REGION 4
ATLANTA, GA 30303

August 6, 2024

Mr. Eric Williams
Chief
Environmental Branch, RPEDS
U.S. Army Corps of Engineers
CEMVN–PDS, Room 136
7400 Leake Avenue
New Orleans, LA 70118

Re: EPA Comments on the Pearl River Basin, Mississippi Federal Flood Risk Management Project Draft Environmental Impact Statement; Rankin and Hinds Counties, Mississippi; CEQ No. 20240098

Dear Mr. Williams:

The U.S. Environmental Protection Agency has reviewed the U.S. Army Corps of Engineers' Draft Environmental Impact Statement for the Pearl River Basin, Mississippi Federal Flood Risk Management Project, Rankin and Hinds Counties, Mississippi, which was published on June 7, 2024. The draft EIS was reviewed in accordance with Section 309 of the Clean Air Act, Section 102(2)(C) of the National Environmental Policy Act, and the Council on Environmental Quality regulations (40 CFR Parts 1500-1508). Among other requirements, the CAA Section 309 requires the EPA to review and comment on the environmental impact of any proposed federal action subject to NEPA's environmental impact statement requirement and to make the agency's comments public.

According to the draft EIS, headwater flooding (greater than 10 feet in some areas) of the Pearl River has caused disruptions of businesses and industry throughout the Jackson, Mississippi metropolitan area for more than 100 years. The area of flood risk currently includes 5,000 commercial and residential structures and affects a population of over 500,000. According to Section 1.4.1 of the draft EIS, the purpose of the draft EIS is to evaluate flood risk management alternatives that could be implemented under Section 3104 of Water Resources Development Act (WRDA) 2007. The draft EIS evaluated the following alternatives: (1) No Action Alternative; (2) Alternative A1 (nonstructural plan); (3) Alternative C (Locally Preferred Plan); (4) Combination Thereof (CTO) Alternative D with Weir (the preliminary National Economic Development Plan); and (5) CTO Alternative E without Weir. The CTO alternatives propose a combination of features from the other alternatives. A preferred alternative is not identified in the draft EIS.

The final EIS, in conjunction with the Commander's Report, published June 12, 2024, will be used to support a decision by the Secretary of the Army regarding which alternative, if any, to implement. The

Commander's Report will compare levels of flood damage risk reduction for each of the alternatives and assess the environmental acceptability, technical feasibility, and economic justification of the alternatives.

On June 30, 2023, the EPA provided scoping comments on the project and accepted the USACE's invitation to be a cooperating agency for this project. The EPA provided scoping comments and recommendations regarding the purpose and need, alternatives, aquatic resources and environmental impact assessment, mitigation, water quality (including impacts of hydrologic alteration, water quality modeling approach and calibration, and water quality permits), watersheds, environmental justice, increased flash flooding in Jackson neighborhoods, transportation, and hazardous, toxic, and radiological waste sites. However, based on interagency meetings held in June 2024, the EPA understands that these scoping comments were not considered in the preparation of the draft EIS. Also, the EPA was not provided an opportunity to participate as a cooperating agency in the preparation of the draft EIS, which prevented the EPA and the USACE from addressing EPA's previous comments before the publication of the draft EIS.

On June 12, 2024, the EPA requested additional information to evaluate the human and environmental impacts associated with the proposed flood risk reduction features, including the Hydraulic & Hydrological model and the water quality model. As of August 6, 2024, the EPA has received some of the requested information. The EPA understands that the USACE will provide the remaining information early enough for the EPA to review them before the publication of the final EIS.

Based on the review of the available information, the EPA has identified public health, welfare, or environmental quality concerns and deficiencies in the analysis that are recommended to be addressed in the final EIS. Alternatives C, D and E would have adverse impacts to the environment requiring mitigation along with an associated monitoring and adaptive management plan. Enclosed are detailed comments and recommendations regarding alternatives; water resources; water modeling; hazardous, toxic, and radioactive waste sites; water quality permits; environmental justice; climate change; dam safety; and direct, indirect, and cumulative impacts. Comments and recommendations regarding the Clean Water Act Section 404, including but not limited to a CWA 404(b)(1) analysis, mitigation, and other information that is needed before a Record of Decision is issued are also included. These recommendations are intended to improve the environmental outcome of the proposed action.

The EPA appreciates the opportunity to review and comment on the draft EIS. If you have questions or wish to discuss our comments and recommendations, please contact Larry Long of the NEPA Section at 404-562-9460 or long.larry@epa.gov.

Sincerely,

WILLIAM DEAN

Digitally signed by WILLIAM DEAN
Date: 2024.08.06 20:31:40 -04'00'

William Kenneth Dean
Acting NEPA Section Manager
Environmental Justice, Community Health and Environmental Review Division

Enclosure: Detailed Technical Comments

Pearl River Basin, Mississippi Federal Flood Risk Project Management
Draft Environmental Impact Statement
Detailed Technical Comments

(1) Cooperating Agency

Section 8.2 (Page 263) of the draft EIS states, "*Cooperating agencies include the … EPA region 4 …. As cooperating agencies, they were invited to participate in the study planning and in the PDT meetings."* However, EPA has no record of being invited to participate in the study planning. By letter dated May 26, 2023, the USACE invited EPA to become a cooperating agency on the proposed project, and by letter dated June 30, 2023, the EPA accepted the invitation.

Recommendation: The EPA recommends the USACE revise the referenced statement in Section 8.2, so it does not misrepresent EPA's level of involvement in the development of the draft EIS. As a cooperating agency, the EPA recommends the USACE provide the EPA opportunities to review and comment on administrative drafts of the final EIS before it is published.

(2) Alternatives

(a) **Inadequate Analysis of Flooding:** The draft EIS states that flood risk protection for Alternative C, CTO Alternative D, and CTO Alternative E are similar with or without the proposed weir/dam. The overall analysis is unclear and without quantitative information about how reduced risk of flooding is achieved for each alternative. While flood management may be similar for Alternatives C, D and E through channel modifications (deepening, widening), construction of the "*proposed weir does not provide flood control benefits*"[1] as they will flood the existing levees. There is limited to no analysis of existing levees and how upgrades or reinforcements to existing levees, as described in Appendix M (NFI Report Plan Formulation), could meet the project purpose to reduce flooding without construction of a new weir.

The draft EIS lacks information to evaluate the extent of much of the induced and increased flooding from the proposed alternatives linked to levee breaches (fairgrounds and Federal Levees), overtopping, and berm failures, etc. and necessary counter measures (pumping, berms/slurry walls). Based on the available information, some alternatives would increase/induce flooding with construction of the proposed weir and inundation of headwaters, downstream, and in communities with environmental justice concerns (e.g. Canton Club and Duttoville) as well as cause overtopping CN railroad bridge, overall seepage failure, and possible levee breaches (p. 7, 124, 156, 194, 233, 245, 246, 265). Frequency and location of failure cannot be currently determined based on information included in the draft EIS. This information is needed for the alternatives analysis, but USACE postponed this work until the preliminary engineering design, which will occur after the Record of Decision. In addition, many figures (e.g., Figures 3-3 and 3-11), figure legends (see Figure 1-2), and tables (see Appendix M 3-1) that are critical to understand the potential extent of induced/increased flooding are illegible in the draft EIS and cannot be evaluated.

[1] June 2024 Draft EIS and Appendix I – Alternative Project Descriptions

Recommendations: The EPA recommends the USACE consider re-evaluating the modified levee plan to reinforce areas of vulnerability in the current levee system. The EPA further recommends considering a reduction in miles of levees from Plan 9 and 10's[2] extensive treatment (21.9 miles of new levees and 10.5 miles of enlarged/raised existing levees in 1996 plan, 24 miles of new levees and 11 miles of raised levees in the 2018 feasibility study/EIS). The EPA also recommends the USACE consider best management practices for maintenance of existing levees, management of the Ross Barnett Reservoir (RBR) for increased flood control, early preparedness planning, enhanced maintenance of existing levees, etc. (see the US General Accounting Office after-action report from the 1979 flood). The analysis of current flooding issues and potential alternatives to address these issues should be conducted in the final EIS instead of being postponed until the Pre-construction Engineering and Design phase. Also, the final EIS and appendices should provide clear resolution of illustrations of structures, flood events, roads, levels of inundation, and data critical to understanding the alternatives analysis.

(b) **Annual Exceedance Probability (AEP):** The 100-year or 1% AEP event is mentioned in several places and figures in the draft EIS, but not specifically identified as the protection level analyzed for the alternatives. The 1979 flood is depicted on the front cover of the draft EIS, and it is implied that Alternative C or a CTO Alternative will provide protection from another 1979 flood event, which is misleading. A levee system was constructed during the 1960s to provide protection from flood damage and a 1996 report recommended a comprehensive levee system to provide protection from the 1979 Flood.[3] The design event of 1% chance exceedance mentioned in the draft EIS is less protective than the 0.5% chance exceedance event corresponding to the 1979 flood should be explicitly stated.[1] Numerous AEPs are analyzed for some (e.g., Alternative 1, CTO) but not all alternatives creating confusion of the flood protection levels across alternatives.

Recommendations: The same AEP should be used across all alternatives for comparison rather than using different AEPs for different alternatives. The EPA recommends the final EIS provide more in-depth discussions that clarify the following: (i) the flood frequency that was used to analyze the alternatives and use the same flood frequency to compare across alternatives; (ii) that the design event 100-year flood in the draft EIS would be less protective than the 1979 flood depicted on the front cover of the draft EIS; and (iii) which alternatives are equally as protective as the current levee system. The draft EIS states that the USACE certified the existing levee system for a 1-percent annual chance exceedance flooding event.

(3) Water Resources

(a) **Flood Risk Reduction Benefits:** The draft EIS states that flood risk reduction is the primary project purpose. However, flood risk reduction benefits associated with structural improvements were not fully evaluated. The Hydrologic and Hydraulic Analysis (H&H Analysis) did not spatially evaluate changes to flood duration that would result from each alternative. Therefore, it is unclear to reviewers where on the landscape, or how much, flood risk reduction

[2] Appendix M- NFI Report Plan Formulation
[3] June 13, 2018, Draft FS/EIS and June 22, 2022, Final FS/EIS Appendix A

and/or benefit would occur. For instance, according to the June 2024 Commander's Report, Alternatives C, D (CTO with a weir), and E (CTO without a weir) appear to induce flooding to 83 structures in the 100-year floodplain – all belonging to communities with environmental justice concerns; the severity of flooding to these areas pre- and post- project was not made clear.

The H&H Analysis spatially modeled flood frequency changes (i.e., changes to the maximum flood extents resulting from the proposed project); however, the types of structures that would receive a benefit were not quantified. For example, in an Alternative A1 (fully nonstructural) option with a Canton Lake levee, it is stated that an additional 250 homes would be protected beyond those protected by nonstructural options, but it is unclear where these structures are located; and structural improvements associated with Alternatives D and E indicate additional flood risk reduction benefits to roads and infrastructure in the 100-year floodplain, but these were not clearly located or quantified except as it appears in the cost analysis. (See concerns with the cost analysis raised below).

Flood risk reduction benefits associated with nonstructural components are also not made clear. In Alternatives A1, D, and E, information is given about the number of homes protected by nonstructural measures (Alternative A1: 143 structures; Alternatives D and E: 60 structures). There is much explanation of why Alternative A1 should be excluded based on limited participation for nonstructural options; however, the same issues would also appear to be realized in Alternatives D and E.

Recommendations: The EPA recommends the final EIS provide a discussion that states potential issues with resident/owner participation rates that would apply to nonstructural features – an issue that appears to apply to Alternatives A1, D and E equally. The final EIS should quantify the locations, homes, roads, hazardous waste sites, drinking water intake areas, and other critical infrastructure that would benefit from structural and nonstructural options. Clearly describe the type of flood risk reduction benefit; in other words, would these areas experience less frequent floods and for shorter durations, and if so, by how much? The final EIS should state the areas that would not receive flood risk reduction benefits, or areas where flood risk could worsen because of proposed structural and nonstructural options. Special attention should be paid to any increases in urban flash-flooding so that an alternative is selected that maximizes equitable flood risk reduction opportunities to include communities with environmental justice concerns. If areas would suffer increased flood risk, quantify the flood risk.

The final EIS should state flood risk associated with hazardous waste sites, remediation sites, wastewater treatment plants, and water treatment plants (e.g., J.H. Fewell WTP, Savanna Street WWTP, LeFleur's Landing, Gallatin Street Dump Site, Gulf States Creosote Slough, and others). Consideration should be given to alternatives that would help reduce leachate and creosote contamination with and without the need for costly remediation. Consideration should also be given to the risk of Sanitary Sewage Overflows associated with each alternative.

(b) **Total Maximum Daily Loads (TMDLs):** Based on information available in EPA's "How's My Waterway" tool, the Pearl River and other streams within the project area have been assessed

as impaired for the Aquatic Life and Recreation uses.[4] Impairment causes include organic enrichment/low dissolved oxygen, nutrients, sediment, bacteria/pathogens, and biological impairment. Historical and recent TMDL studies continue to implement water quality targets through load reductions. As stated in the Mississippi Department of Environmental Quality's (MDEQ's) 2015 Nutrient TMDL for the Pearl River, "*MDEQ's Basin Management Approach and Nonpoint Source Program emphasize restoration of impaired waters with developed TMDLs. During the watershed prioritization process to be conducted by the Pearl River Basin Team, this TMDL will be considered as a basis for implementing possible restoration projects. The Pearl River and the Ross Barnett Reservoir are both actively receiving coverage in basin management projects.*"

Recommendation: Flooding of the project area will contribute to impairment of designated uses. The EPA recommends the USACE consider selecting an alternative that does not include flooding of the project area (e.g., Alternative A1, the nonstructural plan).

(c) **Watershed Restoration and Protection Plan:** According to Mississippi's water quality standards, the Ross Barnett Reservoir and the Pearl River in the vicinity of the J. H. Fewell treatment plant are designated for the Public Water Supply use and must be of sufficient quality to meet the more stringent water quality standards that apply to sources of drinking water. The protection and restoration plan for the Ross Barnett Reservoir (RBR) Watershed [5] focuses on reductions in nutrients and sediment to protect the public water supply, recreation, and aquatic life uses by reducing organic enrichment and improving dissolved oxygen levels. The RBR Plan calls for decreased nutrients and strategies to address the highly erosive soils of the Loess Plains ecoregion causing sedimentation that has contributed to lower water quality of the water supply. Sedimentation has been identified as the most significant water quality concerns in the Ross Barnett Reservoir by several agencies including MDEQ, Pearl River Valley Water Supply District, National Resources Conservation Service, and the Mississippi Soil and Water Conservation Commission. Sediment can also impact water storage capacity, aquatic life, and recreation. While the RBR Plan was created to address the water quality impairments of the reservoir, it was estimated that several years and significant additional resources would be needed to fully resolve nutrient and other impairments.

The proposed alternatives C and CTO Alternative D introduce flooding and create weirs to impound a new lake that will most likely face the same challenges to meeting water standards as the RBR relating to nutrients, erosion, and sedimentation. The proposed lake will receive water from RBR which is classified as eutrophic and higher in nutrients and sediment. If the new lake hydrology and urbanization are like Ross Barnett reservoir, then expected conditions will most likely degrade the water supply and contribute to existing stream impairments.

In addition, the proposed lake located downstream of the City of Jackson will likely impede the stormwater discharge from the tributaries flowing through the city. Additional information and modeling are necessary to evaluate how the proposed lake will impact stormwater discharge and the likelihood of tributary flooding. Raising the elevation of the receiving waterbody will

[4] https://www.epa.gov/waterdata/hows-my-waterway

[5] Ross Barnett Protection and Restoration Plan 2011

reduce the change in the hydraulic head for the tributaries which will lower stream velocities and the flux rate of water discharge. Such a lake could exacerbate the tributary flooding by limiting the stream flow rate causing water to expand their natural floodplain which would cause more flooding. Creating the lake will isolate several species from the free-flowing Pearl River. This could impact the distribution of freshwater mussels which have a beneficial impact on filtering of pollutants.

Recommendation: The EPA recommends the USACE consider alternatives that do not impound surface waters (e.g., Alternative A1), to avoid creating conditions conducive to public water supply use impairment. Hydrology and inundation should be modeled to evaluate nutrient levels to prevent use impairment like that of RBR.

(d) **Sediment Analysis**: No sediment samples or transport analyses have been provided from the Ross Barnett Reservoir or downstream project area either on the main Pearl River channel or tributaries. To determine if impacts are acceptable, additional analysis is needed prior to making a decision. The analysis should evaluate sedimentation passing through the Ross Barnett Reservoir, as sediment is reduced from upstream to downstream of the Ross Barnett Reservoir Dam, within a proposed ponded feature would not impact storage or conveyance of flood waters. Assessment of the tributaries for sediment load in tributary channels to prevent incision and additional sediment into newly constructed lake would be needed. Sediment could alter the water chemistry and nutrients at the existing J.H. Fewell Plant or any other proposed water intake structure.

Recommendation: Develop a sediment model and/or analysis for the proposed lake as a part of the alternatives analysis to determine risk to impacts on nutrients and sedimentation (analysis should include RBR and tributary stream loads). Evaluate sedimentation/soil erosion in the model to assess risk to designated uses from known impairments.

(e) **Source Water Protection:** Recent Annual Drinking Water Quality Reports for the City of Jackson include a reference to a source water assessment to determine the susceptibility of the drinking water supply to potential sources of contamination. See the 2004 Source Water Assessment report for the City of Jackson J. H. Fewell Intake which contains information on the development of a protection plan[6]. Additionally, downtown Jackson streams that will be impounded in the project area are already impaired for nutrients, organic enrichment, and bacteria and may be further impacted by contaminants from landfills and hazardous waste sites. According to Section 3 of the draft EIS, Alternative C consists of demolition of the existing weir near the J. H. Fewell WTP site, construction of a new weir with a low-flow gate structure further downstream to approximate river mile 284.3 to create a year-round recreational water body and provide an alternative raw water supply intake location should one be needed in the future.

Recommendation: The EPA recommends the USACE consider alternatives that do not require moving the drinking water intake from its current location in the Pearl River to below an

[6] City of Jackson – J. H. Fewell Intake, Jackson, MS Source Water Assessment 2004

impoundment that would inundate hazardous sites with known contaminants and will be vulnerable to degraded water quality.

(4) <u>Water Modeling</u>

Review of the Hydraulic & Hydrologic (H&H) and water quality models are critical to the EPA's review. The EPA has made repeated request for these models (including input/output/calibration data) since the publication of the draft EIS. Flood protection is not adequately modeled and is not quantified. The draft EIS is unclear about the impacts of the project on the Waters of the United States (WOTUS), and it is unclear that the alternatives will maximize the reduction of flood risk for the project area. The EPA provided recommendations on the H&H and water quality models in the June 2023 scoping comments based on the limited data and information that was available at that time. These comments and recommendations were not addressed in the draft EIS. The additionally requested information is necessary to better understand the alternatives analysis and to provide more comprehensive recommendations.

<u>Recommendation:</u> The EPA acknowledges that the USACE has committed to provide the models to the EPA early enough for the EPA to review them and provide feedback, and the USACE to provide an appropriate response before the publication of the final EIS.

(a) **H&H Modeling:** The draft EIS lacks information needed to evaluate the extent of much of the induced and increased flooding associated with levee breaches. Flood risk reduction benefits associated with structural improvements were not fully evaluated. The H&H analysis did not spatially evaluate changes to flood duration that would result from each alternative. It is unclear where, or by how much, flood risk reduction and/or benefit certain areas would experience. Limited analysis of existing levees and upgrades or reinforcements to existing levees. It is also unclear what level of flood protection is achieved from each of the alternatives as compared to a 'without project' alternative. Flood risk reduction benefits associated with nonstructural components are also not clear.

The American Society of Civil Engineers sets industrial standards for civil flood control projects as well as the USACE as the federal governments engineering agency. In ASCE/SEI 7-22 Supplement 2, ASCE has set the Flood Hazard Area to be increased from the 100-year flood plain to the 500-year flood plain for Risk Categories II, III, and IV structures to improve the performance of structures subjected to flood events and to meet the target reliabilities of the standard. This change in approach, along with revised loading equations, is a significant departure from previous versions of ASCE 7. The primary technical updates relative to climate effects include a new requirement tying flood hazard mitigation design to risk category, which is consistent with other environmental hazards in ASCE 7. There are four categories from which a building designer can select based on the intended use of the structure, ranging from the least risk to human life in the event of failure in Risk Category I structures to the greatest risk to human life in the event of failure in Risk Category IV structures.

In Section 3.3.1 *Hydrology & Hydraulics Evaluation Tools and Modeling*, the draft EIS states, "*the Hydrology & Hydraulics (H&H) Appendix E provides the hydrologic, hydraulic, and statistical analysis that was conducted by USACE. For hydraulics and hydrology, a HEC-RAS 6.3.1 unsteady*

state hydraulic modeling with a combination of one-and two-dimensional elements are used throughout the analysis. A HEC- Hydrologic Modeling System HMS version 4.10 (HEC, July 2022) model was developed to model the incremental local flows downstream of the Ross Barnett dam. The Hydrologic Engineering Center Statistical Software Package (HEC-SSP) version 2.3 was used to update the flow frequencies at key gaged locations within the Basin. To confirm dam safety hazard classification to inform life safety and design, four breach scenarios were completed with Alternative C project conditions (i.e., new weir), to confirm the dam safety hazard classification."

It is unclear how well the flows are calibrated to the existing conditions events and what level of model error exists when considering the impact of Alternatives. The HEC-RAS model results for the 4 calibration events (Feb 2020, Jan 2020, Aug 2022, & Apr 2017) for the Jackson Gage at HWY 80 shown in Appendix E, Pages 146, 157, 165, 71, Figures 2, 13, 21, 27, respectively, show that while the model is generally matching the magnitude and timing of the peak events at this location, at other times the simulation can vary by approximately ±5.0-ft from the observed values.

Recommendations: The modeling results focus mainly on comparing the differences in the maximum water surface elevations (WSEs) for select routing locations and only for Alternatives C and CTO. The modeling results should include an inundation analysis and maps quantifying the acreages impacted and comparing all alternatives against a 'without project' alternative for each of the event scenarios (i.e., from the 5-year event to the 500-year event).

In addition, the EPA recommends that the final EIS include a discussion on how or if the USACE HEC models are inclusive of the ASCE 7 industrial standard for floodplain analysis.

The EPA would like to review the H&H models (including all inputs/outputs/calibration data) used in this analysis and request copies of these modeling files, including those for: HEC-SSP, HEC-HMS, HEC-RAS discussed in the "Draft Appendix E – Hydrologic and Hydraulic Model" of the June 2024 Pearl River draft EIS, pages 53-128. Understanding based on our discussion on June 18, 2024, that the H&H models are not yet cleared by the Agency Technical Review process, the EPA requests that these files be provided at which point they have been cleared for distribution.

(b) **Water Surface Elevation (WSE):** The WSE results shown in Appendix E, Pages 98-99, "Table E5-11. Elevation Results for Selected Routings" indicate that 'AltC' and 'AltCTO' would reduce the maximum WSEs at the Ross Barnett Outflow and HWY 25 by 1.3-1.9-ft and 3.7 to 4.2-ft, respectively when comparing against the 5-year to 500-year events, but then there's minimal WSE reductions (0.3-0.4-ft) at HWY 80 and increased WSEs (0.5-0.6-ft) at the proposed dam and the downstream extent of the model. The model error uncertainty is not described, and it is unclear whether the difference between the simulated results for each of the Alternatives ('with project') vs. the Existing condition ('without project') for each scenario run are within the bounds of the model error uncertainty. If those differences are within the model error bounds, then the model cannot resolve the impact of the Alternatives ('with project').

The HEC-RAS calibration figures shown in Figures 2 through 32 of Appendix E, Page 146-176, focus mainly on the differences between the maximum WSEs for the calibration events and in many cases do not show the full hydrograph for these events. There is no information regarding how well the model is capturing the total volume and full duration of these events. For example, Figure 21 (page 165 of Appendix E) depicts the calibration for the August 2022 event at the Jackson Gage showing results from August 20th to August 30th, however, this is only a little more than half of the hydrograph for this event, the full event doesn't resolve until about September 6th. The USACE model needs to define how or if the model is capturing the full hydrograph for each of the calibration locations and events. The hydrology calibration should consider the volume of flow (minimizing bias), spread of flows (maximizing variability ratio), and the timing and shape of the hydrograph (maximizing correlation). This analysis focuses primarily on matching the timing and magnitude of 4 peak events (Feb 2020, Jan 2020, Aug 2022, & Apr 2017).

The flow calibration summary shown in Appendix E, Page 144 "Table 1: Stage and Flow Calibration Summary for all Gages, all Calibration Events, HEC-RAS model" appears to compare the absolute maximum stage/flow for the observed vs. calculated values regardless of the timing of these multi-day events. For example, comparing the Table 1 entry for the Hanging Moss gage January 2020 event with the figure for this gage and event ("Figure 15: OBS vs Calculated Stage for Hanging Moss Gage, Jan 2020, HEC-RAS model" on Page 159 of Appendix E), Table 1 suggests that the model is under-predicting the observed event by 1.77-feet while Figure 15 shows that the model is under-predicting the maximum observed event on January 2nd by approximately 2.21-feet and over-predicting the maximum observed event on January 11th by approximately 2.84-feet. Table 1 does not provide meaningful statistical information to describe the calibration and the results are misleading.

Recommendations: The EPA recommends the following actions be addressed in the final EIS.

I. All alternatives should be included in comparison charts and figures. Specifically, results for the alternatives which do not include a weir (i.e., Alternative A1 and Alternative E) should be shown.
II. Include an inundation analysis and maps quantifying the acreages impacted and comparing all alternatives against a 'without project' alternative for each of the event scenarios (i.e., from the 5-year event to the 500-year event).
III. Quantify uncertainty of the model (e.g., using the variance of the model errors) and compare this with the variance of the difference between the 'with and without project' for each scenario.
IV. The calibration should provide summary statistics characterizing how well the model is capturing the volume of flow (minimizing bias), spread of flows (maximizing variability ratio), and the timing and shape of the hydrograph (maximizing correlation).
V. The full hydrograph should be considered for the calibration events.
VI. As with the water quality model, the EPA recommends considering a longer-term continuous simulation, such as multi-year simulations to better understand how well the HEC-RAS model captures this system, better characterize the uncertainty of the model, and to determine the impacts of the alternatives under a variety of different scenarios.

VII. The EPA reiterates our June 30, 2023, recommendation to include a detailed qualitative and quantitative calibration summary of both the flow and WQ analysis: "The EPA notes that quantitative analysis consists of statistically comparing the model predictions with measured field observations. The following statistical comparisons should be considered for calibration: Mean, Normalized Root Mean Square Error, Index of Agreement, Tails of Distribution data, Qualitative inspections, Time Series Plot, Probability Distribution Plot, and 1 to 1 Plot."

VIII. Revise Table 1 to include a relevant statistical summary of the calibration.

(c) **Water Quality Modeling:** Factors important to understand the scope of direct, indirect, and cumulative impacts to WOTUS for each alternative include estimated changes to water quality in the study area and downstream (i.e., 2022 and recent water quality modeling results).

The Water Quality analysis/modeling is included within "Items Deferred to Future Study" as stated in Appendix E, Page 129. However, a thorough alternatives analyses would better serve to drive decision-making, prior to establishing a conclusion. It is stated in Appendix E, Page 129, Paragraph 5, "*A major premise of the efforts is that the waters filling the new lake are essentially those of Ross Barnett, so no significant water quality issues are expected. The studies concluded that below the proposed lake, water quality impacts in the Pearl River due to any flow alterations are muted and not substantial.*" This premise is unsubstantiated and the previous modeling efforts do not substantiate these claims (see additional comments under Water Quality Calibration regarding issues with the previous water quality modeling approach and calibration described in Appendix D of the 2022 NFI report).

It is stated in Appendix E, Page 136, Paragraph 5: "*The USACE analysis shows that all flood reductions are due to channel improvements, and that the proposed weir does not provide flood reduction benefits.*" If this is the case, then understanding the water quality impacts (as well as the other items deferred for future studies) may have greater weight(s) and provide important information in the selection of an alternative.

Recommendation**:** The EPA would like to review the water quality models (including all inputs/outputs/calibration data) used in this analysis and request copies of these modeling files, including those for: EPD-RIV1, WASP, EFDC. Understanding based on our discussion on June 18, 2024, that the WQ modeling has not yet been updated for the current iteration of this project, the EPA requests the modeling files for the previous iteration, discussed in the "Draft Appendix E – Hydrologic and Hydraulic Model" of the June 2024 Pearl River draft EIS, pg 130, bullet #3. Specifically, we would like to review the water quality models discussed in "Appendix D Environmental" of the 2022 Draft FS & EIS Sec 211 Report: EPD-RIV1 (pages IV-47 through IV-61), and EFDC & WASP (starting at page V-135, the August 9, 2019 "Pearl River Channel Improvements Impact Evaluations Report").

(d) **Water Quality Approach:** EPA's June 30, 2023, comments and recommendations regarding the Water Quality Modeling Approach were not sufficiently addressed and these concerns and recommendations remain. Specifically, the EPA had concerns related to the EPD-RIV1 modeling approach used to determine potential impacts to water quality of the proposed alternatives, stating: "Modeling results are only useful in predicting changes when they adequately

represent the system, the parameters, and the variability of those parameters. The water quality model simulation period was only one month, July of 2014, and did not provide the necessary range of wet and dry weather conditions to support a meaningful representation of hydrological conditions in the Pearl River. The selection of a longer-term continuous simulation, such as multi-year simulations, ensures that average, wet and dry conditions are included in the model."

The EPA notes that Appendix D of the 2022 NFI report (referenced in Appendix E, Page 130, Bullet #1) includes a long-term, multi-year water quality modeling analysis using WASP and EFDC completed by Tetra Tech titled "Pearl River Channel Improvements Impact." While we appreciate that this analysis appears to indicate that Alternative C would have minimal downstream impacts at approximately 100-miles and more downstream of the project area, this report does not convey the simulated impact within the project location or at a closer downstream near Byram.

Additionally, this long-term analysis should have considered the July 2014 water quality data within the project location as well as MSDEQ's 2009-2023 water quality data at their monitoring site near Byram (21MSWQ_WQX-02486500) in the calibration of their model to determine how well the model can simulate the impacts at these locations.

Recommendations: The EPA reiterates our June 30, 2023, recommendations: "*The EPA recommends that the modeling timeframe be extended to include seasonal variations and both dry and wet years.*" We also recommend that long-term simulations consider not only the very far downstream impacts, but also show the simulated results within the project location and just downstream of the project in Byram. Additionally, we recommend the long-term analysis considers the July 2014 water quality data within the project location as well as MSDEQ's 2009-2023 water quality data at their monitoring site near Byram (21MSWQ_WQX-02486500) in the calibration of their model.

(e) **Water Quality Calibration:** EPA's June 30, 2023, comments and recommendations regarding the Water Quality Modeling Calibration were not sufficiently addressed and these concerns and recommendations remain. Specifically, the EPA had concerns related to there being insufficient quantitative and qualitative analysis of the flow and water quality modeling calibrations. As part of the calibration process, flow and water quality models should be assessed to determine model bias (how well the model predicts measured values) and variance (how consistently the model predicts measured values). Bias and variance can be assessed by a variety of statistical metrics and the results from these metrics should be discussed as part of calibration. Calibration for EPD-RIV1 water quality model completed by FTN Associates consists solely of x/y plots of observed and modeled data for one station over time. The calibration for the WASP and EFDC water quality modeling completed by Tetra Tech titled "Pearl River Channel Improvements Impact" includes some additional statistical information related to model bias (e.g., means, medians, and percentile comparisons) however, there is no discussion of the model's performance with regards to variance (e.g., Normalized Root Mean Square Error, Nash-Sutcliffe, Index of Agreement, Modified Kling-Gupta).

Recommendations: The EPA reiterates our June 30, 2023, recommendations: "*The EPA notes that quantitative analysis consists of statistically comparing the model predictions with measured field observations. The following statistical comparisons should be considered for calibration: Mean, Normalized Root Mean Square Error, Index of Agreement, Tails of Distribution data, Qualitative inspections, Time Series Plot, Probability Distribution Plot, and 1 to 1 Plot. The EPA also recommends using all available water quality data, including data collected by other agencies (i.e., MDEQ, U.S. Geological Survey, EPA, etc.) in the watershed for calibration.*"

(f) **Flow Alterations:** Flow alterations can have significant impacts to water quality including but not limited to causing significant changes to dissolved oxygen and temperatures that, in addition to extended retention times, can allow for eutrophic conditions to occur behind a dam. Furthermore, the 18 "Key Findings" numerated in Appendix E, Pages 130-134, cite to numerous unknowns which could impact water quality and should be addressed prior to alternative selection (e.g., #5 & #10 cite to impaired waters and TMDLs in the project area. It is unclear if these alternatives cause or contribute to existing impairments. Number 11 cites to legacy contaminants needing to be addressed prior to construction or inundation. Number 16 cites to conditions in the project area being highly influenced by stormwater inflows from Jackson, and that it is unknown whether the stormwater would flush out contaminates or serve as a source of contaminants).

In our June 2023 scoping comments (Impacts of Hydrologic Alternation section), EPA recommended a downstream flow analysis be conducted. It is estimated that 40% of Jackson's water needs are taken from the Pearl River. As urbanization increases, the demand for water will also likely increase. The effect this will have on the availability and levels of downstream flows should be assessed. Also, the timing of reservoir filling was not specified. Filling reservoirs has been found to cause impairments to the receiving downstream waters, therefore, optimal timing of reservoir filling may reduce potential impacts to downstream waters and aquatic life. A flow analysis could also determine how to balance future water withdrawals, impoundment operations, recreational uses and help minimize water quality and aquatic life impacts both in the managed impoundment and downstream.

Recommendations: The EPA recommends the USACE complete the water quality analysis and modeling for each of the alternatives to better understand each alternatives' impact to water quality prior to alternative selection.

(5) Hazardous, Toxic, and Radioactive Wastes

(a) **Comprehensive Environmental Response, Compensation, and Liability Act**: Two sites on the National Priority List (NPL) are located near the project area: the Flowood Superfund Site (Flowood Site) and the Sonford Products Superfund Site (Sonford Products). The Flowood Site and the Sonford Site are both located in the city of Flowood in Rankin County, Mississippi, along Highway 468, approximately a mile east of the Pearl River (Figures 1 and 2). The Hazardous, Toxic, and Radioactive Waste evaluation concludes that the two nearby Superfund sites do not "pose a significant threat of impact to the proposed alternative projects". The two sites are

currently near the Pearl River shoreline, and their proximity will be even closer to a future waterline under some of the proposed alternatives. The closer proximity increases the likelihood of flooding and the transport of contaminants off-site.

Recommendations: The EPA recommends that the USACE conduct a full HTRW evaluation of Superfund risk beyond the "project area," at a minimum, including the Flowood Site and Sonford Products Site to include the new flood lines in relation to the two site locations for all proposed alternatives. EPA also recommends an economic cost proposal be provided for all proposed plans to address increased risk at these Superfund sites for each alternative provided in the final EIS. The EPA recommends that the USACE evaluate the potential contamination risk from the sites based on the changes in proximity resulting from the new flood lines. The EPA also recommends the USACE coordinate with the EPA to obtain updated information available at EPA regarding these sites for inclusion in the evaluation and in the final EIS.

(b) **Hazardous Waste Sites:** The draft EIS recognizes that hazardous waste sites (including Gallatin St. Landfill, LeFleur's Landing Landfill (Jefferson St.), and Gulf States Creosoting Company) within the project area have leached and may continue to leach hazardous waste pollutants into ground and surface water. The draft EIS states that remediation of hazardous waste sites will be necessary during implementation of Alternative C and CTO Alternative D to prevent additional water quality issues and use impairment.

Recommendations: The EPA recommends that USACE coordinate with MDEQ on the status of these hazardous waste sites, the potential risk of contamination to water quality for the proposed alternatives, and remediation needs. The EPA also recommends the USACE consider selecting an alternative that does not include flooding of the project area or excavation that could impact water quality or require relocation of the J. H. Fewell water supply intake below these identified sites. The EPA also recommends the USACE conduct remediation of hazardous waste sites prior to the implementation of any alternative that includes flooding of the project area and the subsequent relocation of the J. H. Fewell water intake.

(6) Water Quality Permits

The 2022 NFI's Section 211 Study stated one objective of the water quality modeling exercise is to determine if the downstream assimilative capacity will be impacted by the weir, but only provides information about the large current National Pollutant Discharge Elimination System (NPDES) permits and future proposed NPDES permit discharges not impacting assimilative capacity. There is no analysis or discussion about how the discharge of fill and habitat changes (i.e., reduced natural filtration functions) for the proposed project would impact assimilative capacity. The 2022 NFI's Section 211 Study conclusions do not address the stated objective. Additionally, the 2022 NFI's Section 211 Study states that the City of Jackson MS4 NPDES Permit requires Best Management Practices (BMPs) that ensure the quality of stormwater. There is no analysis about how the existing MS4 permit would alleviate impacts from the proposed alternative.

Recommendations: The final EIS recommends that the final EIS evaluate whether downstream dischargers with existing NPDES permits will have to reevaluate their discharge permits to account for the change in flows and assimilative capacity due to the proposed project. In addition, the EPA

recommends the final EIS evaluate how existing best management practices would alleviate impacts to water quality from the proposed project, or if additional measures are necessary to address changes in stormwater inputs.

(7) Environmental Justice

The level of flood protection for the communities with EJ concerns is not clear. (As indicated above, the level of flood protection provided by the alternatives needs to be clarified.) According to the June 2024 Commander's Report, Alternatives C, D (CTO with a weir), and E (CTO without a weir) appear to induce flooding to 83 structures in the 100-year floodplain, in communities with EJ concerns.

In addition, the draft EIS indicates that the study area includes three Louisiana parishes. The EPA recommends the USACE incorporate a discussion within the draft EIS that identifies the names and demographics of the three parishes and the communities with EJ concerns that will potentially be impacted by the proposed project. This includes communities potentially impacted due to induced flooding and/or backwater flooding in tributaries.

As stated in our June 2023 scoping comments, major downtown Jackson tributaries include Richland Creek, Lynch Creek, Town Creek, Eubanks Creek, Hog Creek, Moss Creek, Purple Creek, and Prairie Branch. Several of these urban major tributaries are backwater flooding sources for the Pearl River and experience flash flooding three days prior to the Pearl River peaks. They are served by the Fairgrounds pumping station which may be affected by proposed construction of weirs (Alt C, D). Canton Club and Duttoville are two neighborhoods that have been identified for specific flood risk management measures because of frequent high-level flooding which may become worse with one or more of the alternatives that include weirs. The information provided in the draft EIS did not address EPA's scoping comments and indicates that further refinement and final designs of proposed additional structural components (levees, gates, or other drainage control features) will be necessary for neighborhoods affected by backwater flooding, especially Canton Club and Duttoville neighborhoods.

Justice 40 project benefits to disadvantaged communities, as per EO 14008, is described at the end of the draft EIS EJ assessment (pp 238 - 228). Based on the CEJST data for the study area, approximately 60% of the benefits of A1 would be captured in Justice 40 disadvantaged communities, while approximately 20% of the benefits of the CTO would be captured in Justice 40 disadvantaged communities.

Recommendations: The EPA recommends that the USACE conduct an analysis of all eight urban major tributaries in downtown Jackson to determine the estimated flood risk for communities within these floodplain areas. The EPA recommends modeling of potential flooding in the Canton Club and Duttoville neighborhoods and other vulnerable areas to see how the alternatives with weirs increase flooding for 100-year flood event (1% annual exceedance probability) and the more severe 1979 flood. The EPA recommends the USACE conduct additional targeted community outreach to residents inside the flood zone to explain the proposed project, the alternatives, and the expected outcomes for these residents. The EPA recommends the USACE tailor the community engagement activities to the residents of the affected communities and that the meetings be held

at locations and times that are convenient for them. The Environmental Justice Interagency Working Group's Promising Practices for EJ Methodologies in NEPA Reviews[7], dated March 2016, provides guiding principles agencies can consider for addressing potential barriers to meaningful engagement. Furthermore, the EPA recommends the final EIS discuss the targeted engagement to these residents in the flood zone and describe how the community concerns and/or recommendations were considered and addressed. This should include how the community concerns were used to develop proposed mitigation options or to further avoid or minimize impacts to human health and the environment. The final EIS should also determine high, adverse, or disproportional impacts to all areas of concern (including communities with EJ concerns).

(8) Climate Change

Section 2.1.1 *Climate, Weather Patterns, and Climate Change* of the draft EIS states: "*According to the guidance found in ECB 2018-14, paragraph 5.a., 'Climate change information for hydrologic analyses includes direct changes to hydrology through changes in the Pearl River Basin, Mississippi Federal Flood Risk Management Project Draft Environmental Impact Statement temperature, precipitation, evaporation rates and other climate variables, as well as dependent basin responses to climate drivers, such as sedimentation loadings. The qualitative analysis required by this ECB should focus on those aspects of climate and hydrology relevant to the project's problems, opportunities, and alternatives, and include consideration of both past (observed) changes as well as projected, future (modeled) changes. Climate Change data from models are projected using Representative Concentration Pathway (RCP) 4.5 and RCP 8.5. RCP 4.5 represents a moderate/ medium approach that provides insight to future climate change conditions. RCP 8.5 represents a high approach that provides insight to future climate change conditions if there were minimal restrictions/ regulations."*

Recommendations: The EPA recommends the final EIS include an analysis of how the proposed structural alternatives could exacerbate flooding and impact natural resources due to climate change. Climate change is projected to have negative impacts on vegetation and soil, wildlife, and water quantity and quality. Construction of a proposed alternative could result in similar impacts on the environment due to increased flood impacts associated with increases to water temperature from vegetation clearing, and habitat impacts to wildlife/threatened and endangered species. Additionally, the analysis should consider mitigation measures and adaptation strategies to offset or reduce the risk of these effects (e.g., protecting riparian corridors and water management to reduce potential temperature increases). Given that potential environmental harm from increased flows brought about by climate change, The USACE should consider all possible climate hazards including increased temperatures and extreme heat, increased heavy precipitation from extreme storm events, riverine flooding, sea level rise and storm surge and coastal flooding, landslides, wildfire, and drought.

On January 9, 2023, the Council on Environmental Quality (CEQ) published interim guidance to assist federal agencies in assessing and disclosing climate change impacts during environmental

[7] https://www.epa.gov/sites/default/files/2016-08/documents/nepa_promising_practices_document_2016.pdf

reviews.[8] The CEQ developed this guidance in response to EO 13990, Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis. The CEQ indicated that agencies should use this interim guidance to inform the NEPA review for all new proposed actions and may use it for evaluations in process, as agencies deem appropriate, such as informing the consideration of alternatives or helping address comments raised through the public comment process. The EPA recommends the final EIS apply the interim guidance as appropriate, to ensure robust consideration of potential climate impacts, mitigation, and adaptation issues.

(9) Dam Safety

According to Section 6.6.4.7 *Interior Drainage and Seepage Reduction* of the draft EIS, the following would be required during further phases of study: (a) design analysis on interior drainage and pump sizing; (b) final design of seepage reduction; and (c) final design of bridge replacement or protection. Section 6.6.4.8 states that collaboration with MDEQ's Dam Safety group and further weir design would be needed to ensure the weir/dam is designed to meet all required USACE and State Standards for safety. Furthermore, Section 6.6.4.9 states, "*The Operation and Maintenance of proposed hydraulic features have not been developed.*"

Recommendations: The EPA recommends the final EIS include the dam safety analysis to fully evaluate the environmental impacts of this project. The final EIS should discuss when the USACE plans to complete the studies referenced above.

(10) Transportation

By letter dated September 8, 2018, the Mississippi Department of Transportation identified Bridge Counter Measures detailing their concerns about the "One Lake" Channel Improvement plan. Specifically, the MDOT stated, "*If the predicted scour depths occur, there will be catastrophic failure of all seven of the main channel bridges mentioned above and the capacity of the relief bridges on SR 25 will be severely reduced. For this reason, all nine bridges will need to be replaced and the cost to replace the nine bridges should be reflected in the cost of the Pearl River Federal Flood Risk Management Project.*" The only bridge countermeasures planning with MDOT that is cited in the 2024 draft EIS is a letter from MDOT to Rankin Hinds Pearl River Flood and Drainage Control District President, Gary Rhoads, dated February 26, 2024, establishing that "MDOT agrees to collaborate with the Flood Control District in 'the advancement of this project and to ensure countermeasures are included, if determined necessary during the future design process'" and that "...major evaluation will be a Pre-construction Engineering and Design effort and not part of the EIS assessment."

Recommendation: The EPA recommends the USACE incorporate the MDOT's recommendations, including cost analysis and counter measures plan.

[8] https://www.federalregister.gov/documents/2023/01/09/2023-00158/national-environmental-policy-act-guidance-on-consideration-of-greenhouse-gas-emissions-and-climate

(11) Direct, Indirect, and Cumulative Impacts

(a) **Figure 3-1d:** Throughout the draft EIS, direct, indirect, and cumulative impacts are addressed as a percentage of Annual Exceedance Probability (AEP). Figure 3-1d displays two maps that refer to "Structures Inundated from a Cumulative 1% AEP Event Separated by Headwater and Backwater Flooding (Colored dots represent structures in the following AEP floodplains: green dots are 1% (100 year), orange dots are in the 2% (50 year), red dots are within the 4% (25 year) and yellow dots are within the 10% (10 year). However, due to the scale of the maps, it is difficult for reviewers to clearly ascertain the true impacts.

(b) **Table 4-2:** Table 4-2 presents a summary of potential environmental consequences by resource for each alternative. However, it does not contain any numerical values. In addition, it notes that many studies have not been completed as of the date of the draft EIS. Specifically, Table 4-2 states that studies have not been completed for cultural resources and socioeconomics, H&H resources, Water Quality, HTRW, greenhouse gases, and aesthetics. These studies are needed to evaluate the environmental consequences of the alternatives.

Recommendations: The EPA recommends that the final EIS include a separate section on Cumulative Impacts in their totality. We also recommend that the Table 4-2 be completed with numerical figures so the environmental impacts can be viewed in comparative form. The EPA also recommends that all studies be completed and the cooperating agencies be given opportunity to review them prior to the publication of the final EIS.

(12) Clean Water Act Section 404

(a) **Watershed Analysis:** Federal projects specifically authorized by Congress that involve discharges of dredged or fill material into waters of the U.S., including Civil Works projects (40 CFR 230.2(a)(2)), must comply with the Clean Water Act (CWA) Section 404(b)(1) Guidelines (the Guidelines). The Guidelines (40 CFR 230.10(a)) only allow such discharges for the Least Environmentally Damaging Practicable Alternative (LEDPA). A clearly defined project purpose determines the scope at which the array of alternatives is selected (40 CFR 230.10(a)(2)).

Section 230.10(a) of the CWA Guidelines states that an "alternative is practicable if it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes." While costs are considered insofar as to meet the project purpose, the preamble of the Guidelines specifically excludes economics as a consideration (i.e., a project's benefit to cost ratio, or profitability, should not lead decision-making). Alternative C (Non-Federal Interest (NFI) Locally Preferred Plan (LPP) and Alternative D (Combination Thereof (CTO) with a weir) are the most environmentally damaging options, and they also appear to be the only two alternatives that include recreational opportunities, despite that the other alternatives could also include recreational features. This unequal representation of recreational features appears to skew the cost analysis, because benefits from flood risk reduction are not clearly explained. As mentioned in our June 30, 2023, scoping comments, recreational features do not fulfill the basic project purpose of flood risk reduction and should not be considered when evaluating the LEDPA.

Recommendations: The EPA recommends the USACE implement and incorporate the following items into the final EIS:

i. Evaluate how the proposed lake will impact stormwater discharge and tributary flooding.
ii. Provide a comparative analysis of the proposed lake at its desired full pool with limited freeboard for flood control versus keeping the Pearl River in its natural state and allowing the levee and impoundment structures to allow the new Lake to fill only under extreme events. The analysis should also include making use of the Ross Barnett dam to release water as a large storm event is forecast such that it can be used to store stormwater.
iii. The Pearl River should be modeled to assess the impacts of how the hydrologic modifications will impact the downstream segments. The change in flow regime between the current conditions and with the operation of the new Lake should be documented to determine if the changes will have an adverse impact on the aquatic community.
iv. A thorough 404(b)(1) analysis should be performed prior to the Record of Decision for this project. The first step in this analysis includes selection of the LEDPA.
v. When evaluating the LEDPA, consider alternatives that meet the basic project purpose of flood risk reduction; of those, consider alternatives that are least environmentally damaging. For example, Alternatives D and E are stated to provide equivalent flood risk reduction benefits, but Alternative D is more environmentally damaging. Thus, Alternative D does not appear to be the LEDPA; however, other alternatives could be the LEDPA based on their ability to meet the project purpose, but more thorough analysis is needed (see next issue and recommendation).
vi. When evaluating cost in a LEDPA determination, only consider project costs as they are directly related to the project purpose. Separate any potential recreational economic benefits from benefits realized from flood risk reduction to structures, roads, and other critical infrastructure. The final EIS should state realistic costs from damages experienced from flooding. For instance, would long-duration flooding incur more damages than flash floods, and if so, how might these costs differ for each alternative?

The EPA also has environmental concerns that there may not be sufficient compensatory mitigation to offset the direct impacts to the Pearl River channel or the tributary streams. We also understand that the section 404(b)(1) analysis as required under the Clean Water Act has not been completed and request that our detailed comments below be addressed within that analysis prior to issuing the ROD. The EPA is also concerned about the disruption in downstream freshwater flow, changes in water quality, water quality modeling, and habitat impacts which also may affect endangered species, fisheries, and oyster production. The EPA has also identified potential issues to evaluate in the EIS including environmental justice, contaminated sites' proposed remediation, and critical infrastructure.

(b) **Aquatic Resource & Environmental Impact Assessment:** Section 230.11 of the CWA Guidelines describes the factual determinations that must be made to evaluate whether environmental impacts comply with the restrictions on discharge outlined in Section 230.10 and summarized again in Section 230.12. In our June 2023 scoping comments, we provided recommendations and information needs associated with the analysis of direct, indirect, and cumulative impacts, as well as other factors that are used to evaluate whether an alternative contributes to significant degradation of the aquatic ecosystem. Based on the provided information, the currently proposed project did not address concerns outlined in our scoping letter.

The project as proposed would involve direct, indirect, and cumulative impacts that were not fully evaluated and that relied upon decades-old information. The draft EIS did not evaluate direct functional losses to Riverine habitat and utilized the same 2014 Habitat Evaluation Procedures (HEP) report from the previous study to reassess direct impacts for Alternatives C, D, and E. As indicated in the 2014 HEP report, many of the terrestrial habitat variables were based upon data collected in 2013 and 2014, while many of the aquatic habitat variables relied upon data collected as part of a 2006 Aquatic Evaluation performed by the U.S. Army Engineer Research and Development Center (ERDC). Land use and associated habitat variables have likely changed in recent years and should be reevaluated for each alternative. Furthermore, the draft EIS did not evaluate the potential for indirect or cumulative aquatic resource impacts, despite that this project could incur significant indirect and cumulative effects on the environment. For instance, any changes to flood frequency and duration would subsequently impact adjacent riverine bottomland hardwood wetlands within 1- to 5- year frequency intervals, because such wetlands depend upon flooding to maintain their dominant ecosystem functions.

Recommendations: The EPA recommends the USACE implement and incorporate the following items into the final EIS:

i. A recent (i.e., within the past five years) aquatic resource delineation should be provided as part of the assessment process.
ii. Habitat variables utilized in functional assessments should use more recent data that is representative of current conditions.
iii. The H&H analysis should include an evaluation of the spatial distribution of changes to flood frequency and duration – not just peak flows.
iv. Once flood inundation patterns are better understood, the EPA recommends that the effects of the project on hydrologic, biogeochemical, and plant and animal aquatic resource functions be objectively evaluated. Full consideration of impacts to the aquatic ecosystem and their dependent species is needed to determine the extent of required in-kind mitigation associated with each proposed alternative.
v. For the purposes of wetland assessment, the Hydrogeomorphic Approach (HGM Approach) should be used to determine direct and indirect functional impacts, including but not limited to riverine bottomland hardwood wetlands within the 5-year flood frequency interval, because the HGM Approach can estimate impacts associated with changes to wetland vegetation, soils, and hydrology (i.e., flood frequency and duration). The HGM Approach is regularly used in the Section 404 Regulatory program within the Vicksburg District. This analysis should also evaluate how altered flood frequency and inundation patterns might impact any existing recreational areas (e.g., LeFleur's Bluff State Park and Crystal Lake) as well as potential changes to aquatic resources within Fannye Cook Natural Area/Pearl River Basin Mitigation Bank in Rankin County.
vi. Objectively evaluate impacts to obligate and facultative riverine species (e.g., aquatic vegetation, invertebrates, and vertebrates) resulting from conversion to a lacustrine system that is likely to develop a similar suite of issues known to occur in the Ross Barnett Reservoir (e.g., high sedimentation, fecal coliforms, manganese, etc.).

Aside from impacts caused by altered inundation patterns, this project could potentially impact water quality and contribute to significant degradation of the aquatic environment. For areas

within the study area, the water quality modeling approach and calibration methods were not made clear; therefore, it is not clear whether the draft EIS considered how the various alternatives would alter sedimentation and nutrient loads considering several hazardous waste sites in the area. The effects of altered water quality on the city of Jackson's drinking water intake sites, as well as the potential for increased treatment burdens were also not made clear. Further, the draft EIS did not quantify downstream impacts associated with each alternative – only Alternative C. Downstream impacts may include altered flow rates, altered nutrient and sedimentation deposition patterns, changes to water temperature and salinity downstream, and changes to biogeochemical cycling – all of which can have subsequent impacts on the aquatic environment.

Recommendations: The EPA recommends the USACE implement and incorporate the following items into the final EIS:

i. Updated water quality modeling is needed for each alternative. Quantify the human and environmental impacts associated with flooding to applicable hazardous waste sites, remediation sites, wastewater treatment plants, and water treatment plants (e.g., J.H. Fewell WTP, Savanna Street WWTP, LeFleur's Landing, Gallatin Street Dump Site, Gulf States Creosote Slough, and others). Quantify the extent of downstream impacts to water quality, water quantities (especially during low flows), and the species that could be adversely impacted (with consultation with USFWS).

ii. Cumulative impacts to aquatic resources should be evaluated and should consider past and reasonably foreseeable development in the watershed, as well as an evaluation of impacts to nearby mitigation sites and recreational areas.

iii. Some of the alternatives will likely require a significant volume of fill material to construct levees and/or weir. The point of extraction and disposal determines whether the material is subject to evaluation under regulations pursuant to the Resource Conservation and Recovery Act (RCRA) or the CWA. We recommend a description of the volumes of material proposed for excavation, dredge, fill, and disposal based on the point of extraction and disposal being 'upland' or 'waters of the U.S.'. Under the CWA, some sediments may require testing. Regardless of the final placement/disposal site, the tiered approach found in both the Inland Testing Manual and the Upland Testing Manual are the same and should be utilized regarding testing needs for material subject to CWA regulation. Further, coordination with EPA to produce a sampling plan and quality assurance plan is recommended to facilitate shared interpretation of testing results and avoid any future delays.

iv. Consider other less environmentally damaging alternatives that use nature-based solutions. Wetlands that are proposed to be permanently impacted include floodplain wetlands that provide important ecological functions and ecosystem services including flood storage and maintenance of water quality within the watershed which, in turn, provide anthropogenic community resiliency. In trapping and then slowly releasing rainwater and floodwater, floodplain wetlands reduce peak flows and flood damage. They also serve critical roles in recycling nutrients, filtering pollutants, and providing habitat for fish and wildlife. More explanation is needed to provide a basis for significant channel deepening and widening which would serve to further disconnect the Pearl River from its floodplain and deprive the watershed of vital ecosystem services provided by floodplain wetlands. Consideration should be given to levee setbacks to increase

floodplain area, levee upgrades, floodplain preservation or restoration to increase flood storage, roughness, and habitat, and enhanced management of the Ross Barnett Reservoir for increased flood control.

v. Once it has been determined that the LEDPA has been selected, clear demonstration of measures to avoid and minimize environmental impacts should be included. This includes direct, indirect, and cumulative impacts to wetlands and streams, including downstream impacts to aquatic resources outside the immediate study area.

(c) **Mitigation:** According to Section 2036 of the Water Resources Development Act of 2007, "the Secretary shall ensure that the mitigation plan for each water resources project complies with the mitigation standards and policies established pursuant to the regulatory programs administered by the Secretary." 33 U.S.C. § 2283(d)(3)(A). Compensatory mitigation is required for functional losses to waters of the U.S. and must follow the regulations outlined in 40 CFR §§ 230.91-98 and 33 CFR Parts 325 and 332. These latter regulations are commonly referred to as the 2008 Mitigation Rule (Rule). In our June 2023 scoping letter, we provided recommendations and information needs associated with the development of a Rule-compliant compensatory mitigation plan. Based on the provided information, the currently proposed project does not address concerns outlined in our scoping letter.

Chief among the previously stated concerns was the need for adequate evaluation of project impacts, using updated information, to determine selection of the LEDPA. According to sequencing prescribed in the Guidelines at Section 230.91(c), an applicant must demonstrate avoidance and then minimization of wetland impacts before compensatory mitigation can be considered. Avoidance takes sequential preference, and the Guidelines stipulate no permit should be issued if there are less environmentally damaging practicable alternatives available to the applicant which would have less impact on aquatic resources pursuant to Section 230.10(a). See the "Environmental Impacts" section above for more information.

In our June 2023 scoping letter, the EPA also requested an opportunity to evaluate a compensatory mitigation plan prior to the signing of the ROD. However, information in the draft EIS indicates that a compensatory mitigation plan would not be developed until after the ROD. Furthermore, the draft EIS does not list EPA as a participant on the Interagency Mitigation Team, and EPA had not been invited to participate in any discussions regarding compensatory mitigation until July 30, 2024. For a project to be Rule-compliant, and thus compliant with the Clean Water Act 404(b)(1) Guidelines, it must include a site-specific compensatory mitigation plan that contains all twelve elements indicated in 40 CFR Part 230, Subpart J.

<u>Recommendations:</u> The EPA recommends the USACE implement and incorporate the following items into the final EIS:

i. Review of any compensatory mitigation plan is premature until it has been demonstrated that the LEDPA has been selected and the applicant has taken all practicable steps to avoid and minimize aquatic resource impacts (40 CFR § 230.91(c)). The scope of impacts to aquatic resource functions for each alternative, and ability to mitigate for those impacts, warrants further review by EPA to ensure compliance with the Guidelines.

ii. Prior to the issuance of the Record of Decision for the Project, compensatory mitigation plans consistent with 33 CFR 332.4(c) [40 CFR 230.94(c)] must be approved that fulfill the

requirements of all applicable Federal environmental laws, including but not limited to, the National Environmental Policy Act (NEPA), Clean Water Act (CWA), Fish and Wildlife Coordination Act (FWCA), and Endangered Species Act (ESA). Given the nature and scope of direct and indirect/secondary impacts to significant natural resources and species associated with the Project, we recommend that compensatory mitigation measures be implemented in advance of or concurrent with the regulated discharges of dredged or fill material necessary for project construction. We recommend that proposed work not be commenced in WOTUS until the mitigation plan for each compensatory mitigation component has been approved by the Interagency Mitigation Team and all in-lieu fee program/mitigation bank credits have been purchased and/or compensatory mitigation sites have been secured (e.g., acquired via fee title acquisition or protected via conservation easement). These recommendations are necessary to ensure a Rule-compliant mitigation strategy that minimizes temporal losses to aquatic resources.

iii. The following factors should be considered in plan development, including but not limited to:
    - Prioritization of “in-kind” and “in-basin” restoration opportunities, including floodplain restoration opportunities upstream of Jackson.
    - Prioritization of sites that would provide offsets within a similar geomorphic position, support similar communities of fish and wildlife species, and be of an appropriate scale.
    - Prioritization of sites that would co-locate stream and wetland restoration work to include floodplain connectivity where feasible.
    - Prioritization of large contiguous tracts of land to minimize habitat fragmentation.
    - Prioritization of sites that would enhance existing habitat corridors.