the Corps. Despite the differences between the two techniques the Corps agrees with EPA that one technique corroborates the other.

Response: EPA staff did read and review the Corps' Hydraulics and Hydrology Appendix very carefully and recognizes the Corps' knowledge and familiarity with the hydrology in the project area. That is why EPA utilized much of the information generated by the Corps in drawing our conclusions that the project will affect the frequency and duration of flooding throughout the project area. As expressed in a June 19, 2008 letter to the Mississippi Levee Board regarding this same issue, the EPA contractor analysis did not introduce any new data but rather was conducted to inform EPA's evaluation and interpretation of the Corps' hydrologic information. Both the Corps' and EPA's analyses used the same period of record daily stage data and reached the same fundamental conclusion that the frequency and duration

of flooding will change as a result of this project. The RD discusses EPA's interpretation of the ecological ramifications of the Corps' hydrologic analysis.

78. Comment: The Corps comments that primary production (plant productivity) is the base of the food chain and that reforestation of frequently flooded agricultural land (55,600 acres) will improve the primary production and enhance conditions for the invertebrate community associated with these sites. The Corps goes on to postulate why greentree reservoirs do not produce the invertebrate populations of more naturally flooded forests, concluding it may be due to the static flooding conditions encountered in greentree reservoirs.

Response: EPA agrees that reforestation will produce more organic material and provide more material for carbon cycling and consumption. However, if the reforestation does not occur on frequently flooded land, the trophic interactions between the plant material and the invertebrate community is altered and has a cascading effect on the food chain. Further, as discussed in the RD and FD, the environmental benefits attributed to the proposed reforestation of up to 55,600 acres have not been substantiated.

79. Comment: The Corps asserts that the project will not affect the 21 species of amphibians and 32 species of reptiles which benefit from the current flood pulse.

Response: As discussed in the RD, the 53 herptofaunal species require water for their life cycles. Dispersal of these species is also facilitated by flood waters. When flood waters are restricted from accessing areas on the floodplain as envisioned by the proposed project, these herptofauna will be adversely affected.

80. Comment: The Corps asserts that EPA's description of the flood regime of the Backwater Area does not take into account the artificial nature of prolonged flooding caused by past Corps projects. The Corps goes on to state that floodwater could be retained for months causing the potential for stagnation and hypoxic conditions which in turn would produce physiological stress in fish. Further, the Corps contends that upon recession of these long ponded waters that fish could be stranded in remaining pools and could be subject to die-offs and/or predation. The Corps believes extended flooding is detrimental to fish.

Response: This assertion appears to be in contradiction to the assertions made by the Corps in Attachment E of its August 1, 2008, comment letter which stipulates (page E-4) that riverine backwater wetlands do not store water for long periods of time. If the comment on page E-4 is accurate then the fishery concerns may be inappropriate. However, as EPA points out in the RD and as the Corps acknowledges in their comments, fish are capable of moving within the floodplain and stream system at various flood stages and taking advantage of the hydrologic (including temperature and flow) and topographic diversity on the floodplain and species specific requirements. Thus, when hypoxic conditions develop, intolerant species will move away from the adverse conditions and seek more suitable habitat. Further, the Corps' position regarding stagnant and hypoxic conditions does not address temporal (i.e., seasonal) and spatial variability. "Stagnant" water is not necessarily hypoxic (or adverse as the term "stagnant" suggests) even late in the season (i.e., summer and fall). Lentic environments throughout the region (e.g., ponds, oxbow lakes, sloughs, even semi-permanent depressions) have still water and do very well with regard to supporting viable fish stocks. "Stagnant" (e.g., non-flowing) water is in fact important in many ways for fish and fisheries on floodplains.

Stillwater allows suspended materials to settle, thereby increasing water clarity out on the floodplains. This can promote plankton production. Early in the year (late winter & spring), particularly in the shallow areas, the relatively more clear water also assists with warming of water (because sunlight can pass through to substrates and a portion is even reflected back by those substrates increasing the warming). This warmer water stimulates spawning of many fishes out on the floodplain and can also help increase production of aquatic invertebrates (that can be forage for fishes).

Early-spawned fishes tend to have better survival and recruitment. The more water spreads across the landscape, and the longer it stays there, the more opportunity (in terms of time and place) there is for development of forage items (e.g., plankton and other invertebrates) for the fishes, particularly young, recently-spawned fish. Additionally, the shallow water is actually a safer place for young fish than is deeper water. There are fewer aquatic predators (e.g., large piscivorous fishes). The small individuals of many fish species in fact tend to stay in those shallow areas as long as they can. However, those fish that may become isolated in drying depressions are indeed more vulnerable to predation by birds, reptiles, and mammals. These stranded fish provide a very valuable seasonal resource for these other animals (e.g., black bear, otter, osprey, bald eagle, and alligator).

81. Comment: The Corps believes that EPA's estimate of 116 species of fish that occur in the Backwater Area is inflated. They point out that numerous species listed were based on records that may have been collected in the past or have never been collected in the Backwater Area. The Corps also asserts that the listing of the 2 Ammocrypta darters, half of the Etheostoma darters (6), and seven species of cyprinids (minnows, shiners, and chubs) were of "unsubstantiated occurrence". Thus the Corps asserts that the list of fish species in the Backwater Area should fall below 100 species.

Response: EPA obtained the list of potential fish species occurring in the Yazoo Backwater Area from the Mississippi Museum of Natural Science (Museum) database. The database was queried for fish species occurring in Sharkey, Issaquena, Yazoo, and Humphreys County. Fish species from each county were compiled into the single list (Table 3, page 27 RD) against which the Corps collection records "COE" and the Fish and Wildlife Service's selection of backwater dependent species "BW-USFWS" were compared. As the title of Table 3 of the RD indicates, the 116 species from the Museum represented potential species which could occur in the Yazoo Backwater Area. Several of the species listed above (i.e., Ammocrypta darters and several Etheostoma darters) were collected along the Big Black River in Yazoo County. EPA is aware, and the Corps acknowledges, that fish species can and do move and travel distances that could take them well outside the project area. However, given the distance between the Big Black River and the Yazoo Backwater Area, changes to the species list have been evaluated and the total estimate of fish species that potentially occur in the Yazoo Backwater Area has been reduced from 116 to 95. Based on EPA's review of the list there are still at least 58 species which are dependent on backwater areas.

82. Comment: The Corps also takes issue with the comparison of the Yazoo Backwater Area with wetland/floodplain habitats and hydrologic regimes along the Cache and Atchafalaya Rivers.

Response: EPA is fully aware of the cumulative impacts to forested wetlands and the hydrologic regime of the Yazoo Backwater Area as a result of past flood control projects and the effects those actions have had on the existing fauna. However, the Cache and Atchafalaya

Rivers offer insight into the reference conditions under which backwater dependent fish species interact with forested floodplains during backwater events in the lower Mississippi River Valley. EPA did not intend to characterize the Yazoo Backwater Area as being the same as the Cache or Atchafalaya Rivers (the FD has been modified to clarify this point), only as a means to elucidate the importance of, and the way in which, fish species utilize backwater events to access the floodplains. Further, the studies indicate how forested floodplains influence the productivity of the fishery.

83. Comment: The Corps also takes issue with EPA's use of the terms, "other floodplain areas" and "decoupling" in describing the effects of the Project on flooding in the project area.

Response: As the hydrograph produced in "Synopsis of 2008 MS River Spring Flood Event In the Vicksburg District" on page 17 indicates, the proposed project would have limited flood waters from reaching 92' NGVD during this last flood event. Therefore, 122,000 acres including forested wetlands, agricultural fields and scrub-shrub wetlands, would not have flooded for the 55 days the gates were closed. Thus, with project floodplain inundation would be restricted, and EPA would consider lands which no longer have the current hydroperiod to be ecologically "decoupled," or having reduced wetland processes supported by floodwaters. The more water spreads across the landscape, and the longer it stays there, the more opportunity (in terms of time and place) there is for development of breeding habitat and forage items (e.g., plankton and other invertebrates) for the fish, particularly young, recently-spawned fish.

84. Comment: The Corps states that EPA misinterpreted the Corps' statement regarding the Corps' use of the term "prevented" when referring to the levees and Steele Bayou Structure and the prevention of fish movement throughout the Backwater Area.

Response: EPA agrees with the Corps that fish are capable of moving into and out of the Yazoo Backwater Area freely when the Steele Bayou gates are open which may contribute to the diversity seen in species lists from the Mississippi Museum of Natural Science. However, as explained before, EPA believes that the proposed project will restrict flood waters from extending out onto the floodplain, restricting fish access to suitable habitat on these floodplains.

85. Comment: The Corps asserts that the 8 day spawning period used in the HEP analysis is reasonable due to the propensity of larval fish to move to deeper water, or move with the hydrograph to avoid stranding.

Response: Different fish species spawn at different times. Even within a species, there are individuals that spawn at different times. Protracted spawning allows fish in highly variable environments to maximize chances of producing a viable cohort that will ultimately recruit into the adult population (and the fishery). It should be noted that the Corps was troubled by the possibility of prolonged flooding causing minimal dispersal and yet feels that the spawning period of 8 days is reasonable because larval fish have a propensity to move to deeper water to avoid stranding. This appears to be a contradiction within the Corps' comments.

86. Comment: The Corps asserts that the recommended project would enhance the habitat for over one-third of the upland birds that use the study area without significantly affecting the others.

Response: EPA recognizes the diversity of upland bird species which occur in the state of Mississippi and which occur in the Yazoo Backwater Area and agree that less flooding could improve habitat for upland game birds. The diversity of bird species discussed by the Corps affirms EPA's position that the area is biologically diverse. The RD discusses the effects of reduced hydroperiod as a result of the proposed project on bottomland hardwood wetlands and the waterfowl and wetland birds dependent upon them. Reduction of the flood pulse and the extent of flooding will reduce the available foraging habitat and breeding habitat for some bird species. In fact, in the Corps' comments they estimated 23 percent of the land currently flooded would not be flooded with the project. This estimate is slightly lower than the 35 percent estimate of the acreage which would not flood with the implemented project in the Synopsis of the 2008 Mississippi River Spring Flood Event. Either estimate is a significant amount of acreage representing potential losses of wetland dependent bird foraging and breeding habitat.

87. Comment: The Corps asserts the project will adversely affect 5 species of wetland-dependent mammals.

Response: EPA concurs.

88. Comment: The Corps asserts that fish species richness in the Yazoo Backwater Area is not as great as reported in the RD and that the impaired water quality, in some streams in the Yazoo Backwater Area, reduce the productivity and diversity of the fishery resource.

Response: EPA obtained the list of potential fish species occurring in the Yazoo Backwater Area from the Mississippi Museum of Natural Science (Museum) database. The database was queried for fish species occurring in Sharkey, Issaquena, Yazoo, and Humphreys County. Fish species from each county were compiled into the single list (Table 3, page 27 of the RD) against which the Corps collection records "COE" and the Fish and Wildlife Service's selection of backwater dependent species "BW-USFWS" were compared. As the title of Table 3 of the RD indicates, the 116 species from the Museum represent potential species which could occur in the Backwater Area. Several of the species listed above (i.e., Ammocrypta darters and several Etheostoma darters) were collected along the Big Black River in Yazoo County. EPA is aware, and the Corps acknowledges, that fish species can and do move and travel distances that could take them well outside the project area. However, given the distance between the Big Black River and the Yazoo Backwater Area, changes to the species list have been evaluated. Based on EPA's review of the list there are still 58 species which are dependent on backwater areas.

EPA still maintains that the fishery in the Yazoo Backwater Area is very productive under the current hydrologic regime. The Corps is correct in stating that the majority of fish in the Yazoo Backwater Area are adapted to the extreme variations in temperature, dissolved oxygen and water elevations. It is indeed this environmental variability and the ability for fish in the area to live and thrive in this variability that makes this type of ecosystem so incredibly productive. Allowing floodwaters to spread across the landscape and allowing fish access to interact with this flooding and highly variable landscape increases the productivity of area fisheries. The interplay of landscape variability with hydrology, climate, and physical/chemical conditions of the water on the floodplain becomes the driving force for fisheries in floodplain river ecosystems. It is true that the fishery has been reduced in many streams and wetland areas due to the extensive land use changes, hydrologic and geomorphic alteration of the Yazoo Basin;

however, as shown by the extensive species list, a large number of species of fish still exist in the overall project area. Additionally some harvestable species are quite productive and provide for subsistence and recreational fishing opportunities. Further adverse impacts to the fishery from the proposed project could be expected due to increased stresses from additional alteration of the existing hydrology of the project area. This could hamper recovery of the fish community in impacted streams when future restoration activities are undertaken.

89. Comment: The Corps asserts that the Mitigation Assessment described in Appendix 9 of the RD is flawed because:

- the HGM calculator was designed for site specific comparisons,
- arbitrary hydrologic conditions were used, and
- high failure risks were assigned without scientific support.

Response: EPA utilized the Corps' HGM calculator because it can provide comparisons of impact site conditions to expected mitigation site conditions based on the quality of the two situations. The calculator compares functional capacity index scores from the impact site to those expected at the mitigation site at the beginning of mitigation and at maturity of the compensation site. This approach is important because it clearly illustrates the change in each of the project area's eight functions. The Corps is correct in their statement that the calculator was designed for site specific comparisons, but that is true of the HGM assessment approach used in the FSEIS as well. EPA utilized the Corps' HGM landscape data from the FSEIS for the with- and without-project conditions for forested wetlands. As stated in the Corps' HGM Assessment, included in the FSEIS and discussed in the Compensatory Mitigation section of the PD, RD, and FD, there was very little information regarding actual mitigation sites to be used for the compensation analysis for this project. The FSEIS's HGM Assessment used a long list of assumptions regarding conditions on mitigation sites. EPA utilized all of those assumptions as well in the calculation of the ratios. The only variance from the FSEIS's HGM assumptions were the modification of hydrologic variables (frequency and duration of flooding) to more accurately depict the impacts of the project.

As for using "arbitrary" hydrologic conditions, the Corps maintains that a 6.25 percent duration is arbitrary and does not occur. However, the Corps goes on to explain in their comments that durations on the 2 year floodplain range from 1 to >34 days. The 6.25 percent duration (17 days) is well within the 1-34 day band prescribed by the Corps and was ascribed to the mitigation sites. Assigning more than a 5 percent duration for flooding (as suggested by the Corps in their comments) favors the lift provided to the mitigation sites. This 6.25 percent duration is also found in the Corps' HGM Assessment (Table 1) as the mid-point duration chosen to represent the band between 5 percent and 7.5 percent duration floods in the assessment of baseline conditions. Therefore, the use of 6.25 percent is reasonable and not arbitrary.

Just as the Corps used "no duration" to represent anticipated conditions on the mitigation sites, EPA used 0 percent duration to represent the effect of the project on areas typically flooded more frequently which will flood less frequently as a result of the project. For example, if flood waters are restricted from reaching the 2 year floodplain but every 5 years, then wetland areas typically flooded every other year will not be flooded as often. For those wetland functions and habitat characteristics which require frequent flooding, the flooding will not occur as often. If flooding at the typical or reference standard frequency doesn't occur, that

area has no flooding, this is represented by 0 percent duration. In other words, if a wetland, accustomed to flooding on a 2-year return, doesn't flood during that typical time period because of the effects of the proposed pumps, it has no flooding (0 percent duration) during that typical 2-year time frame.

As for high failure risks, the National Research Council's (NRC) report on Compensating for Wetland Losses under the Clean Water Act (2001) found that often wetland area and particularly wetland functions were not being replaced. They provided recommendations for improving wetland mitigation under the Clean Water Act. The majority of these recommendations involve improving mitigation project site selection, developing more detailed mitigation plans, developing site specific performance criteria to measure restoration progress, and conducting comprehensive monitoring of sites to determine if they are achieving stated goals and objectives. In the absence of these recommended measures (which the Corps and EPA have since spelled out in national guidance and more recently codified into regulation at 33 CFR part 332 and 40 CFR part 230 subpart J), EPA feels it is appropriate to assign risk factors to mitigation sites. Studies reviewed by the NRC, in preparing its report, indicate that mitigation projects which lack the key measures outlined above, as is the case with the proposed project (see PD, RD and FD), exhibit very high failure rates (up to 80 percent failure was noted).

90. Comment: The Corps disagrees with EPA's EMAP estimate that up to 24,000 additional acres on the 2 year floodplain are impacted by the project.

Response: In conducting the impact assessment for the FSEIS, the Corps used the FEAT/FESM modeled 5 percent duration area (GIS polygon) to depict the extent of wetlands. The Corps analysis indicated that as a result of the proposed project, 67,000 acres from approximately 88.6' NGVD down to 87' NGVD would experience altered flood durations. However, the 5 percent duration "polygon" did not experience a change in flood frequency. In other words, the FEAT/FESM wetlands still flood regularly but not for as long. This is well documented in the FSEIS.

EPA has maintained, based on the EMAP survey, that wetlands occur outside the Corps FEAT/FESM 5 percent area. The EMAP survey statistically established this during the field survey in which the 3-parameter approach recommended in the Corps Wetland Delineation Manual was used to verify wetland status. A portion of the wetland acres found outside the Corps 5 percent boundary occur within the 2 year frequency floodplain. EPA looked at these additional wetland acres and compared the with- and without- project conditions to establish how many acres would lose the 2 year flood frequency. Table 8 in the RD, which appears again in the Corps' 8-1-08 comments, represents the number of acres losing the more frequent floods. This Table does not include the Corps' 67,000 acres of altered duration. Table 8 shows the change in flood frequency on wetland acres outside the Corps FEAT/FESM wetland boundary. Therefore, the Corps' estimate and the EPA estimate are separate.

91. Comment: The Corps also takes issue with EPA's assertion that wetland impacts have been underestimated, because of EPA's failure to understand the Corps basic assumption.

Response: That assumption was "that all water required to meet wetland demands was provided by backwater flooding and that precipitation did not factor in the maintenance of basic wetland functions." EPA does understand that assumption which is why we agreed with the

HGM classification of the 5 percent duration flood polygon as “riverine backwater.” EPA does not understand this assumption which stipulates that wetland function is driven by flood frequency and duration, which is why when this flood regime is removed from currently flooded wetlands their HGM subclass would likely change as a result of the alteration of the water source. For example, riverine backwater wetland’s predominant water source is backwater flooding. The functions ascribed to this wetland type are in large part determined by the water source and hydrodynamics. When that water source changes, i.e., flood water is no longer the dominant source, wetland jurisdictional status may be maintained by precipitation and/or subsurface water, but the functions performed by that wetland change. Regardless of the classification, EPA understands that wetland function is altered as a result of change in flooding even if the jurisdictional status of the system is maintained by precipitation.

92. Comment: The Corps contends that the project as proposed will decrease the amount of methyl mercury in fish tissue by not allowing these wetlands to inundate during portions of the year and thereby, interrupting the methylation cycle. Their evidence of this conclusion is two fold - 1) literature documentation of similar projects and 2) empirical evidence from the Steele Bayou area.

Response: On the first point, EPA believes the analysis is inconclusive as to whether or not this specific project will cause a decrease in fish tissue concentrations. The Corps bases their contention on the premise that not wetting these areas will not allow conditions to set up that are conducive to methylation and thereby, decrease the amount of methylmercury in fish tissue. While the body of evidence supplied may support this conclusion, it is unclear how this system will react once the project is in place. Merely having these areas wet less often may not decrease methylation significantly due to other considerations in the remainder of the waterbody i.e., predicted methylation rates, normal organic bedload, oxygen content, and microbial community dynamics.

In light of this, EPA similarly believes that the apparent cause-effect relationship between days of inundation and increased methylmercury in fish tissue from Steele Bayou argued by the Corps’ is inconclusive. While there is a possible connection, the Corps admits that this relationship may also be due to controls on air emissions in the last 15 years which have decreased overall air deposition loadings. Because these two things may be autocorrelated in this case, placing a cause to the effect is difficult in either case and yields an inconclusive result. Therefore, picking one line of the relationship does not assure success in mitigating the effect.

Additionally, the data presented would indicate that the trend in mean fish tissue concentration has decreased from the early 1990s to 2005 (see Fig. 2 of Corps’ Attachment F). The level reported in 2005 is a mean fish tissue concentration of 0.21mg/kg methylmercury. While the species of fish is not noted, this level is below the EPA water quality criterion of 0.3mg/kg. Since MSDEQ has yet to adopt this criterion into their water quality standards, EPA can only speculate as to the possible impairment status of Steele Bayou. On its face, it would appear that Steele Bayou would not be impaired for methylmercury and would be meeting water quality standards.

In conclusion, the hypothesis presented by the Corps has a sufficient amount of uncertainty in it that it cannot be concluded that the proposed project will indeed improve methylmercury concentrations in fish tissue.

93. Comment: The Vicksburg District collected larval fish samples in three general locations from April – July, 2008. Dissolved oxygen samples were collected as well. Data collected during these sampling events will be analyzed and results potentially available later this year.

Response: The EPA looks forward to reviewing the results of this evaluation when it is completed.

94. Comment: The project will not impact winter breeders or waterfowl. The conditions for pumping require both high Mississippi River waters (closing of the Steele Bayou Structure) and heavy rainfall causing backwater flooding in the drainage basin behind the Steele Bayou Structure. These conditions very rarely occur during the winter, so it is misleading to suggest that there would be pumping during winter months unless a major flood is experienced.

Response: According to Figure 6-51 from the Corps Engineering Summary (Appendix 6) the Steele Bayou floodgates can close and the pump could operate in December, January and February. In these late winter flooding situations, if the pumps were used, as predicted to occur by the aforementioned plate, wetland functions could be affected.

95. Comment: As stated in other comments, the 2 year floodplain (used by EPA) does not consider the time of year and duration of flooding (which is necessary to identify jurisdictional wetlands). Although wetlands occur in the 2-year frequency floodplain, they are not the result of backwater hydrological events and connection of wetlands in the 2-year floodplain is unconfirmed.

Response: The 2-year floodplain used by EPA is the same 2-year floodplain used by the Corps in the Aquatic, Terrestrial and Waterfowl assessments. It is also the same floodplain which the Corps is proposing to reforest and claim benefits for “wetland” functions. The wetlands identified by EMAP and agreed to by the Corps ARE jurisdictional wetlands by virtue of meeting the 3-parameters outlined in the Corps’ 1987 Wetland Delineation Manual (i.e., having indicators of wetland hydrology, soils and vegetation). The fact that remote modeling done by the Corps suggests that these wetlands may not have flooding for 14 consecutive days in the growing season does not change EPA’s position that the functions of these wetlands are altered by the project. As discussed in the RD and FD, the change in the backwater flood pulse will have detrimental effects on wetland functions regardless of whether the areas are flooded for 7 days or 34 days. EPA has accepted the Corps contention that the FEAT/FESM model portrays the extent of flooding caused by backwater. The wetlands identified by the field-based EMAP survey are within the area identified by the Corps as flooding by backwater on a 2 year return. Based on the area of inundation shown by the Corps in their flood models, EPA maintains that these wetlands are connected by surface water.

96. Comment: A review of Tables 78-80 in the FSEIS Appendix 10 Supplement B confirms that none of the eight wetland functions analyzed have a net loss.

Response: EPA disagrees. The term “loss of function” within HGM generally means a reduction in the level of function. The FSEIS and the RD discuss the reduction in functions as a result of the pumps. Table 78 in the FSEIS Appendix 10 Supplement B (HGM Assessment) indicates that in Year 50 of the restoration the Export Organic Carbon, Biological and Physical Removal of Elements and Compounds functions do not attain the same level of functional

capacity as previously achieved in mature forested wetlands without the project. The difference between the Functional Capacity Indices between without project and with project restoration at Year 50 for these functions indicates that full functional replacement is not achieved, constituting a “loss” or reduction in function.

97. Comment: The detain floodwater function for riverine backwater flooding does not require use of duration. Backwater wetlands do not have depressional storage, but detain floodwater by roughness from trees and bushes as water moves in and out of the wetland. It would be inappropriate to consider duration as part of the analysis.

Response: EPA disagrees. Backwater wetlands do have depressional storage by virtue of inclusion of the indicator “micro-depressional ponding” (Vpond). This variable/indicator is evident in the “Detain Precipitation and Maintain Plant Communities” functions in the Yazoo HGM Guidebook. Whereas this variable is not explicitly utilized in the “Detain Floodwater” function it does indicate that backwater wetlands do have depressional storage. In fact, the elements of roughness for this model are derived from United States Geological Survey (USGS) techniques for estimating floodplain roughness. As the Guidebook states on pg 51, “Other components of wetland structure contribute to roughness, but are not assessed here (e.g., surface micro-relief) because they cannot be estimated rapidly and reliably...”

EPA fully understands how these HGM rapid wetland assessment models were constructed and why certain variables were included and others omitted. It is correct that the HGM Guidebook does not include duration of flooding as a variable due to the inability to estimate duration at the time of model development. However, the importance of flood duration to this function is indicated by the “independent measure of the function”, or the measurement which could be used to verify the floodwater detention model, which can be found on page 48 of the Yazoo Guidebook. Specifically, the authors of the Guidebook indicate that a potential independent quantitative measure of this function is the volume of water stored per unit area per unit time ( $m^3/ha/ time$ ). It is the inclusion of time in the independent measure and in the discussion on page 49 of the Guidebook which leads EPA to conclude that duration should have been included in the modified models prepared for this project. As also explained in the Guidebook, flood frequency and roughness are used in this model because of their relation to detention time and their ability to be rapidly estimated in the field.

98. Comment: There is no documentation that the vegetation species composition in the study area has changed over the last 30 years since the completion of the Yazoo Backwater Levee and Steele Bayou and Little Sunflower Structures.

Response: EPA agrees that no long term studies were implemented during the past 30 years of hydrologic alteration of the Yazoo Backwater Area to document the change in vegetation. Hence, we do not know precisely what vegetative changes will occur as a result of further hydrologic alterations proposed by the pumps project. However, as EPA points out in the RD and FD, anticipated hydrologic changes could result in the change of wetland subclass (riverine backwater to flats) based on a change in water source. Over time, the HGM Guidebook indicates that vegetation will change and become an indicator of change in subclass, which results from a change in hydrology. As the HGM Guidebook and the studies cited in the RD and FD indicate, changes in vegetation may take several decades to occur and be detected.

99. Comment: The 2-year frequency floodplain does not consider time of year, or depth of inundation. The Corps analysis considered changes in all these factors in determining the acres of spawning habitat impacted. The reference to Table 10-10 of the FSEIS Wetlands Appendix has no correlation to fish spawning since the information in the table is not linked to water depth.

Response: EPA is aware that the Corps did not intend the analysis done in FSEIS Appendix 10 to be associated with the analysis done for fisheries. However, the Corps used the 2-year floodplain as the assessment area for the fishery assessment. The Corps has further maintained that their wetland assessment area is totally contained within the 2-year floodplain. Therefore, the fishery assessment area could be larger in extent than the 5 percent duration wetland assessment area. Table 10-10 shows the change in acres from duration bands (5 percent) which exceed 8 days (fish spawning period used in the HEP analysis) to duration bands less than 8 days (2.5 percent or 7 days). The change in duration bands is based on the changes in stage, or elevation (or depth), as is the entire FEAT/FESM analysis. The RD, FD and FSEIS Aquatics Appendix discuss the use and importance of forested wetlands by fish. Therefore, EPA does not agree with the assertion that the FSEIS's Wetlands Appendix has no correlation to fish spawning since Table 10-10 is linked to change in duration which is linked to change in time which is linked to change in depth and which is linked to prime fisheries habitat.

100. Comment: We have commented before that the species selected for the HEP assessment were reviewed by EPA and FWS, and are appropriate (i.e., use the floodplain habitat for spawning and rearing). Appendix 11 to the Corps FSEIS indicates that the species selected for evaluation would in fact utilize the floodplain habitat for spawning and foraging.

Response: EPA has reviewed Appendix 11 and disagrees with the assertion that all species in the HEP analysis utilize the floodplain for spawning and foraging. Appendix 11 indicates that ghost shiners and speckled chubs spawn primarily in rivers. Freshwater drum and threadfin shad generally spawn in open river channels. This seems to be counter to the assertion that all fish species evaluated used floodplains for spawning and foraging.

101. Comment: Monitoring of reforested mitigation lands purchased and reforested by the Vicksburg District for other projects have shown that the environmental resources are being achieved at a rate faster than projected.

Response: EPA has reviewed the reports on Monitoring/Functional Assessment of Selected USACE Reforested Bottomland Hardwood Sites in the Yazoo Basin included in the FSEIS. In general, the reports indicate that the trees which were planted are growing. Based upon the reliance of HGM models on vegetation, it is not unexpected that results would show improvement based on the increased density, cover, and composition of the vegetation. However, the HGM assessments utilized remote data or assumptions about the hydrologic regime (rather than actually field based monitoring of hydrology). Using these assumptions or the remote data, the conclusions are that hydrology is intact on the reforestation sites. Due to the nature of the proposed pumps project and the anticipated impacts on flood frequency and duration, actual hydrologic monitoring would have to be undertaken to actually assess the restoration of the riverine backwater ecosystems which are being impacted. Using FEAT/FESM results to predict and confirm hydrology for wetland mitigation will not be adequate.

102. Comment: We are very concerned that EPA participated in the HGM process, and has now introduced a new tool to evaluate the compensatory mitigation. The HGM Compensation Ratio Calculator Version 3.3 was not used by the Corps, and it does not appear that the information presented Appendix 9 of the RD was previously provided to the Corps. That is arbitrary and unfair to the Levee Board and the commenting public.

Response: The HGM Compensation Ratio Calculator is a Corps' product. The decision to use it or not was the Corps'. Appendix 9 of the RD (Appendix 8 in the FD) discusses EPA's rationale for using the calculator. Much of the information on functional capacity index (FCI) scores was taken from the FSEIS' HGM assessment. EPA did modify flood frequency and flood duration variable values to recalculate FCIs for the various scenarios in the analysis. These changes in flood frequency and duration were predicted by the Corps' hydrologic analysis. Results of the analysis have been shared with the Corps and the Levee Board.

103. Comment: The text in Appendix 9 of the RD describes the basic assumptions used with regard to the compensation sites. However, we cannot ascertain from that Appendix what basic assumptions were used for the impact sites.

Response: The text on page 3 of Appendix 9 of the RD states that in the first scenario, "project impacts and mitigation conditions are the same as stated using the Corps' assessment data, (i.e., only duration of flooding being affected)." In addition the text goes on to explain, "...the assumptions used in the FSEIS HGM Report were placed into the spreadsheet for an impacted mature forested, riverine backwater wetland." This means that the impact occurred only through a change in flood duration. This scenario was equivalent to the Corps' impact scenario.

Throughout the analysis in Appendix 9 of the RD, the affected assumptions are that the impact site is a mature forested wetland and that the hydrology will be changed as described in the text. The tables indicate the results of modifying flood duration and frequency.

104. Comment: EPA has assumed that the mitigation sites will lack the minimum wetland hydrology of 5 percent of the growing season. Since the mitigation sites are in the one-year and two-year floodplain, assuming such a short duration of flooding in low lying areas biases the analysis.

Response: Given the level of proposed hydrologic impacts to flooding, lack of detailed mitigation plans, and dependence on willing sellers, EPA is not assuming that the mitigation sites will be sited in the 1-2 year post project floodplain. As EPA has discussed in the RD, given our mitigation analysis, we do not believe that enough land is available to accomplish mitigation for a fully functional riverine backwater wetland ecosystem.

105. Comment: Reference to results achieved on WRP land cannot be compared to that achieved by the Corps on mitigation land acquired for other projects in the Mississippi Delta. Preliminary studies by the Corps indicate that functions are being achieved on mitigation tracts at a faster rate than predicted.

Response: Corps monitoring data indicates that vegetation is growing on mitigation sites. The Corps has little or no data on the actual site specific hydrologic regime of sites reported on in the FSEIS. Without site specific hydrologic data to establish that the impacts of hydrologic

modification are being replaced, the monitoring data and its conclusions regarding functional replacement are incomplete.

106. Comment: It is inappropriate to use the Corps wetland impact acres for impacts below 88.6 and EMAP for impacts to lands in the 2-year frequency floodplain.

Response: In conducting the impact assessment for the FSEIS, the Corps used the FEAT/FESM modeled 5 percent duration area (GIS polygon) to depict the extent of wetlands. The Corps analysis indicated that as a result of the proposed project, 67,000 acres from approximately 88.6' NGVD down to 87' NGVD would experience altered flood durations. However, the 5 percent duration "polygon" did not experience a change in flood frequency. In other words, the FEAT/FESM wetlands still flood regularly but not for as long. This is well documented in the FSEIS.

EPA has maintained, based on the EMAP survey, that wetlands occur outside the Corps FEAT/FESM 5 percent area. The EMAP survey statistically established this during the field survey in which the 3-parameter approach recommended in the Corps Wetland Delineation Manual was used to verify wetland status. A portion of the wetland acres found outside the Corps 5 percent boundary occur within the 2 year frequency floodplain. EPA looked at these additional wetland acres and compared the with- and without- project conditions to establish how many acres would lose the 2 year flood frequency. EPA estimates that up to 24,000 acres occur in the band which represents the 2-year floodplain with-out and with- the project. These acres were not accounted for by the Corps, and are not in the same polygon evaluated by the Corps in their impact assessment, thus they are additional acres. EPA recognizes that the two estimates were derived differently and cannot be mathematically "added" but the acres abandoned by the 2 year flood are "extra" acres which needed to be assessed.

107. Comment: EMAP does not have the ability to determine the source of hydrology on wetlands they claim to be impacted above the Corps assessment.

Response: EPA concurs on this point which is why the EMAP analysis was done using the Corps flood polygons.

The project sponsor and/or the Corps raised a number of comments regarding information provided by the FWS, including Appendix 4 of the RD, a June 2008 report produced by the FWS entitled "Fish and Wildlife Resources Associated with the Yazoo Backwater Area: Certain Life History Aspects, Ecological Relationships, and Effects Anticipated as a Result of Reduced Flooding." A number of the comments provided by the project sponsor on Appendix 4 were also provided in earlier communications with EPA and are addressed above. Thus, EPA asked the FWS to respond to any additional issues raised by the project sponsor and the Corps. Below are responses to these comments provided by the FWS.

108. Comment: FWS doesn't provide any documentation to support specific negative impacts to the four FWS National Wildlife Refuges.

Response: FWS's comments on the FSEIS dated Jan. 18, 2008, provide Table 2, page 11, which details reductions in frequency and duration of flooding on the four refuges (e.g., Panther Swamp NWR 5,260 acres of reduced flooding within the 2-5 year floodplain; Theodore Roosevelt NWR reduced flooding on 433 acres within the 2-5 year floodplain; Yazoo NWR

reduced flooding on 189 acres within the 2-5 year floodplain; and Holt Collier NWR reduced flooding on 265 acres within the 2-5 year floodplain). All of FWS's analysis was based on Corps' GIS data (pre vs. post project), on-the-ground observations, and other scientifically-based analysis. FWS's analysis was factual and scientifically reproducible.

109. Comment: The 1956 FWS report included impacts from the Yazoo Headwater Project.

Response: Yazoo Headwater Project runoff flows into the lower Yazoo Basin project area. In the early stages of flood control planning, 52 years ago, it was appropriate to discuss impacts within the entire Yazoo Basin. The impacts of the Big Sunflower River Maintenance Project, which overlaps 80 percent of the Backwater project area, are discussed in the Corps' FSEIS for the Yazoo Backwater Project.

110. Comment: The discussion of the blue sucker (*Cyprinus elongates*) as being listed as a fish of special concern being found in the Project Area. The Literature Cited indicated that (Hand and Jackson, 2005) reviews "Blue sucker stock characteristics in the upper Yazoo River Basin, Mississippi." That is not the Project location or, more importantly, location of impacts projected from the Project. This is just another case of FWS reaching to justify its opposition to this Project.

Response: According to the FSEIS (Appendix 11), the Corps documented the blue suckers' occurrence in the Yazoo Backwater Area.

111. Comment: In 2006, after engaging in consultation over endangered species in the Yazoo Backwater Project area, the FWS formally concurred with the Vicksburg District that the Yazoo Backwater Project will not affect the Louisiana Black Bear. FWS further stated that the project may be "beneficial" for the Louisiana Black Bear.

Response: If the proposed reforestation plan is not successful and the project induces the clearing of forest land, the Yazoo Backwater Area project may adversely affect the black bear. Further, forest mitigation and enhancement efforts that could specifically restore bear corridors and fill patches of forest habitat were not included in the FSEIS's mitigation plan.

112. Comment: Twin Oaks, Mahanna, and Lake George Wildlife Management Areas were all acquired to provide terrestrial mitigation. Flooding has hindered mitigation efforts at Mahanna and Lake George. When the Mississippi Department of Wildlife Fisheries and Parks (MDWFP) wanted to establish waterfowl habitat as part of Mahanna, FWS objected. The features of the Recommended Plan will benefit all three properties.

Response: Flooding for waterfowl and terrestrial wildlife habitat are compatible management tools for forested wetlands. Seasonal flooding is a natural part of these ecosystems. In the past, there were disagreements among the Corps, FWS, and MDWFP on the management emphasis at the three subject Management Areas. Those disagreements have been resolved.

113. Comment: Refuges have sign-in stations at the entrances. Why did FWS elect to provide "estimated" information instead of actual visitor data? Moreover, it is misleading to suggest that backwater flood reduction would cause a reduction in visitors to refuges. Such a conclusion depends on the acceptance that the Project would so change the fauna and flora of these refuges that visitors would lose interest.

Response: Refuge sign-in stations are voluntary and are not utilized by all visitors. Further, the sign-in data requested does not cover all the uses available on refuges. Therefore, refuge personnel look at other indicators such as number of vehicles in parking lots and numbers of visitors observed. FWS has determined that the reductions in flooding would, over time, change the flora and fauna to the point that visitation at the refuges would be reduced.

114. Comment: The proposed project will not impact fishing interests of the NWRs. There is only one boat ramp at Panther Swamp NWR in an area not impacted by the project. No other boat ramps are available at NWRs or state managed areas.

Response: Much of the fishing on public areas is done from the bank. Some fishermen simply launch their small boats without the use of a ramp. FWS estimates of fishermen use on refuges are based on observations by FWS biologists.

115. Comment: The 112,600 acres reference by FWS involves the 2-5 year floodplain. This is the total acreage involved (Table 10 – 10, FSEIS Wetlands Appendix) and not the change in acres flooded for 8 consecutive days to a depth of 1 foot from March to May. The water regime required by the fisheries resource does not extend over the total flooded area or meet the seasonal requirements of the fisheries resource.

Response: The fishery resources would not use every acre of the 112,600 acres, but a significant portion of the flooded area would be utilized. FWS developed the reductions in flooding based on Corps' GIS data. FWS has not determined the depth and number of days of flooding associated with the 112,600 acres. Also, less flooded areas (less depth) do provide valuable nutrient input, detritus sources, and shorter period refugia for smaller fish, albeit for less than eight consecutive days. Therefore the entire 112,600 acres we reference do indeed provide benefits to fisheries in the area.

116. Comment: FWS questions the use of eight consecutive days for spawning. FWS indicates that flooding to one inch for one hour is suitable for spawning. It is wrong to think that every inch of flooded land for any amount of time is suitable fisheries habitat.

Response: Utilizing literature and discussions with fishery biologists, eight consecutive days of flooding is a minimum length of time to successfully spawn. Larval fry are extremely vulnerable for the first 7 to 10 days, particularly to predation. If those fry are forced, by loss of flooded habitat, into deeper channels prior to 21 to 30 days of growth, a fish spawn may be successful, but survival rates of the fry are minimal. So, the spawn may be successful, but the recruitment of young to adult is very low. FWS concurs that every acre of flooded habitat cannot be utilized for fish reproduction. However, the entire 112,600 acres we reference do indeed provide benefits to fisheries in the area.

117. Comment: Panther Swamp NWR has approximately half of its land area in the Project area and will be impacted by the operation of the pumps. It should be noted that the FWS has had a problem on this NWR with flooding and has had the Corps and others assist with alleviating these problems. That is, EPA fails to describe some of the real life management of this NWR, which is adversely impacted by high floodwaters. This goes back to the need to manage water for all interests, a function available with the pumps.

Response: Panther Swamp NWR is bisected by the Will Whittington Canal and Levees, a Corps project, which largely contributes to the water level problems on the refuge. As stated previously, the proposed project would reduce biologically productive flooding on Panther Swamp by 5,260 acres within the 2-5 year floodplain.

118. Comment: Other sites identified by EPA are not subject to impact from the proposed project. The Yazoo NWR is all above elevation 90 feet and has weirs constructed in Steele Bayou to assist with managing water in this facility. The Holt Collier NWR is all above elevation 100 and will only be impacted by a 100-year event. The Theodore Roosevelt NWR is just now being developed and it would be difficult to address impacts. If the interpretive center is constructed in the Study area, it will have to be flood proofed without the completion of this project.

Response: Table 2 of FWS's Jan. 18, 2008, comment letter regarding the FSEIS describes reduced flooding impacts of the proposed project to all NWRs. The 2 year flood elevation at Steele Bayou is 91 feet. The proposed project would reduce flooding within the 2 to 5 year floodplain by 112,600 acres, and those drier acres would then become the 5 to 10 year floodplain. No mitigation is provided for reductions in flooding of wetlands above the 2 year event (91 feet), including those on Yazoo NWR. The weirs on Yazoo NWR were constructed by the Corps as mitigation features for adverse impacts to the refuge from previous Yazoo Basin flood control projects. Depending on the site location, the interpretive center may not have to be flood proofed. Additionally, flood proofing is a widely accepted nonstructural, flood damage reduction measure.

119. Comment: The impacts to waterfowl associated with the proposed project will be negligible including impacts on the NWRs and wildlife management areas. The 55 year period of record documents that the pumps would have been operated less than three (3) days a year on average during waterfowl hunting season. All of these areas depend on artificial water or precipitation, not backwater flooding, to provide the waterfowl habitat.

Response: The impacts to waterfowl are related to long-term, adverse impacts to spring breeding and rearing habitat for species such as the wood duck and hooded merganser, as well as the reductions in spring flooding that ultimately, over time, alter the flora and fauna that waterfowl depend on during the breeding and wintering period.

120. Comment: The FSEIS Appendix 11 provides a complete evaluation of the impacts to wildlife in the Project Area. The HEP team determined the species to be evaluated and the method to be used to evaluate impacts and computation of compensatory mitigation if required. The non-structural feature of the Corps Recommended Plan more than offsets any impacts to wildlife and fisheries resulting from the operation of the pumps.

Response: FSEIS Appendix 11 addresses the impacts of the project on fisheries and not the complete suite of wildlife species in the Project Area. FWS has reviewed the HEP analysis and believes that certain species chosen for the HEP analysis (i.e., ghost shiners, speckled chubs, and threadfin shad) generally spawn in rivers. Utilizing species which generally prefer to spawn in rivers rather than species which rely on the shallower floodplain areas for spawning could bias the results of the HEP analysis by showing these evaluated species as not greatly adversely affected by the project.

121. Comment: Of the citations included as part of Appendix 4 (e.g., on pages 24 and 25), only one provides any data specific to the Project Area. Although much of the data in these studies can be applied to the resource in the Project Area, the FWS has failed to consider or evaluate the difference in hydrology, timing, duration, and climate when they try to compare general information to the watersheds in the Project Area and the Recommended Plan.

Response: The FWS disagrees with the project sponsor's assertion that we have failed to consider the difference in hydrologic regime between the area where studies were conducted and the Project Area. The FWS's comments are based on our review of the best available science, which includes information contained in the FSEIS as well as additional literature and technical documents describing wetland, fisheries and wildlife resources in the Yazoo Backwater Area and in similar riverine backwater wetland systems. The FWS does understand that studies conducted in other areas of the LMRAV do need to be carefully considered in order to assess the pertinence of the information presented to the project area. The project sponsor is correct in its assertion that not all of the information presented in the numerous scientific studies cited in our comments is all directly applicable to the project area. That is why the FWS used a number of studies where possible from similar habitats with similar if not the same species found in the Project Area, upon which to rely for background information.

Further, the FWS participated in numerous site visits, technical meetings and forums, and reviews associated with the wetland, fish and wildlife resources found in the Yazoo Backwater Area and how these resources would be impacted by the proposed Project since the 1970's. Moreover, between 2003 and 2005, the FWS, in conjunction with technical staff from the Corps, EPA and Natural Resources Conservation Service, conducted an EMAP study which involved extensive field investigations throughout the Yazoo Backwater Area.

When the Corps developed its HGM Guidebook for the Yazoo River Basin, upon which the entire wetland impact analysis contained in the FSEIS is based, it relied upon the best available scientific literature from inside the Yazoo Basin and Yazoo Backwater Area as well as relevant documents from similar systems outside the Project Area. The FWS's document took the same approach and relied on similar and in many cases the same literature and technical documents.

122. Comment: The hyperbole reflected in Appendix 4 of the RD (describing the area as one that processes such high quality resources) raises the obvious question of why after 30 years of study by EPA and over 50 years of study by FWS, there have been no studies specific to the area being funded or completed by these agencies or the similar agencies of the state of Mississippi or by the wildlife departments of the many universities who have studied these resources in other states and watersheds.

Response: As stated above, the FWS relied upon the best available scientific literature from inside the Yazoo Basin and Yazoo Backwater Area as well as relevant documents from similar systems outside the Project Area including the Mississippi Comprehensive Wildlife Conservation Strategy developed by the Mississippi Department of Wildlife, Fisheries, and Parks and the Mississippi Museum of Natural Science which evaluated wildlife habitat across the state including the Yazoo Backwater Area.

123. Comment: Also, the study concludes, "Despite the richness of BLH (bottomland hardwood) systems, many species (e.g., mice, muskrat, wading birds, waterfowl) that use these habitats have relatively high amplitude population dynamics caused by major episodic events,

especially flooding. For these species, there may be crucial points in the low ebbs of population swings that can cause significant reduction (and perhaps even extirpation) in species occurrence, at least locally.” In short, the source recognizes that flooding can seriously impact these species.

Response: Populations of most wildlife species are not static, peaking and falling with environmental conditions. Flooding is also exploited by many BLH species (i.e. waterfowl, wading birds, muskrats) as an opportunity for expanded, highly productive feeding. As discussed in EPA’s RD, some small mammal populations will be impacted as a result of floods, but that resource utilization of bottomland hardwood forests after floods by more mobile species is significant.

124. Comment: Further review of Hupp et al. 2005 finds that he determined “The annual period of inundation largely controls development of characteristic fluvial landforms, sediment deposition, and vegetation distribution patterns.” This supports the position that raising the pump-on elevation to 87 feet (one-year frequency flood) will not result in major impacts in vegetation patterns as stated in the Recommended Determination.

Response: Vegetation within the one year frequency event may not be affected; however, the Recommended Plan would reduce the frequency and duration of flooding in wetlands above the one year event, which would affect the health and species composition of the vegetation, as well as the other fluvial processes referred to by the project sponsor, above the 87 foot one-year flood event.

125. Comment: The completion of the Yazoo Backwater Levee and structures will largely prohibit exotic species currently being found in the Mississippi River from invading the Big Sunflower and Steele Bayou systems.

Response: While the project would not prohibit exotic species currently found in the Mississippi River from entering the Yazoo Backwater Area it would inhibit their invasion. However, the Backwater Levee and structures also inhibit the utilization of the Yazoo Backwater Area by native Mississippi River fish. The survival of many of these native fish species depends upon backwater areas for spawning and nursery habitat.

126. Comment: This same reference also concludes “Exploitation of invertebrates by waterbirds can be optimized through shallow water levels, partial drawdowns that concentrate prey, and extended (3-5 week) drawdowns with “feather-edge” flooding to increase the available time and area for foraging.” This is accomplished with the structural feature (14,000 cfs pump station) of the Recommended Plan. As explained in the Corps’ record, the pumping station rate of water removal is slow enough to allow for the continued use of the flooded areas (over 216,000 acres before initiation of pumping) by waterfowl.

Response: The Recommended Plan reduces the frequency and duration of flooding within the two to five year floodplain by approximately 112,600 acres. Reducing how often and how long wetlands are flooded would actually result in less available productive habitat for waterbird foraging.

127. Comment: A review of Heitmeyer 2001 states “Twelve species of waterfowl are common in southern forests of the United States.” The study also states that “Another nine

species occasionally are present in southern forests but their primary range and habitat use are elsewhere.” FWS has misstated and summarized data from these reports in an effort to magnify impacts. While these sources would support at most a range of 8-12 species using the Project Area, FWS asserts that there are 31 waterfowl species in the Project Area.

Response: The FWS disagrees with the project sponsor’s claim that we have deliberately added species to the count of waterfowl species utilizing the Yazoo Backwater Area. In fact, the list of waterfowl from the National Wildlife Refuges indicates that 31 species occur in the Project Area.

128. Comment: Because EPA and FWS supported the Corps' view that reforestation of certain flooded agricultural land provide other offsetting ecological benefits, this quality of waterfowl feeding on agricultural land was balanced into the HGM evaluation. It is disingenuous for EPA to now advocate for the benefits of flooded agricultural land, when it previously supported the Project's efforts to reforest this same kind of land.

Response: The commenter is mistaken. The FWS has not advocated for the benefits of flooded agricultural land. The statement regarding “shallow-flooded” fields was not intended to be an endorsement of this land use, just a recognition that birds are able to utilize this land use type when mixed with other wetland habitats. The presence of a mosaic of habitats including agricultural fields as well as forested and ponded wetlands provide the habitat diversity necessary for productive migration stop-overs.

129. Comment: Also a review of “Shorebird populations, distribution and area of habitat in the Mississippi Alluvial Valley during southward migration” September, 1997 indicates a reliance on agricultural lands for habitat. The report states “the vast amount of nonforested area in the region, mostly dedicated to agriculture, may enhance shorebird corridor capabilities ....” This would point out that even the fish and wildlife communities need a balance of habitat.

Response: Far more BLH forest (75 to 80 percent) was cleared for agriculture than shorebirds require. There is an imbalance, or lack of BLHs, and an over abundance of agricultural lands in the Yazoo Basin. The Recommended Plan reduces the frequency and duration of flooding within the two to five year floodplain (i.e., predominantly agricultural land) by approximately 112,600 acres. Reducing how often and how long areas are flooded would actually result in less available productive habitat for waterbird foraging.

130. Comment: The Recommended Plan benefits shorebirds with both the structural feature (pumps) to eliminate the deeper floodwater in the Study Area and the conservation feature included in the reforestation easements.

Response: The Recommended Plan reduces the frequency and duration of wetland flooding, which would result in less foraging habitat. Eliminating deeper floodwater means shallow flooding on the perimeter is also being eliminated. The conservation feature of allowing up to 10 percent of reforested areas to remain cleared is voluntary and includes features other than just shallow flooded areas for waterfowl and shorebirds.

131. Comment: The RD Appendix 4 asserts that if spring flooding frequency is reduced, this will result in "significantly reduced" survival rates of northward migrating shorebirds. The Corps’ record demonstrates that the Project will not affect the one year frequency flood and

that there will be sufficient area flooded even when the pump station is operated to provide habitat for shorebirds.

Response: The Recommended Plan reduces flooding on average by 112,600 acres within the two to five year floodplain in the spring; 112,600 acres that are vital for northward migrating shorebirds. This reduction in available habitat will significantly reduce adequate food sources within the project area to sustain northward migrating shorebirds. Further, there is no data or basis in the FSEIS that the operation of the pumps in the spring would provide sufficient shorebird habitat.

132. Comment: FWS states that 130 species of songbirds use bottomland hardwood habitats. They then state that most of them have been documented in the Yazoo Project Area and reference Table 1. Although Table 1 is a listing of birds of the Yazoo Basin requiring seasonal flooding during the winter it contains only a total of 56 species of all birds listed (43 percent of 130) and many of those species are waterfowl, marsh birds, and shorebirds. The FWS again is misleading the reader by stating “.....most of which have been documented in the Yazoo Project Area (Table 1)” when in fact very few songbirds are included in Table 1.

Response: Comment Noted. The 130 species of songbirds that use bottomland hardwoods are not listed in Table 1.

133. Comment: Both references cited in this paragraph (Schramm and Eggleton, 2006, and Schramm et al. 1999) along with the text of the paragraph describe impacts to fisheries within the leveed channel portion of the Lower Mississippi River not those backwater areas being protected by these levees. ... The last sentence of this paragraph acknowledges that the Project Area is separated from the Mississippi River by a levee and gates. In contrast, Yazoo backwater flooding behind the closed Steele Bayou Structure (absent floodwater removal) tends to be stagnant and rise in temperature, lacking direct fluctuation with the River.

Response: The FWS has been in the Project Area with ERDC biologists during the 2008 spring backwater flooding. It was noted then that high temperatures occurred in agricultural fields during prolonged periods of flooding. However, it was also noted that fish and juvenile fish were abundant in the flooded forested portions of the Project Area. (For a response to the “stagnant” issue see numbers 50 and 80 above).

134. Comment: The quote from Don Jackson discusses fisheries in the Yazoo system. A review of Jackson’s two citations (Jackson 2005, and Jackson and Ye 2000) finds that these publications involve studies of the Upper Yazoo River system. This system is generally considered the portion of the Yazoo River above Belzoni (Highway 12). ... The comments made cannot be expected to be relevant to the Project Area which is separated from the Yazoo system by a levee.

Response: The referenced quote is regarding the entire Yazoo system including the Yazoo Backwater Area. Also, as noted by the Corps in its comments on the RD, there is a great deal of movement of fishes between the upper and lower Yazoo River System and Steele Bayou.

135. Comment: The citation (Schramm 2004) is a study of the fisheries on the Mississippi River headwaters, the Upper Mississippi River and the Lower Mississippi River. This study primarily evaluates impacts of historical changes to the Mississippi River to the fisheries

resource in the River. The backwater areas evaluated in these studies had a direct connection to the Mississippi River and are general in nature. There was no specific review of any leveed backwater areas, and the study did not include any information specific to the Project Area.

Response: There are significant ecological similarities that apply between the leveed floodplain of the Mississippi River and the Yazoo Backwater Area. Scientists and FWS biologists often extrapolate data and rely on comparisons of similar ecosystems. As stated above, the FWS relied upon the best available scientific literature from inside the Yazoo Basin and Yazoo Backwater Area as well as relevant documents from similar systems outside the Project Area.

136. Comment: The pump-on elevation of 87 feet (the one-year frequency flood) will maintain the one-year frequency flood pulse, which will leave 216,000 acres flooded and unaffected by the pumping station. All of these impacts were evaluated by the HEP team, which included FWS personnel, and provide in the Aquatic Appendix of the FSEIS.

Response: The FWS disagrees with your use of the word “unaffected.” The acreage above the 87-foot, one-year frequency flood is a source of valuable nutrient input (detritus, microbes, particulate matter) to the acreage at and below the 87 foot elevation. If not for the ebb and flow of flood waters above the 87 foot elevation, the one-year elevation would be deprived of said nutrients, in effect “starving” the wildlife and microbial systems at and below the 87 foot elevation.

137. Comment: Although the citation (Jackson and Ye 2000) does not evaluate fisheries in the Project Area, we would point out that the Recommended Plan does not eliminate overbank flooding. The pump-on elevation of 87 feet (one-year frequency flood) allows floodwater to move into the floodplain as evidenced by the fact that 216,000 acres are flooded prior to turning on the pumps. There is a difference between eliminating overbank flooding, and changing the duration/frequency of such flooding that occurs on the two year and above frequency.

Response: The Service agrees that there is a difference between elimination and reduction of overbank flooding. The reduction in flood frequency and duration associated with this project will have serious impacts to fishery habitat by reducing spring flooding of 112,600 acres within the two to five year floodplain. Scientists are becoming increasingly aware that flooding (in all its forms) is beneficial because it maintains the lateral connectivity between a river and its associated floodplain and enhances overall system productivity and floodplain river fisheries. Although the citation (Jackson and Ye 2000) does not evaluate fisheries in the Project Area, it does stress the importance of flooding, in all its forms to the ecosystem, which is why it was cited.

138. Comment: This entire paragraph is attributed to the citation (Bryan et al. 1974), a study of the fisheries in the Atchafalaya Basin of Louisiana. Although most of the species listed may be found in streams in the Project Area, the water regime in the Atchafalaya are very different from the Project Area.

Response: The FWS is fully aware that the hydrologic regime of the Yazoo Backwater Area is different from the Atchafalaya Basin of Louisiana. However, the Atchafalaya River offers insight into the reference conditions under which backwater dependent fish species interact

with forested floodplains during backwater events in the lower Mississippi River Valley. The FWS did not intend to characterize the Yazoo Backwater Area as being the same as the Atchafalaya River, only as a means to elucidate the importance of and the way in which fish species utilize backwater events to access the floodplains. Further, the studies indicate how forested floodplains influence the productivity of the fishery.

139. Comment: Also, the Corps' record reflects that the selection of a longer duration requirement for fish spawning (longer than 8 days duration), results in a decrease of available acres for a given flood event. That is, for example, fewer acres would remain flooded for 12 days during a flood event than would remain flooded for 8 days. This change in assumptions would in turn reduce the mitigation requirements for any impacts from the structural feature (pumps) of the Recommended Plan.

Response: Eight days is the minimum needed to successfully spawn. Larval fish require 21 to 30 days of growth for a reasonable chance of survival. Thus, successful fish reproduction requires habitat flooded for at least 21 days. What effects the minimum flooding requirement has on mitigation requirements is not the issue.

140. Comment: The maintenance of water in shallow pools throughout the Project Area will have an annual water supply from local precipitation. It is erroneous to suggest that the Project would adversely impact maintenance of water in shallow pools.

Response: Shallow water ponds need hydrologic input from all available sources. Ponds that are fed entirely from local precipitation often suffer from low dissolved oxygen, high levels of algae and high temperatures. Episodic hydrologic events, such as a 2-5 year flood event, rejuvenate these shallow water ponds.

141. Comment: Over half of the Panther Swamp NWR lies outside the Project Area. This portion of the NWR remains directly connected to stages on the Yazoo and Mississippi River in that it is not protected by a levee system.

Response: Panther Swamp National Wildlife Refuge (Panther Swamp NWR) was established in 1978 under the Migratory Bird Conservation Act (1929). The primary purpose of the refuge is for use as an inviolate sanctuary, or for any other management purposes, for migratory birds. The refuge is located in the Lower Mississippi Alluvial Valley (LMAV). More specifically, Panther Swamp NWR is situated in the floodplains of the Yazoo and Sunflower Rivers. The predominant habitat is seasonally flooded bottomland hardwood forest (BLH). Maintaining this BLH forest system in a diverse, healthy and productive condition is paramount to Panther Swamp NWR being able to fulfill the primary purpose of the refuge.

The hydrologic regimes in the BLH forests of Panther Swamp NWR have been previously altered to some degree by earlier drainage/flood control projects in the LMAV by construction of various levee and channelization projects. Although altered, backwater flooding continues to occur on refuge lands providing some of the hydrological functions necessary to maintaining a healthy, diverse and productive BLH forest system.

142. Comment: The author states "After speaking with several BLH Forest Ecology professionals and reviewing the current literature, no studies or documentation were found that reliably and accurately predict exactly what vegetative changes will take place in the BLH

forest system on Panther Swamp NWR if periodic backwater flooding is further reduced or eliminated.” We need to also point out that the Recommended Plan will not eliminate flooding on that portion of Panther Swamp NWR in the Project Area only change the frequency and duration. The Recommended Plan will have no impact on the portion of the Panther Swamp NWR that lies outside the Project Area.

Response: The FWS agrees that no long term studies were implemented during the past 30 years of hydrologic alteration of the Yazoo Backwater Area to document the change in vegetation. Hence, we do not know precisely what vegetative changes will occur as a result of further hydrologic alterations proposed by the pumps project. However, as the FWS notes, anticipated hydrologic changes could result in the change of wetland subclass (riverine backwater to flats) based on a change in water source. Over time, the HGM Guidebook indicates that vegetation will change and become an indicator of change in subclass, which results from a change in hydrology.