August 6, 2024

Delivered by Electronic Mail to: PearlRiverFRM@usace.army.mil

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4155 Clay Street
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Mr. Eric Williams
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U.S. Army Corps of Engineers, CEMVN-PDS
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Re: Audubon Comments on Pearl River Basin Flood Risk Management Draft Environmental Impact Statement, 89 Fed. Reg. 48610, June 7, 2024

Dear Colonel Gipson and Mr. Williams,

On behalf of the National Audubon Society and our more than 1.6 million members, including nearly 38,000 members in our Audubon Delta region (MS, LA, AR), we urge the U.S. Army Corps of Engineers' (Corps) to reject all ecologically damaging, economic development plans proposed in the Pearl River Basin Flood Risk Management Draft Environmental Impact Statement (DEIS) that involve damming or dredging the Pearl River, specifically Alternatives C, D, and E. Instead, we call on the Corps to pursue Alternative A1 and critically, to expand it to incorporate more non-structural flood measures in combination with nature-based and selective structural approaches that can deliver effective, environmentally sensitive relief to those who need it in the Greater Jackson area while protecting the Pearl River Basin's ecology and wildlife, downstream communities, and regional economy.

Audubon has worked in this region for more than a century, which reflects its significance as one of the most intact river systems in the southeastern U.S. We understand just how important the Pearl River is to support communities, the economy, habitat, and wildlife, including an impressive 32 million birds that use the Pearl River basin every year from the Ross Barnett Reservoir to the Gulf of Mexico.[1]

Accordingly, Audubon has been working for many years with our chapters and partners across Mississippi, Louisiana, and beyond to protect the Pearl River from the environmentally destructive proposal known locally as "One Lake"—a decades old plan widely publicized as a private real estate development scheme masquerading as a flood control project.

Despite the Corps' latest DEIS being incomplete and missing important information required by law, we find that it clearly demonstrates that One Lake and all related proposals to dam or dredge the Pearl River should be rejected. Not only will DEIS Alternatives C, D, and E cause massive impacts to Pearl River habitats, birds, and wildlife, these alternatives will not provide meaningful flood relief; rather the DEIS documents that these alternatives are intended to promote economic development and recreation. As

[1] Meehan, T., and E.I. Johnson. 2023. Migratory bird use of the Pearl River basin. National Audubon Society, New York, NY. (Provided in Appendix A)

discussed in detail below, these alternatives also will put more people and property in harm's way, expose local and downstream communities to toxic contamination, alter freshwater flows vital to healthy river habitat and the regional economy, and induce flooding on vulnerable communities.

Furthermore, the DEIS violates the National Environmental Policy Act (NEPA) and Water Resources Development Act (WRDA) because the Corps has asserted it will delay the required environmental analyses and feasibility study until the pre-construction, engineering, and design (PED) phase, which would be *after* the Corps had recommended Alternative D or E. That approach is exactly backwards and contradicts NEPA's requirement to undertake a comprehensive review before a decision is made.

Throughout this years-long flood planning process, Audubon—as well as hundreds of environmental organizations, social justice and faith groups, business-industry sectors, elected and community leaders, and members of the public—have called on the Corps to prioritize commonsense, effective flood measures that holistically protect local and downstream communities, support nature, and promote climate resilience. We firmly attest that these crucial goals can be realized only by creating a more comprehensive Alternative A1 through increased non-structural, nature-based, and strategically targeted structural flood protections. As part of this effort, it is imperative that the Corps remove all indiscriminately imposed conditions that unjustly burden property owners with an array of financial costs related to structural elevations and other non-structural measures.

Audubon appreciates your careful consideration of our comments on the DEIS and Commander's Report as further detailed below.

The Corps Should Adopt and Expand DEIS Alternative A1

Audubon strongly urges the Corps to endorse and expand DEIS Alternative A1 (A1) while rejecting Alternatives C, D, and E. At the same time, Audubon warns the Corps against dismissing A1 based on the DEIS's unsubstantiated and biased arguments, which improperly skew the analysis in favor of Alternatives C, D, and E.

Currently A1 is proposed as a non-structural plan only that would elevate 81 homes, floodproof 62 businesses, and offer voluntary buyouts in Jackson's flood-prone areas, all of which would result in no impacts to the environment, public health, or downstream communities nor induce flooding on any structures or require any compensatory mitigation. Although Audubon is supportive of these elements, we believe this alternative as proposed does not go far enough to adequately address the flood relief needs of metro Jackson. As such, Audubon believes it is imperative to consider and include a number of additional components in A1. Appendix B provides examples of how several of these components, such as nature-based flood solutions, levee setbacks, and voluntary relocations, have been used in other parts of the U.S. to protect communities and the environment.

We recommend an expanded A1 include:

Increasing the number of homes to be elevated and businesses to be floodproofed.

Specifically, a Corps' PowerPoint presentation prepared in August 2023 for the Rankin-Hinds Pearl River Drainage and Flood Control District (Levee Board), which was obtained by Audubon and partners last December through a Freedom of Information Act request, identifies 600 structures in the 100-year

floodplain for which homes would be elevated and businesses would be floodproofed. With an estimated cost $199 million and a benefit cost ratio of 2.7, the Corps already has $221 million available to amply cover this proposal through an Infrastructure Investment and Jobs Act (IIJA) appropriation made in October 2022. Under the current project authority, it is possible for the Corps to immediately begin pursuing this alternative once the EIS is finalized.

To reiterate, priority participation should be given to those structures with historical flooding problems.

Notably, it appears that the DEIS is attempting to undermine A1 as the preferred alternative by making claims there are "significant implementation risks" relative to property owners' participation rates in structural elevation programs (Main Report at 135). Some Louisiana examples that debunk this claim include:

- Referenced in the DEIS, the Southwest Coastal Louisiana Project Nonstructural Coastal Storm Damage Risk Reduction project has a current participation rate of 80% demonstrates, which far exceeds the 50% rate cited in the DEIS. This project is similar in scale and approach to A1 since it uses the $286 million in IIJA monies to floodproof or elevate 800-1000 structures. (Source: https://cims.coastal.louisiana.gov/outreach/Projects/SWCoastal, Accessed on 7/27/2024)

- A Flood Emergency Management Agency (FEMA) project in the City of Mandeville projects its participation rate to reach 96% by next year through FEMA's Hazard Mitigation Grant Program and Flood Mitigation Assistance Program. (Source: https://www.fema.gov/case-study/mandeville-louisiana-city-stays-afloat-promoting-elevations, Accessed on 7/27/2024)

Remove arbitrarily imposed financial burdens placed on community participation.

A majority of the flood prone areas identified in metro Jackson are located in environmental justice neighborhoods. The Corps should reverse course and remove arbitrarily imposed burdens placed on community participation that require structure owners to pay for an extensive array of "ineligible" costs associated with elevations and other non-structural measures. These requirements appear baseless and intentionally designed to create unnecessary roadblocks that deter community members' participation so as to derail A1 as a feasible alternative and frame Alternatives D and E as the only possible options.

The good news is that there are significant opportunities to help Jackson residents and businesses get flood relief through a suite of already-existing federal programs, many of which are well funded. Some examples of these programs are:

- FEMA's Building Resilient Infrastructure and Communities Program, Flood Mitigation Assistance Program, and Hazard Mitigation Grant Program

- Housing & Urban Development's (HUD) Community Development Block Grants for Mitigation and Disaster Recovery

- U.S. Department of Agriculture's Emergency Watershed Protection Program

- U.S. Department of Transportation's Promoting Resilient Operations for Transformative, Efficient, and Cost-saving Transportation (PROTECT) Program and Rebuilding American Infrastructure with Sustainability and Equity (RAISE) grants

- U.S. Environmental Protection Agency's (EPA) Environmental Justice Small Grants Program and Sewer Overflow & Stormwater Reuse Municipal Grants Program

In addition to the outright removal of undue financial barriers, the Commander's Report identifies some initial ideas on how to increase participation rates for elevations and floodproofing, especially for those property owners located in disadvantaged communities. Although additional Congressional authority may be needed, options could include (Commander's Report at 10):

- Temporary relocation assistance.

- Developing an assistance program similar to the Mississippi Disaster Recovery Division Elevation Grant Program that was established for coastal Mississippi counties following Hurricane Katrina.

- Establishing a program to help homeowners defray elevation costs similar to the Homeowner Elevation Grant Program that provides support to four coastal Mississippi counties (i.e., Hancock, Harrison, Jackson, and Pearl River).

Including targeted road elevations that address transportation corridors with a demonstrated history of flood issues.

As noted in the Commander's Report, "A structure in a flood prone area may or may not receive flooding at and above its first floor, but that flooding does, at a minimum, impact transportation networks in the study area causing economic impacts including flooding of vehicles and travel delays for critical services" (Commander's Report at 9). Road elevations should include primary and secondary roads that are known to experience flooding problems and serve as key mobility routes.

Considering targeted voluntary relocations or buy-outs of properties.

A1 should include the development of a plan that considers targeted voluntary relocations or voluntary buy-outs of properties with a documented history of flooding problems. Removal of some of the highest flood risk structures and restoring those properties to green space/habitat would support natural infrastructure approaches to capture floodwater, especially from localized rain-induced events.

Including consideration of Pearl River tributaries.

The DEIS wrongly and baselessly dismisses the consideration of the Pearl River's tributaries for flood planning purposes. Specifically, "This feature was removed from further consideration in the CTO alternative upon identifying that this work is being undertaken by the NRCS, State and other local entities through the Mississippi Watershed projects" (Main Report at 93). The decision to ignore tributary flooding also is at odds with Corps statements made on their project website as part of the decision to delay the DEIS release twice last year, "While we cannot thoroughly assess all comments

received, we are working to make sure our analyses address some of the more frequently received comments like flooding issues on the tributaries." (Source: "Updates" for August 31, 2023, and October 31, 2023 found on https://www.mvk.usace.army.mil/Missions/Programs-and-Project-Management/Project-Management/Pearl-River/, Accessed on 7/31/2024)

Audubon finds this beyond reproach as many of the flooding woes experienced in the Greater Jackson area are significantly attributed to rain-induced flash flooding that impacts urban neighborhoods located along the 12 creeks that flow into the Pearl River. These neighborhoods are predominantly low-income communities of color; therefore, tributary flooding is a serious environmental justice issue. Additionally, no consideration of the tributaries makes no sense in light of the DEIS's own recommendation that, "It is recommended that a survey of tributaries and structures along the tributaries be incorporated into the model to better estimate flooding and impacts along tributaries" (Main Report at 245).

Given that various government entities are conducting work within the Pearl River tributaries, including efforts to develop localized flood plans and conduct cleanouts, it is crucial that these efforts be included in A1 to ensure a comprehensive and well-coordinated flood relief effort to benefit all the Greater Jackson area.

Incorporating natural or nature-based flood approaches.

Despite the multitude of requests to see natural or nature-based flood approaches included in flood planning for metro Jackson, we are deeply disappointed that the DEIS fails to do so. We reiterate that any flood plan should thoughtfully consider restoring river habitat, wetlands, and green spaces in the Pearl River's floodplain. This includes paying particular attention to all 12 of the Pearl's tributaries that flow through the Greater Jackson area where much of the documented chronic flash flooding occurs.

These restoration activities can be approached in such a way so as to maximize their co-benefits, such to support public recreation opportunities. The DEIS recognizes that, "Within the study area, there are few immediate access points to the river and few green spaces for the public" (Main Report at 112). For example, the City of Jackson owns 740 acres of property along the Pearl River that is currently unutilized. The community's interest in developing such recreational opportunities is evidenced by a recent design plan created for a 178-acre nature preserve in northeast Jackson through the leadership of Mississippi Communities United for Prosperity, community-based nonprofit. Enhancing the water capture and retention potential of such natural habitats and green spaces through hydrologic and native plant restoration, while enhancing community recreational values, should be expanded into the consideration of A1.

Improvements to management and operation of the Ross Barnett Reservoir and Spillway.

Since the last major flood of the Greater Jackson area in 1983 (a 100-year event), management of the Ross Barnett Reservoir and Spillway has become an increasingly important flood risk reduction tool. During 2018, Mississippi's second wettest year on record, which included several flood stage events on the Pearl, the reservoir was effectively managed in such as a way as to mitigate and minimize flood threats and help protect structures. These benefits also were evident during the winter of 2020, which included the wettest January on record.

The Commander's Report notes, "Although the reservoir was not designed for flood control", it is estimated that Reservoir operations has been providing a 28% flood peak reduction since 1979 (Commander's Report at 11).

Alternative A1 should be expanded to ensure Reservoir operations are being maximized as a flood mitigation tool. For example, "State and local entities may consider operational changes at the Ross Barnett Reservoir and revising the Ross Barnett Water Control Manual to formalize continued flood reduction capacity inform future discharge operations" (Commander's Report at 11).

The DEIS does not consider Reservoir operations nor is there any basic information provided about how Alternatives C, D, and E would coordinate with Reservoir management and operations—the Corps should evaluate Reservoir operations so as to ensure Spillway management is being optimized to the maximum extent practical for flood mitigation and public safety.

Considering levee setbacks and protections for vulnerable Jackson neighborhoods.

Levee setbacks are an accepted tool for reducing flood risks along river systems as they provide extra space for flood water while helping reduce erosion and support a more dynamic, healthier river system. However, the DEIS wrongly and baselessly dismisses the consideration of levee setbacks, "This feature was determined to provide limited flood risk reduction benefits and therefore was removed from further consideration" (Main Report at 93). The Corps should evaluate the existing levee system to identify segments that may require structural reinforcement or that need improvement, and with a critical goal of identifying potential segments where setting levees may be set back farther from the Pearl River in order to allow the river more room to naturally spread out during flood events. Key areas to consider include highly constricted reaches of the Pearl River (for example, from RM 288 to RM 291).

For example, the DEIS proposes that A1 could be adapted to incorporate a 1.5-mile levee segment to serve the Canton Club neighborhood; this new levee is expected to provide flood protection for 250 structures of which 165 structures would no longer flood at an estimated construction cost of $10 million. Audubon's work with community partners in northeast Jackson has highlighted the need to consider a new levee segment to provide targeted flood protection for the Canton Club neighborhood as well as the adjoining Parkway and McLeod neighborhoods. A levee that considers these three neighborhoods could provide flood protection for 1,000 structures. Audubon believes careful study of this option must consider the flood risks and needs of adjacent neighborhoods.

Including improvements to the Savanna Street Wastewater Treatment Plant levee.

Under Alternatives C, D, and E, the DEIS identifies upgrading an existing non-Federal levee into a Federalized ring levee around the Savanna Street Wastewater Treatment Plant. The Levee Board's 2018 Draft Study estimated the cost to do so would be $1.9 million. This facility serves as critical infrastructure to Greater Jackson and experiences a high flood risk. This levee upgrade is not dependent on those three alternatives, and as such should be done as part of an expanded Alternative A1, or can be pursued independent of this flood plan.

DEIS Alternatives C, D, and E are Unacceptable, Environmentally Destructive Plans that Should Be Rejected

Although the DEIS is incomplete, as detailed in our comments, it unequivocally makes clear that One Lake's Alternative C and the related dam-dredge proposals of CTO Alternatives D (with weir) and E (without weir) are unacceptable, environmentally destructive, and economically unjustified plans that should be rejected by the Corps.

For many years, proponents have claimed that One Lake—along with other lake proposals—is a flood control project, but this widely publicized real estate development scheme would only put more people and property in harm's way. Both Alternatives D and E are only minor variations of the original One Lake plan, which the DEIS has already determined is "not justified" (Main Report at vii).

One Lake Alternative C would destroy vital habitat for hundreds of species of birds and wildlife, exacerbate already significant water and sediment resource problems all the way to the Gulf of Mexico, and damage the region's vital seafood and nature-based tourism economy. Critically, construction of One Lake would expose vulnerable communities in Jackson, as well as those located downstream, to extensive toxic contamination while worsening flooding problems, especially for local disadvantaged neighborhoods. At least three highly contaminated Hazardous-Toxic-Radiological Waste sites, two Superfund sites, and three Hazardous Waste sites are located directly within or adjacent to One Lake's dredging footprint. Given the similarity of Alternatives D and E to One Lake, both alternatives are nearly identical in demonstrating many of these same serious problems and failings. The DEIS also is prepared in such a way as to favor Alternative D, a slightly smaller One Lake proposal that appears to be the Corps' preferred plan.

Consequently, Audubon demonstrates below how Alternatives C, D, and E are fundamentally flawed, environmentally destructive, and economically unjustified; thus, the Corps should reject them.

Alternatives C, D, and E will encourage new development in the Pearl River floodway and floodplain, resulting in putting more people and property in harm's way.

Alternatives C, D, and E involve massive dredging of mostly floodplain and river habitat from 9-10 miles of the Pearl River.

- Alternative C will dig up 20 million cubic yards and install a dam to a nearly 2,600-acre impoundment. The proposal would directly destroy more than 3,000 acres of habitat and would require at least 24,760 acres of habitat mitigation.

- Alternatives D and E each will dig at least 11.3 million-14.1 million cubic yards, directly destroy at least 2,000 acres of habitat, and require at least 10,762 acres of habitat mitigation, for which an even basic plan does not yet exist. Alternative D will install a dam to create a 1,700-acre impoundment, whereas Alternative E will not have a structural dam. However, both alternatives create land for new development and recreation.

- All three alternatives will use the dredged material from the Pearl River as fill along hundreds of acres of the newly excavated river/lake to promote "expanded riverfront access, natural areas, and commercial development, along with recreational opportunities" (Main Report at 109 and 125).

These three alternatives demonstrate what Audubon has been highlighting for many years: that the true intent of dam-dredge proposals on the Pearl is to create new developable waterfront property for homes, businesses, and other economic development.

An example of these initiatives can be found at the Great City Mississippi Foundation website, such as a promotional video showing a mixed-use development at Belhaven Beach that includes residential, commercial/retail, marina, and boardwalk on the Pearl River:

(Source: https://www.facebook.com/greatcityms/videos/1582273838941654/ , Accessed on 7/30/2024)

Notably, a 1982 study by the FWS attributed much of the City of Jackson's damage from the 1979 Flood of Record to development within the floodplain. The Greater Jackson area needs less development in flood-prone areas, not new urban development brought by Alternatives C, D, and E.

The Corps should be required to complete a Programmatic EIS if it chooses to pursue Alternatives C, D, or E because these plans will result in significant direct and secondary impacts from induced development and its supporting infrastructure to the Pearl River, habitats, and local and downstream communities.

Although Alternative D and E include some non-structural elements outlined in A1, A1 demonstrates that those elements can stand on their own and be pursued independent of the full CTO proposals, the latter of which have notably reduced economic cost-benefit ratios. In other words, A1 along with expanded considerations outlined above is more effective, environmentally sensitive, and economically feasible flood plan that offers improved long-term climate sustainability compared to the CTO options, as acknowledged by the DEIS.

The DEIS dam-dredge proposals fail to deliver effective flood relief for Greater Jackson.

The DEIS states that the One Lake's Alternative C is "not justified" under the traditional USACE benefit-cost analysis (Main Report at viii). Furthermore, the Corps' Agency Technical Review (ATR) of the Levee Board's 2018 Draft Study made it clear that One Lake will not reduce flood risks, "[The] lake does not create any additional flood storage capacity or conveyance capacity" (ATR Report June 2020 at 93). The

DEIS states that the dam in Alt. D "does not provide any flood control benefits"; rather its purpose is for recreation (Main Report at viii).

Given the similarities among Alternatives C, D, and E, their ineffective nature to meaningfully mitigate flood risk, along with their multitude of environmental impacts, community harms, and hidden costs, point to the conclusion that these faulty proposals should be rejected on their face.

Alternatives C, D, and E will directly destroy thousands of acres of wildlife habitat.

These three alternatives will each directly destroy upwards of 2,000-3,000 acres of habitat, much of which is vital floodplain and in-stream riverine habitat. Many of the habitats to be impacted are wetlands, including bottomland hardwood forest, which provide critical natural flood protection to local communities. Additional significant habitat losses are anticipated down river below the proposed project footprint as the fundamental changes to the form and function of the Pearl River system play out over time, including reduction and elimination of natural floodplain inundation.

Alternatives C, D, and E will adversely affect hundreds of species of birds, fish, and wildlife.

These alternatives will cause massive direct and indirect habitat loss and fundamental transformation of the Pearl River ecosystem.

Notable endangered species impacts include the federally threatened Gulf sturgeon (*Acipenser oxyrhynchus desotoi*) as well as the Ringed sawback turtle (*Graptemys oculifera*) and Pearl River map turtle (*Graptemys pearlensis*), both endemic to the Pearl.

As the U.S. Fish & Wildlife Service (FWS) has advised, "[w]ildlife resources within the Pearl River Basin are dependent upon the diverse floral composition of associated forested wetlands" and "a higher percentage" of vertebrate wildlife species in the basin "use bottomland hardwoods as primary habitat (habitat a species depends upon for reproduction and/or feeding during all or a portion of the year) than any other habitat type."[2] Impacts to habitat and wildlife are discussed below in more detail.

The hydrologic modeling for Alternatives C, D, and E is wholly inadequate.

The DEIS's hydrologic modeling is not comprehensive and rigorous enough to shed light on these downstream concerns, especially in low flow or drought period. This is inexcusable since Alternatives C, D, and E will forever alter the Pearl's flow. Key analyses not available in the DEIS include velocity, consideration of 12 tributaries in the project area, low flow and drought conditions, and consideration of the Ross Barnett Reservoir.

The Pearl River is the fourth largest source of freshwater for the Gulf of Mexico, east of the Mississippi River, making it closely tied to the health of the Gulf, Mississippi Sound, and Lake Borgne. Downstream stakeholders concerned about the impact of a dam-lake project on the Pearl River have passed more

[2] U.S. Department of the Interior, Fish and Wildlife Service letter to Michael E. Goff at page 1 (August 16, 2018) (providing official comments on the 2018 DEIS).

than 15 resolutions, including municipalities, counties, and unanimously by the Louisiana State Legislature.

Reducing water levels in the lower Pearl River is expected to jeopardize water quality, sediment availability, seafood and tourism sectors, and hundreds of millions of dollars in coastal restoration projects planned or underway for Mississippi and Louisiana, including a $56 million marsh-oyster project in Hancock County, Mississippi, and several projects identified in Louisiana's Coastal Master Plan.

Economic pillars at risk include Mississippi and Louisiana's combined $14 billion-dollar-a year hunting-fishing culture and the region's multi-million dollar seafood and tourism industries—all of which support thousands of jobs. Reductions in downstream river flows are anticipated to increase costs to nearly 100 downstream Pearl River industrial users and municipalities that rely on stable freshwater flow and adequate dilution of their discharges, such as International Paper, Georgia-Pacific, and the towns of Bogalusa and Pearl River.

Alternatives C, D, and E will further degrade the water quality in the Pearl River.

The DEIS acknowledges that two water quality models provided by Levee Board were limited in duration and scope, and made significant assumptions that resulted in no concerns about water quality degradation, in spite of the understanding that Jackson is plagued by stormwater issues and sanitary sewer leaks (Main Report at 237). The City of Jackson has documented the release of billions of gallons of poorly treated sewage into the Pearl.

In 2012, the City of Jackson entered into a consent decree with the EPA and the Mississippi Department of Environmental Quality (MDEQ) regarding sewage overflows from its wastewater collection system. Ultimately in 2019, MDEQ issued a water contact advisory for 20 miles of the Pearl River, closing the reach to swimming, fishing, or wading—from its confluence with Hanging Moss Creek in Jackson to the Swinging Bridge at Byram—and 12 of its Jackson-area tributaries; this area which includes the project area outlined in Alternatives C, D, and E.

These three alternatives would only serve to amplify water quality degradation in the Pearl River by slowing and confining the flow of stormwater and sewage, and creating a eutrophic impoundment that is unsuitable for aquatic life or human contact. MDEQ's review of the Levee Board's 2018 Draft Study raised numerous questions about the project's water quality modeling, and called for more analysis "to consider how [One Lake] would affect water quality downstream of the project area". Public exposure and health concerns are especially relevant to the public recreation goals of these alternatives yet the DEIS completely fails to evaluate these risks.

Alternatives C, D, and E will worsen Jackson's drinking water problems.

The 100-year old J.H. Fewell drinking water plant services 30% of the City of Jackson and draws directly from the segment of the Pearl River where all three alternatives would be extensively dredging. The Levee Board's 2018 Draft Study noted that this activity to build One Lake Alternative C would significant increase turbidity such that the facility would not be able to operate and force the City of Jackson to

arrange a "temporary" water supply alternative during construction that would take at least "three or four years".[3] Also the DEIS states, "additional study and verification would be needed to confirm that adding a large weir would not induce sediment loads to alter the incoming chemistry in such a way to induce failure at the existing J.H. Fewell Plant or any other proposed structure along the newly ponded area" (Main Report at 179).

Relatedly, One Lake would not have prevented the 2021 collapse of the Jackson's main water treatment plant, the O.B. Curtis plant, which supplies up to 70% of Jackson's drinking water supply. That collapse was caused by flood-induced high turbidity—and other polluted runoff—in the Ross Barnett Reservoir, which is the water source for the O.B. Curtis plant and is located seven miles upstream of One Lake has no ability to–and will not—alleviate flood-induced high turbidity in the Ross Barnett Reservoir.

Given the similar nature of these three alternatives, the same outcomes on Jackson's drinking water problems can be expected for CTO Alternatives D and E.

Dredge-fill proposals will expose vulnerable communities to extensive toxic contamination—thereby adding to the area's environmental injustices.

At least three highly contaminated Hazardous-Toxic-Radiological Waste (HTRW) sites, two Superfund sites, and three Hazardous Waste sites have been identified in or near the dredging footprint of Alternatives C, D, and E. Preliminary site assessments have only been done for three of these eight sites, but have found cadmium, lead, nickel, benzene, Polynuclear Aromatic Hydrocarbons (PAHs), and creosote compounds at levels well above regulatory standards (Main Report at 204). At one site that is an unpermitted landfill, soil borings found garbage at 3-34 feet deep. The incomplete assessment of these sites is a significant planning failure of the DEIS, and the consideration of any alternatives activities that may disrupt these areas should be suspended until a rigorous environmental assessment is completed.

Extensive dredging activities will re-suspend contaminated sediments at those sites and will expose Greater Jackson and downstream communities, fish, and wildlife to high levels of toxins. The DEIS also states that there will be probable exposure to toxic contaminants from HTRW sites within the ponded area at the inflow to J.H. Fewell Drinking Water Plant (Main Report at 179).

There is no plan proposed for how these contaminated sediments would be handled or remediated to prevent further transmission or exposure to the environment, wildlife, or the public. The Corps asserts that it is prohibited from undertaking HTRW work, passing all related HTRW responsibilities to the Non-Federal Sponsor, the Levee Board. These responsibilities include site assessments, necessary remediation, and associated costs with the ultimate goal of protecting the health of Jackson and downstream communities. Even so, it is the responsibility of a DEIS to demonstrate all potential risks of proposed alternatives—therefore the Corps cannot simply pass these serious responsibilities onto the Levee Board nor delay them until the PED or some undetermined future time.

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[3] Northside Sun, Moving Ahead: Final Public Comment Period For One Lake Coming Soon, 6/14/22 (available at https://www.northsidesun.com/local-content-top-stories/moving-ahead-final-public-comment-period-one-lakecoming-soon#sthash.bggohcen.dpbs)("Keith Turner, attorney for the Rankin-Hinds Pearl River Flood & Drainage Control District said . . . After funding is secured, the project will require three or four years of construction, and then several more years for developers to produce plans for the economic development component.")

Notably, the Levee Board has a track record of not prioritizing public health and taking these contaminated sites seriously. Their 2018 Draft Study had limited sampling, no remediation plan, and no roadmap to protect public health from exposure during and after dredging and fill placement. The true costs to clean up these sites are likely to be many tens of millions of dollars—well above the paltry $8 million in remediation costs that the Levee Board estimated in their 2018 Draft Study.

The serious toxic contamination issues associated with Alternatives C, D, and E warrant rigorous attention and study, and as presented in the DEIS, these proposals should be rejected and not receive any further consideration.

Alternatives C, D, and E will worsen environmental injustices by exacerbating flooding in underserved Jackson neighborhoods and downstream communities.

Many of the flooding impacts experienced in the Greater Jackson area are attributed to rain-induced flash flooding, particularly those neighborhoods located along the 12 creeks that flow into the Pearl River. These neighborhoods are predominantly low-income communities of color. Alternatives C, D, and E will result in permanently elevating 9-10 miles of the Pearl River, resulting in impeding flow, backing up water into the tributaries, and increasing flooding to underserved neighborhoods. Not only will these alternatives further exacerbate localized flash flooding, they will increase underserved neighborhoods' vulnerability to backwater flooding from high river events while also magnifying flood risk from rain events in the upper reaches of the tributaries that ultimately flow into the now-elevated creek channels.

The Levee Board's 2018 DEIS notes that One Lake will not protect against local creek flooding, and in fact states that the One Lake impoundment will permanently elevate water levels in all 12 Pearl River tributaries. The aforementioned Corps' August 2023 PowerPoint presentation to the Levee Board noted that One Lake would induce flooding on 230 structures within the study area and potentially many more structures south from the 5 year to the 500-year event. The DEIS's limited analyses states that One Lake Alternative C will "induce flooding on approximately 220 structures within the study area and potentially more structures south of the study area" (Main Report at 134). The DEIS also states that One Lake will cause potential induced flooding from a 100-year storm event to 83 structures in the study area, all of which are located in environmental justice neighborhoods that are recognized as federally-designated "disadvantaged communities" (Main Report at 223).

Alternative D, for example, would create a permanent lake that would be six feet higher in elevation than the current river (Main Report at 127), which will result in impeding flow, backing up water into the tributaries, and increasing flooding for adjacent neighborhoods. The DEIS's limited analyses indicate that Alternatives D and E will induce downstream flooding for at least 52 structures (Main Report at 224). Of the 52 structures impacted, 43 are homes. Many of these structures are located in environmental justice-based "disadvantaged communities" and will receive first floor flooding of 5 inches or more caused by Alternative D. These structural numbers are at odds with the DEIS's assumption that during high flows water levels with or without the weir/dam are assumed to be the same (Main Report at 173) such that induced flooding downstream from Alternatives D and E "are considered to be the same as Alternative C, given the similarity of the results just downstream of the project area" (Main Report at 176). These fundamental discrepancies in the DEIS should be addressed.

Furthermore, the DEIS contains no information about the total number of structures from the 5-year to the 500-year event that will receive induced flooding caused by Alternatives D or E. This omission leaves out crucial information and makes it impossible for reviewers to fully evaluate the project harms.

Finally, permanently elevated water levels in the Pearl and the increased tributary flooding will also add to the City of Jackson's many stormwater permit violations. Urban stormwater flooding already affects mainly EJ neighborhoods, such as those located along Town Creek and Lynch Creek.

In summary, the DEIS's hydrologic modeling wrongly fails to incorporate the Pearl River's tributaries, assess downstream impacts, provide a full scope of structural impacts, and assess stormwater loading—all of which are essential components to understand Alternative C, D, and E's full suite of impacts.

Alternatives C, D, and E have a staggering array of unknown and hidden costs.

Despite missing the required economic analysis, the limited details provided in the DEIS point to Alternatives C, D, and E being economically unfeasible. Notably, the cost-benefit analyses appear slanted and intentionally incomplete in such a way as to dismiss Alternative A1 and justify Alternative D as the preferred approach.

The DEIS acknowledges that the estimated costs are based on many poorly substantiated assumptions while noting that there is an array of unknown, or hidden, costs that are to be determined during the Planning, Engineering, and Design (PED) phase. This biased assessment, especially for a project of this size and scale, is woefully beyond reproach.

These many missing costs imply that the true dollar-costs of Alternatives C, D, and E are vastly underestimated. The local cost share borne by the Levee Board will go up astronomically in addition to annual management and operations costs—costs that ultimately will be passed onto Mississippi taxpayers.

Unaccounted costs include:

- Habitat and other environmental mitigation.
- Site assessments and remediation of eight HTRW sites along with a plan to protect public and environmental health.
- Outlays to provide a "temporary" drinking water supply for 3+ years.
- Bridge countermeasures and replacements. The Mississippi Department of Transportation's assessment of the Levee Board's 2018 Draft Study found dredging would result in "catastrophic failure" of critical infrastructure, thereby requiring the replacement of nine bridges. Back-of-envelope estimates in 2018 estimated that this would add nearly $110 million to the project cost.
- Relocating at least 4-5 utility transmission lines.
- Countermeasures or relocation of existing railroad lines.

- Extra costs involved in building a weir whose scale and proportions are more akin to a dam.

- Because Alternative D's primary goal is to provide recreation by installing a dam rather than flood protection, federal law requires this component to be economically justified and bear a 50-50 cost share by the Levee Board as the Non-Federal Interest.

Public safety modeling is incomplete for Alternatives C, D and E.

Despite Corps and Levee Board references that Alternatives C or D propose installing a weir, the structural scale and resulting creation of 2,562-acre and 1,706-acre lakes, respectively, suggest that these should be considered dams—and dams require much more rigorous design standards and safety protocols to protect the public. In fact, the Corps' Agency Technical Review completed on the Levee Board's 2018 Draft Study clarifies that One Lake's purported weir is in fact a dam. (ATR Report June 2020 at 80) Alternative E, too, will result in creating a 1,706-acre lake. Furthermore, the Ross Barnett Reservoir and Spillway located just north of the project area is a major upstream influence that adds to the complexity of Alternatives C, D, and E, and necessitates comprehensive analyses.

Regarding the required levee safety risk analysis, the DEIS states, "A risk assessment was not completed or documented in any of the completed feasibility reports to understand the life safety risks for any of the proposed alternatives for this project." (DEIS Appendix E at 115) The DEIS modeling has not assessed what structures or areas of local and downstream communities would be impacted.

In addition, the DEIS acknowledges that its limited evaluation was constrained by the available information and lack of time. This resulted in only four pool loading analyses done for Alternative C only, the parameters and assumptions of which are unclear. No assessment of Alternative D or E was completed, and the DEIS indicates assessment would need to be completed in later phases. This limited approach and resulting insufficient analyses are unacceptable, and Alternatives C, D, and E should receive no further consideration until these are complete.

DEIS Alternatives C, D, & E Pose Serious, Irreparable Damage to Birds, Wildlife, & Their Habitats

The DEIS is missing crucial environmental information required by law to adequately assess the impacts of Alternatives C, D and E, including but not limited to a habitat mitigation plan and sedimentation study, and for Alternatives D and E a Biological Opinion and Fish & Wildlife Coordination Act Report. In spite of these major failings, it is clear that these three alternatives pose significant, irreversible damages—directly, indirectly, and cumulatively—to the Pearl River Basin habitats and resources, and the fish and wildlife that rely on them, including several species listed under the Endangered Species Act. Ecological impacts are not only limited to the proposals' immediate footprints, but also to the 200 river-miles of ecological resources located downstream as well as Mississippi Sound, coastal Louisiana, and the Gulf of Mexico.

These three alternatives will forever directly alter 9-10 river miles and destroy at least 2,000-3,000 acres of wetlands and other habitats that support hundreds of species of birds, fish, and wildlife, including several federally listed species such as the Gulf sturgeon, Ringed sawback turtle, and recently listed

Pearl River map turtle. Several state listed endangered species regularly use the project area, including Swallow-tailed Kite (*Elanoides forficatus*) and Wood Stork (*Mycteria americana*).[4]

Audubon's abundance modeling analysis estimated that at least 32 million birds depend on the central-lower Pearl River Basin annually.[5] These stunning findings reinforce the Pearl River Basin as a major ecologic lynchpin of the Mississippi Flyway, providing hemispherically important habitat for many migrating, resident, and overwintering bird species. Complete details of Audubon's analysis are provided in Appendix A. Audubon contends that not only will dredging and damming activities have direct impacts to vital bird habitat in the footprint of Alternatives C, D, E, but these irreversible actions will have many consequent—and just as direct—impacts to birds' health through hydrologic disruptions and habitat deterioration.

Audubon's evaluation determined that the central and lower Pearl River Basin supports >1% of the North American population for 11 conservation priority bird species during at least one phase of their life cycle (Table 1). Little Blue Heron (*Egretta caerulea*), Snowy Egret (*Egretta thula*), Tricolored Heron (*Egretta tricolor*), Prothonotary Warbler (*Protonotaria citrea*), and Rusty Blackbird (*Euphagus carolinus*) are sensitive to variations in water levels, such that altering natural hydrological cycles of the Pearl River by Alternatives C, D, and E would negatively impact to their populations. The other species listed would be affected through changes in forest stand composition and density driven by changes to the hydrologic regime of the watershed.

The DEIS lists federally proposed and candidate species, however, it fails to include the Golden-winged Warbler, which is a candidate species. The Golden-winged Warbler is a migratory species through the project area and utilizes a variety of primary and secondary upland deciduous and mixed forests during migration. Audubon's analysis estimates that 2% of the global population use the Pearl River Basin during fall migration.

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[4] Mississippi Museum of Natural Science (2014). *Endangered Species of Mississippi.* Mississippi Department of Wildlife, Fisheries, & Parks, Mississippi Museum of Natural Science, Jackson, MS *(available at https://www.mdwfp.com/media/3231/endangered_species_of_mississippi.pdf)* (visited June 22, 2023).

[5] Meehan, T., and E.I. Johnson. 2023. Migratory bird use of the Pearl River basin. National Audubon Society, New York, NY. (Provided in Appendix A)

Table 1. Species of Greatest Conservation Need, identified by the 2014 Mississippi State Wildlife Action Plan (SWAP)[6], their NatureServe S-Ranking (1 is higher conservation priority than 5), and the proportion of the North American (NA) population supported by the Pearl River Basin during the peak season.

Species	MS SWAP S-Rank	Proportion of NA Population and Season
Little Blue Heron	S2B, S2N	4.1% - Fall
Snowy Egret	S4B, S1N	1.8% - Fall
Tricolored Heron	S2B, S1N	2.3% - Fall
Chuck-will's-widow	S4B	3.4% - Spring
Wood Thrush	S5B	2.6% - Spring
Golden-winged Warbler	ESA Candidate	2.0% - Fall
Kentucky Warbler	S5B	4.1% - Spring
Worm-eating Warbler	S3B	9.7% - Spring
Swainson's Warbler	S3, S4B	2.9% - Summer
Prothonotary Warbler	S5B	1.6% - Summer
Rusty Blackbird	S2	1.3% - Winter

In addition to 11 conservation priority species, Audubon's analysis demonstrates a disproportionate importance of the Pearl River Basin for six other native bird species, where at least 5% of their North American population is supported (Table 2).

Table 2. Species in which the Pearl River supports >5% of their North American (NA) population.

Species	Proportion of NA Population and Season
Broad-winged Hawk	15.7% - Fall
Tree Swallow	11.4% - Fall
Fish Crow	8.4% - Spring
Yellow-throated Vireo	6.4% - Spring
Summer Tanager	5.6% - Spring
Northern Parula	5.4% - Spring

The DEIS's Main Report provides only a few brief paragraphs on non-ESA listed birds and wildlife, which reflects a lack of understanding of the critically important role in the Pearl River Basin supporting biodiversity and Mississippi and Louisiana's natural heritage. In addition, the Main Report includes a significant number of inaccurate and baseless habitat and wildlife-related statements that signal the document is framed so as to downplay the impacts of Alternatives C, D, and E on fauna. Rather, the DEIS is prepared in such a way as to intentionally divert blame away from the impacts of these alternatives, which is the exact opposite of what a DEIS is supposed to accomplish. Examples include:

[6] Mississippi Museum of Natural Science (2014). *Endangered Species of Mississippi.* Mississippi Department of Wildlife, Fisheries, & Parks, Mississippi Museum of Natural Science, Jackson, MS *(available at https://www.mdwfp.com/media/3231/endangered_species_of_mississippi.pdf)*.

- "Many migratory birds (other than wading/water birds and shorebirds) are opportunistic nesters and would nest in trees, shrubs, building overhangs, house gutters, etc." (Main Report at 46).
    - Audubon suggests that this statement should be removed because each species has a very unique and specific set of needs for nest placement that includes patch/landscape-level, territory-level, and nest-level habitat requirements, i.e., that the vast majority of species do not nest "opportunistically" and instead have very specific niches refined through millions of years of evolution. Of the 220 bird species that Audubon modeled, only seven are native species that nest on building overhangs, house gutters, and other human structures (i.e., Cliff Swallow, House Finch, Eastern Phoebe, American Robin, Carolina Wren, Chimney Swift, and Barn Swallow).

- "Direct and indirect impacts to wildlife from [Alternative CTO without Weir (Alternative E)] are anticipated to be minor to moderate in intensity and potentially long-term in duration….The wildlife dependent on riverine system ecology would not be impacted as the Pearl River would continue to function as a riverine system except in high water events. This would not be much different from the current conditions during high water events and the impacts would be temporary and to a much lesser extent than with a weir. Access to wildlife habitat within the Project Area would not be significantly impacted as most species are highly mobile and could migrate into the adjoining habitats not directly impacted by project implementation…." (Main Report at 152).
    - This claim that Alternative E would have little to no impacts on riverine-dependent wildlife is clearly not supported by the scientific literature. Also the DEIS should analyze –but does not—wildlife impacts from low and high water events. Appendix C via Pringle et. al (2001) provides an excellent review of how alterations to hydrology have direct and indirect impacts of ecological integrity. Further, it is preposterous to assert that most wildlife in the project area could simply move out of the way, way, especially given the scope and scale of adverse impacts. Fundamental ecological principles of density dependence, carrying capacity, and competition have been well accepted and understood for decades, and clearly refute this assertion. Again, a lack of ecological and wildlife management expertise—which has introduced biases against A1 as we detailed above—by the DEIS preparers is evident here as the term "migrate" in an ecological context is defined by the scheduled and predictable departure *and* return of an organism between two distinct areas. Construction and loss of habitat from the point of view from wildlife is scheduled nor predictable. Finally, if this assertion were true, development-induced habitat loss would not be the leading cause of population declines for the majority of birds and other wildlife.[7]

- The DEIS asserts, "Without action, wetlands within the Project Area (including the historically dominant bottomland hardwood habitat) would likely decline as a result of ongoing

[7] Rosenberg, K.V., A.M. Dokter, P.J. Blancher, J.R. Sauer, A.C. Smith, P.A. Smith, J.C. Stanton, A. Panjabi, L. Helft, M. Parr, P.P. Marra. 2019. Decline of the North American avifauna. *Science* 366: 120–124. (Provided in Appendix D)

urbanization and changing river conditions…Without changes in flood control management, these impacts would be expected into the future" (Main Report at 146).

  - Not only does the DEIS fail to quantify "changing river conditions" but illogically suggests that a flood control project is needed to stem wetland losses in the Pearl River when it is known that Alternatives C, D, and E will only further habitat loss by promoting new development in the floodplain and adjacent areas. These alternatives contribute to the very same problem that has caused much of the flooding woes and habitat loss now experienced in Greater Jackson.

- Throughout its habitat and wildlife discussions, the DEIS makes hypothetical predictions about factors well beyond its scope of interpreting conditions affected by a flood plan. These inappropriate examples include DEIS assertions that impacts from both CTOs add to "impacts that have occurred over time and are expected to continue" and the spread of feral hogs (Main Report at 147 and 151, respectively).

- The DEIS makes broad statements that declines in ESA listed and protected species would likely continue regardless of whether Alternative A1, C, D, E, or "No Action" is selected. Not only should FWS—not the Corps—ultimately make these determinations for Alternatives D and E through Biological Opinion and FWCA reports, but the DEIS inappropriately asserts that these alternatives are all created equal in their impact (Main Report at 153-167). In its review of the Levee Board's 2018 Draft Study, FWS concluded that One Lake Alternative C "is the most environmentally damaging plan" to which both CTOs are quite similar.

- The DEIS fails to recognize the importance of habitat and state-level population impacts from Alternatives C, D, and E to several breeding conservation priority species that the Pearl River supports >1% of their global populations, namely, the Kentucky Warbler, Swainson's Warbler, and Prothonotary Warbler, among others (Table 1).

- The DEIS fails to explain how acres were converted to Average Annual Habitat Units (AAHUs), especially with regards to "Table 5-2 Impacts to be Mitigated Based on IMT Assumptions"; this detail is critical to understanding the mitigation requirements being considered (Main Report at 232). Also, Alternatives C, D, and E will directly impact hundreds to thousands of acres of river bottoms yet riverine AAHUs have not been calculated, even at a basic level. These omissions further demonstrate how this document is not an adequate, let alone comprehensive, DEIS.

Audubon is deeply concerned about and objects to the DEIS deferring mitigation plans and cost estimates to the PED phase. One Lake Alternative C will require at least 24,760 acres of habitat mitigation, while each CTO will require at least 10,762 acres of habitat mitigation. These staggering figures warrant serious detailed analysis in the DEIS. Yet the Corps defers any such analysis until the PED phase, making it impossible to fully assess the environmental impacts of these alternatives and their anticipated mitigation costs—for which the Corps is legally obligated to do so.

Audubon believes it is highly unlikely, if not inconceivable, that in-kind mitigation exists to fully compensate for unavoidable habitat impacts from these alternatives. This is especially relevant for

dynamic, functioning habitats like the Pearl's riverine/riparian system where the river flow itself provides a crucial ecosystem function that is irreplaceable.

We find it alarming that, "The mitigation strategies and locations of riverine mitigation have not yet been identified" (Main Report at 233). In fact, the aforementioned Corps' PowerPoint presentation to the Levee Board in August 2023 agreed that it is not possible to replace the extensive wetland and riverine habitat acreage that would be destroyed by One Lake Alternative C. The Corps acknowledged "experts agree" that it is "impossible" to restore or compensate for large-scale ecosystem losses like One Lake. Alternatives D and E are expected to have the same challenges given their similarity to One Lake.

Also notable is that a conversion of habitat to emergent wetlands or bottomland hardwood forest alone does not restore the lost ecosystem functions, nor habitat for several ESA species (i.e., Gulf sturgeon, Ringed sawback turtle, Pearl River map turtle, Louisiana pigtoe [*Pleurobema riddellii*]). Any proposed mitigation plan would have to account for long-term degradation of the central-lower Pearl River system and also should recognize that mitigation for existing bottomland hardwood forest takes decades of regeneration.

There are strong examples in the scientific literature that demonstrate where mitigating riparian habitat resulted in an incomplete offset of ecosystem functions, even when required acreages could be attained. "[I]n the USA…the outcomes frequently fall short of the target of a 'like for like' swap of habitat," per Burgin (2010).[8] Theis et. al (2019) found, "results suggest compliance cannot be treated as equivalent to ecosystem function…" and "Offsetting functionality is also system dependent…"[9]

The Pearl River is a vital source of freshwater and sediment for downstream habitats, Mississippi Sound, southeast Louisiana, and the Gulf of Mexico. Much of the central-lower Pearl is comprised of vast stretches of bottomland hardwood forests and wetlands that require a specific and frequent hydrologic regime to provide the appropriate balance of nutrients, sediments, and freshwater to remain healthy and productive.

Altering the quality or functions of downstream habitats, some of which is expected to result in habitat loss, from these three alternatives will have significant consequences on the foraging, nesting, and breeding needs of tens of millions of birds that annually depend on the central-lower Pearl River ecosystem. The population-level importance of the Pearl River Basin ranges from providing critical stopover habitat for Neotropical migratory birds to coastal foraging habitat that supplies oysters, fish, shrimp, crabs, insects, small mammals and other aquatic/terrestrial vertebrates and invertebrates as well as plants.

The potential for altered upstream flows to impact bird foraging habitat, as well as the broader food web, is demonstrated by a scientific paper that examined how droughts can alter river and tributary

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[8] Burgin, S. 2010. 'Mitigation banks' for wetland conservation: a major success or an unmitigated disaster? *Wetlands Ecology and Management* 18:49–55. (Provided in Appendix E)

[9] Theis, S., J.L.W. Ruppert, K.N. Roberts, C.K. Minns, M. Koops, and M.S. Poesch. 2019. Compliance with and ecosystem function of biodiversity offsets in North American and European freshwaters. *Conservation Biology* 34(1):41-53. (Provided in Appendix F)

inputs into Mississippi Sound and result in dramatically changing the fish community structure.[10] Of the eight species studied, researchers found "…the abundance of seven species significantly decreased while the abundance of one species significantly increased." The DEIS fails to assess or consider such consequences.

Additionally, more than 125,000 acres of public-private conservation located below the three alternatives' footprint provide important bird and wildlife habitat, such as Bogue Chitto National Wildlife Refuge, Hancock County Coastal Preserve, Pearl River Wildlife Management Area, Ben's Creek Wildlife Management Area, Marion County Wildlife Management Area, Old River Wildlife Management Area, and the 87-acre Fischer Wildlife Sanctuary that is owned and managed by Orleans Audubon Society, a local Audubon chapter. These conservation lands also serve as a major economic engine through consumptive and non-consumptive uses such as hunting, fishing, bird watching, and nature tourism.

Alternatives C, D, and E will result in permanently altering the Pearl River flows, thus forever changing its downstream hydrology, sediment transport, water quality, and ability to support the fresh-salt water interface critical to a rich Gulf estuary—the DEIS's modeling fails to thoroughly assess these impacts. The DEIS also fails to assess the economic consequences to communities that currently benefit from outdoor recreational activities.

For example, the limited modeling in the DEIS completely ignores low-flow or drought conditions on the Pearl River that are known to exacerbate evaporation losses and amplify low water conditions downstream. The DEIS also fails to assess how Alternatives C, D, and E will interact with the Ross Barnett Reservoir during low and high flow conditions.

Notably, the Pearl's central and lower basin wetland habitats provide local communities with crucial buffering protection from flash flooding, high river, and coastal storm events. The DEIS does not—but should—assess this anticipated loss of functioning wetlands and floodplain habitats and the resulting increased storm surge and flooding to Greater Jackson neighborhoods, downstream communities, and central Gulf Coast.

Finally, Audubon has had a long-standing involvement in efforts to restore the Mississippi River Delta and in guiding Gulf recovery efforts from the 2010 Deepwater Horizon oil disaster. The three alternatives jeopardize the multi-billion dollar natural infrastructure investments and restoration projects planned or underway across the central Gulf Coast. Because the Pearl River is a major source of sediment for coastal Louisiana and the central Gulf, a sedimentation analysis is essential to any dam or dredge proposal. The lack of a sedimentation study for Alternatives C, D, and E make it impossible to assess their short and long-term impacts on these vital restoration projects, and as such, these alternatives should be rejected.

Audubon's well-founded, scientifically supported concerns about habitat impacts outlined above also include sites throughout the Pearl watershed that are recognized as Important Bird Areas (IBAs). An IBA is an area that has been identified using an internationally agreed to set of criteria as being globally important for the conservation of bird populations; Audubon administers this program in the U.S. IBAs

[10] Mickle, P.F., J.L. Herbig, C.R. Somerset, B.T. Chudzik, K.L. Lucas, and M.E. Fleming. 2018. Effects of annual droughts on fish communities in Mississippi Sound estuaries. *Estuaries and Coasts* 41: 1475-1485. (Provided in Appendix G)

that are directly imperiled by Alternatives C, D, and E include Hancock County Marsh Coastal Preserve (MS), East Delta Plain (LA), and Pearl River (LA, nominated).

LeFleur's Bluff State Park is located in Jackson and is recognized as an IBA due in large part to the decades-long effort by our local chapter, Jackson Audubon Society, to steward and manage the park's habitat as a premier nesting area for Prothonotary Warblers a species of high conservation concern as noted above. All three alternatives propose dredging some of the park's most pristine and important habitat; Alternative D alone would impact 78 acres from excavation and lake creation. Audubon considers impacts to IBAs unacceptable. Also, it is illogical that Alternative D, whose primary goal is to create recreational opportunities, would significantly reduce the size of the City of Jackson's only urban state park that provides vital public access to the Pearl River.

Further Pursuit of Alternatives C, D, & E would Violate Federal Laws

The Corps asserts that it will wait until a future time during the pre-construction, engineering, and design (PED) phase to complete a feasibility study and environmental review. NEPA and WRDAs, however, require the Corps to do exactly the opposite before it can recommend Alternative D or E for construction. The Corps also must comply with all federal laws, including the Clean Water Act, Endangered Species Act, and Fish and Wildlife Coordination Act, before recommending Alternative D or E for construction. To do this, the Corps would have to initiate a fundamentally new planning process. Further, as noted in the DEIS and Commander's Report, Alternatives D or E are not authorized, and would at least need Congressional approval for reauthorization and cost approval. The Corps expressed timeline to issue a final EIS and Record of Decision by December 2024 does not allow for these many required and necessary steps.

Given the lack of substantive information provided on the impacts of Alternatives C, D, and E, and that numerous studies and reviews that will not be made available to the public until after the Corps has selected its preferred alternative and moved into the PED phase (see list below), Audubon contends that this document is in fact not a true DEIS but a low-level feasibility study. The serious environmental threats, as well as concerns we have raised relative to public health and safety, warrant a thorough science-based assessment now, not the Corps' unlawful dismissal to complete these studies at some future time. As such, this DEIS flouts science, law, and meaningful review by the public, natural resource agencies, and concerned stakeholders.

The DEIS is missing numerous analyses, which include, but are not limited to, the following:

1. Mitigation Plan
2. Mitigation Needs
3. Formal ESA consultation on Alternatives D and E
4. FWCA recommendations on Alternatives D and E
5. Substantive discussion on non-ESA bird, fish, and wildlife impacts
6. Impacts to plant species
7. Clean Water Act 404(b)(1) analysis
8. Water quality impacts including stormwater loading

9. Water supply impacts
10. HTRW site assessment
11. Impacts of Alternatives D and E on tributary flooding
12. Velocity analyses
13. Impact of Alternative D weir at high river flows
14. Sedimentation study
15. Sediment analysis and management plan
16. Impacts of river dredging in Alternatives D and E
17. Borrow Area analysis for suitability
18. Explanation of why alternative non-structural plans were set aside
19. Consideration of nature and nature-based measures as required
20. Impact of wetland and floodplain habitat losses in the lower Pearl River Basin on storm surge to coastal Mississippi and Louisiana
21. Economics details or appendix
22. Determination of whether the Alternative D weir is a high hazard dam (Note: One Lake Alternative C dam is considered high hazard)
23. Analysis of "potential life safety impacts" for CTO Alternatives D and E
24. Agency Technical Review

A Comprehensive Watershed Study Is Needed

The DEIS and Commander's Report note, "A comprehensive watershed study of the Pearl River is necessary to fully understand the basin's hydrology, hydrodynamics, and ecosystem. The scope of the study should be from the headwaters to the terminus at the Gulf of Mexico" (Main Report at 235; Commander's Report at 12). While authorization through a Water Resources Development Act would be required, Audubon supports a complete watershed study of Pearl River. We believe such a study is long overdue given the breadth of basin's biodiversity and ecological value, the complexity of threats and stressors it faces, and its significance to communities and the regional economy.

In conclusion, Audubon is wholly opposed to DEIS Alternatives C (One Lake), D and E, and we respectfully ask the Corps to protect the Pearl River, its ecological resources, local and downstream communities, and the regional economy, by rejecting these ill-conceived, destructive proposals. Instead, we urge the Corps to pursue DEIS Alternative A1 and critically, to expand it to incorporate more non-structural flood measures in combination with nature-based and selective structural approaches that can deliver effective, environmentally sensitive relief to those who need it in the Greater Jackson area while protecting the Pearl River Basin's ecology, wildlife, and downstream communities.

Please contact Jill Mastrototaro, Audubon Delta's Mississippi Policy Director at jill.mastrototaro@audubon.org or (504) 481-3659 with questions or for more information.

Sincerely,

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Attachments

Appendix A:

Audubon Bird Abundance Analysis for the Central-Lower Pearl River

Meehan, T., and E.I. Johnson. 2023. Migratory bird use of the Pearl River basin. National Audubon Society, New York, NY.

In 2023, Audubon completed an abundance analysis that scientifically and unequivocally substantiates the importance of a healthy Pearl River to 220 breeding, wintering, and migrating bird species. Audubon developed this model analysis and a summary of this peer-reviewed methodology is provided in Figure 1, below. Audubon's analysis focused on 220 bird species with a reasonable potential to use the selected study area and that were reasonably represented in the eBird database. Our analysis estimated that **a minimum of 32 million birds depend on the central-lower Pearl River Basin for nesting and migration.**

Specifically, our analysis found that over 17 million birds during spring migration and more than 28 million birds during fall migration use this region of the basin annually. Additionally, our analysis found over 4.3 million breeding birds use the area during the summer, and the area supports more than 13.2 million wintering birds. Generally, spring migration is April – May, breeding season is June – July, fall migration August – October, and nonbreeding season (i.e., wintering) is November – March.

The study area selected for this analysis is shown in Figure 2 and includes three HUC-8 watersheds with ID numbers 03180002, 03180003, and 03180004. These HUCs are a combined total of 3,212,612 acres and include the footprint of the proposed One Lake project and the 200-miles of river that would flow below the proposed dam. The total number of birds using this area during different seasons, along with standard errors of the estimates, are provided in Table 1 and depicted in Figure 3.

Audubon's findings substantially reinforce long-standing assessments made by natural resource agencies, scientists, conservation groups, and many others that the Pearl River is a major ecologic lynchpin of the Mississippi Flyway, providing hemispherically significant habitat for many migrating, overwintering, and resident birds.

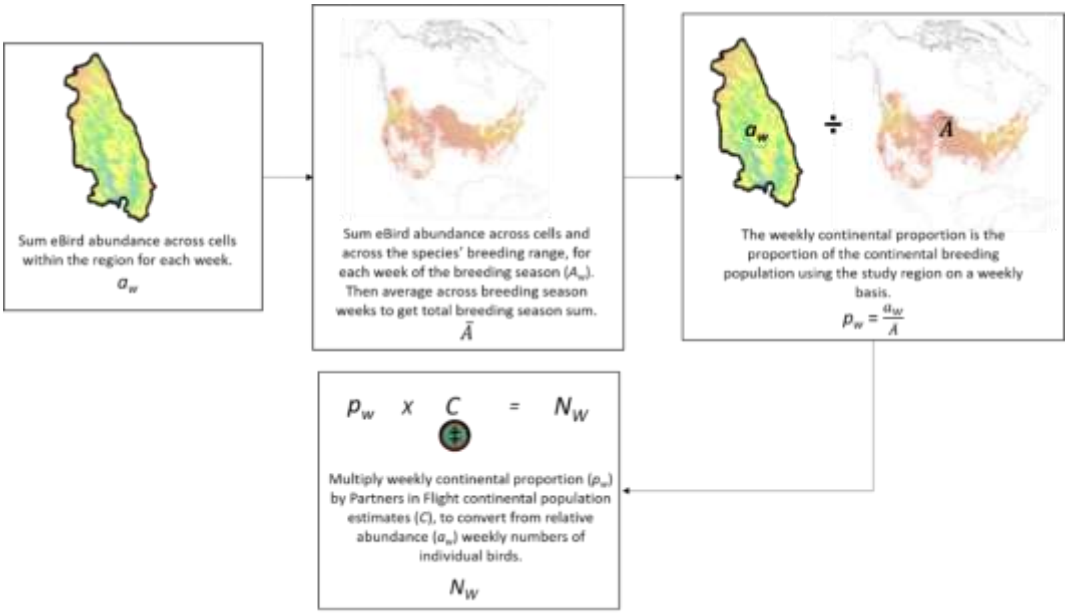

Figure 1. Illustration of the methodology developed by Audubon for its eBird abundance analysis, which was first completed for the Colorado River Delta and California's Central Valley and published as DeLuca, W.V., Meehan, T., Seavy, N., Jones, A., Pitt, J., Deppe, J.L. and Wilsey, C.B., 2021. The Colorado River Delta and California's Central Valley are critical regions for many migrating North American landbirds. *Ornithological Applications*, 123(1). This serves as a graphical and mathematical description of the process Audubon used to go from the weekly eBird abundance raster surface in the Sacramento study region to an estimate of total number of individual birds using the region for a given week.

Figure 2. The Pearl River Basin study area used in Audubon's analysis (purple) includes three HUC-8 watersheds with ID numbers 03180002, 03180003, and 03180004.

Table 1: The number of individual birds using the Pearl River study area across the four seasons.

Season	Total Type	Estimated Number	Standard Error
Spring	Migrants only	17,030,639	396,597
Fall	Migrants only	28,037,479	774,366
Summer	Breeding birds	4,317,259	62,639
Winter	Wintering birds	13,276,935	202,754

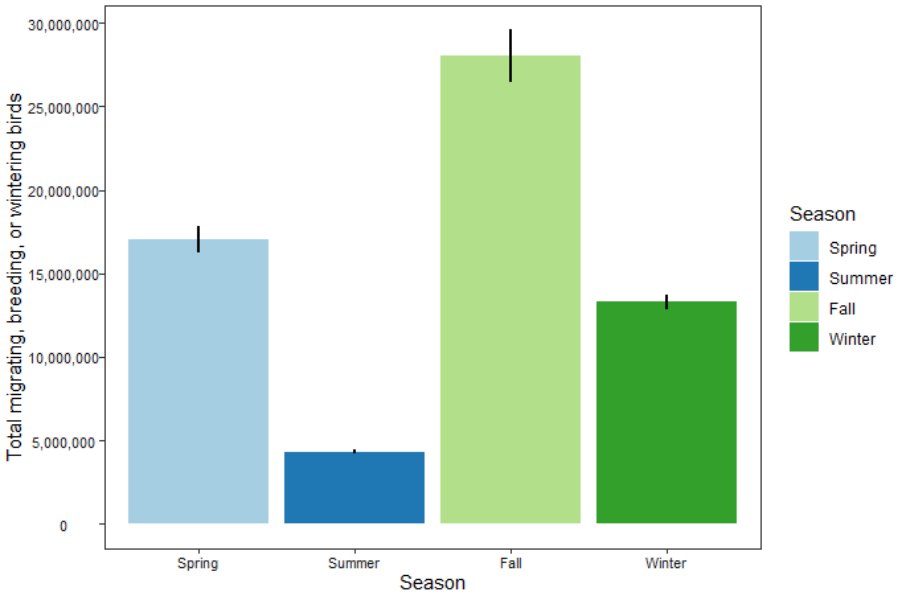

Figure 3. The total number of migrating, breeding, and wintering birds that annually use the Pearl River study area across the four seasons. Generally, spring migration is April – May, breeding season is June – July, fall migration is August – October, and nonbreeding season (i.e., wintering) is November – March.

Audubon evaluated population estimates of birds from the Pearl River Basin analysis in comparison to the United States and Canada (hereafter "North American", for convenience) population for Species of Greatest Conservation Need (SGCN) identified in Mississippi's State Wildlife Action Plan (SWAP), and noted that the Pearl River Basin supported >1% of the North American population during at least one season for 11 SGCN species (Table 2). Many of these species are sensitive to variations in water levels, such that altering natural hydrological cycles of the Pearl could have direct negative impacts to their populations. These species include Little Blue Heron, Snowy Egret, Tricolored Heron, Prothonotary Warbler, and Rusty Blackbird. The other species listed would be indirectly affected, through changes in forest stand composition and density driven by changes to the hydrologic regime of the watershed.

Table 2. Species of Greatest Conservation Need, identified by the 2014 Mississippi State Wildlife Action Plan (SWAP)[11], their NatureServe S-Ranking (1 is higher conservation priority than 5), and the proportion of the North American (NA) population supported by the Pearl River Basin during the peak season.

Species	MS SWAP S-Rank	Proportion of NA Population and Season
Little Blue Heron	S2B, S2N	4.1% - Fall
Snowy Egret	S4B, S1N	1.8% - Fall
Tricolored Heron	S2B, S1N	2.3% - Fall
Chuck-will's-widow	S4B	3.4% - Spring
Wood Thrush	S5B	2.6% - Spring
Golden-winged Warbler	ESA Candidate	2.0% - Fall

[11] Mississippi Museum of Natural Science (2014). *Endangered Species of Mississippi.* Mississippi Department of Wildlife, Fisheries, & Parks, Mississippi Museum of Natural Science, Jackson, MS *(available at https://www.mdwfp.com/media/3231/endangered_species_of_mississippi.pdf)*.

Kentucky Warbler	S5B	4.1% - Spring
Worm-eating Warbler	S3B	9.7% - Spring
Swainson's Warbler	S3, S4B	2.9% - Summer
Prothonotary Warbler	S5B	1.6% - Summer
Rusty Blackbird	S2	1.3% - Winter

In addition to conservation priority species, our analysis demonstrates a disproportionate importance of the Pearl River Basin for six other native bird species, where at least 5% of their North American population is supported (Table 3).

Table 3. Species in which the Pearl River supports >5% of their North American (NA) population.

Species	Proportion of NA Population and Season
Broad-winged Hawk	15.7% - Fall
Tree Swallow	11.4% - Fall
Fish Crow	8.4% - Spring
Yellow-throated Vireo	6.4% - Spring
Summer Tanager	5.6% - Spring
Northern Parula	5.4% - Spring

In summary, Audubon's findings demonstrate the population-level importance that central-lower Pearl River ecosystem has in supporting the health and survival of tens of millions of birds that annually use the area impacted by DEIS Alternatives C, D, and E.

Appendix B:
Natural Infrastructure Success Stories

The projects highlighted below used natural infrastructure solutions—including ecosystem restoration, levee setbacks, and voluntary relocations—to protect communities and the environment.

Notably, wetlands prevented $625 million in flood damages in the 12 coastal states affected by Hurricane Sandy and reduced damages by 20% to 30% in the four states with the greatest wetland coverage. During Hurricane Katrina, coastal wetlands reduced storm surge in some New Orleans neighborhoods by two to three feet, and levees with wetland buffers had a much greater chance of withstanding Katrina's fury than those levees without wetland buffers.

In the **Gulf Coast regions of Texas, Louisiana, Mississippi, and Florida**, nature-based solutions to reduce coastal flood risks are significantly more cost effective than structural solutions. A 2018 study shows that in this region, the average benefit-cost ratio for nature-based solutions is 3.5 while levees and dikes have a negative benefit-cost ratio of 0.26. Restoring wetlands could *prevent $18.2 billion in losses* while costing just $2 billion to carry out. Spending $1.3 billion to restore oyster reefs could *prevent $9.7 billion in losses*. Spending $1.2 billion to restore barrier islands could *prevent $5.9 billion in losses*.[i]

In **southern California**, the Surfers' Point Managed Shoreline Retreat Project will restore is restoring 1,800 feet of shoreline with cobble beach and vegetated sand dunes east of the mouth of the Ventura River to "provide resilience and offset risk from sea level rise and storms for 50 years" while maintaining beach access and other coastal resources. Since the project began, Surfers' Point has become Ventura County's most visited beach. Even with only one of two phases completed, the restored beach and dunes withstood 2015-2016 winter high wave conditions without damage, while other locations such as the Ventura Pier and promenade were damaged and the Pierpont neighborhood east of the project site was inundated.[ii]

In **northern California**, the Napa Valley Flood Control Project is using a community-developed "living river" plan to reduce flood damages along the flood-prone Napa River. This plan replaces the Corps' originally proposed floodwalls and levees with terraced marshes, wider wetland barriers, and restored riparian zones. The Project will restore more than 650 acres of high-value tidal wetlands of the San Francisco Bay Estuary while protecting 2,700 homes, 350 businesses, and over 50 public properties from 100-year flood levels, saving $26 million annually in flood damage costs.[iii] Though only partially complete, the project was credited for lowering flood levels by about 2 to 3 feet during the 2006 New Year's Day flood.

In **Florida**, the Corps is using wetland restoration in the Upper St. John's River floodplain to provide important flood damage reduction benefits. The backbone of this project is restoration of 200,000 acres of floodplain, which will hold more than 500,000 acre-feet of water—enough to cover 86 square miles with 10 feet of water—and will accommodate surface water runoff from a more than 2,000 square mile area. The Corps predicts that this $200 million project will reduce flood damages by $215 million during a 100-year flood event, and provide average annual benefits of $14 million. This project was authorized by Congress in 1986 to reduce flood damages along the river.

In **Illinois**, a 2014 study conducted for the Chicago Wilderness Green Infrastructure Vision, found that natural systems are the least costly and most efficient way to control flooding. Wetlands in the seven-county Chicago metropolitan area provide an average $22,000 of benefits per acre each year in water flow regulation. This study also found that watersheds with 30 percent wetland or lake areas saw flood peaks that were 60 to 80 percent lower than watersheds without such coverage, and that preventing building in floodplain areas could save an average of $900 per acre per year in flood damages.[iv]

In **Iowa**, the purchase of 12,000 acres in easements along the 45-mile Iowa River corridor saved local communities an estimated $7.6 million in flood damages as of 2009. The easement purchase effort began after the historic 1993 floods when river communities in east-central Iowa recognized the need for a more effective approach to reducing flood damages.

In **Massachusetts**, a 1972 Corps study showed that upstream wetlands were playing a critical role in reducing flooding in the middle and upper reaches of the Charles River by storing millions of gallons of water and preventing $17 million each year in flood damages. This led the Corps to preserve 8,000 floodplain acres to ensure future flood storage, at a cost of just one-tenth of the structural project it had previously planned to build. Congress sanctioned this approach in 1974 when it authorized the Charles River Natural Valley Storage Area. These floodplain wetlands are credited with reducing major floods, including in 1979, 1982, and 2006. The Corps estimates that this project has prevented $11.9 million in flood damages while providing recreational benefits valued at between $3.2 and $4.6 million.[v]

In **New York**, restoration of wetlands and lands adjacent to 19 stream corridors in Staten Island "successfully removed the scourge of regular flooding from southeastern Staten Island, while saving the City $300 million in costs of constructing storm water sewers."[vi] Some 400 acres of freshwater wetland and riparian stream habitat has been restored along 11 miles of stream corridors that collectively drain about one third of Staten Island's land area. A 2018 study commissioned by the City of New York found that using "hybrid infrastructure" that combines nature, nature-based, and gray infrastructure together could save Howard Beach, Queens $225 million in damages in a 100-year storm while also generating important ecosystem services.[vii]

In **Oregon**, the Portland Bureau of Environmental Services restored 63 acres of wetland and floodplain habitat, restored 15 miles of Johnson Creek, and move structures out of high-risk areas to reduce flood damages in the Johnson Creek neighborhood. In January 2012, when heavy rainfall caused Johnson Creek to rise two feet above its historic flood stage, the restored site held the floodwaters, keeping nearby homes dry and local businesses open. An ecosystem services valuation of the restored area found that the project would provide $30 million in benefits (in 2004 dollars) over 100 years through avoided property and utility damages, avoided traffic delays, improved water and air quality, increased recreational opportunities, and healthy fish and wildlife habitat.[viii]

In **Texas**, restoration of a 178-acre urban wetland—formerly an abandoned golf course—acted as a sponge to store 100 million gallons of water during Hurricane Harvey, protecting 150 homes in Houston's Clear Lake community from serious flooding. This project will store up to a half billion gallons of water and protect up to 3,000 homes when it is completed in 2021.[ix]

In **Vermont**, a vast network of floodplains and wetlands, including those protected by 23 conservation easements protecting 2,148 acres of wetland along Otter Creek, saved Middlebury $1.8 million in flood damages during Tropical Storm Irene, and between $126,000 and $450,000 during each of 10 other flood events. Just 30 miles upstream, in an area without such floodplain and wetland protections, Tropical Storm Irene caused extensive flooding to the city of Rutland. [x]

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[i] Borja G. Reguero et al., "Comparing the Cost Effectiveness of Nature-Based and Coastal Adaptation: A Case Study from the Gulf Coast of the United States," PLoS ONE 13, no. 4 (April 11, 2018), https://doi.org/10.1371/journal.pone.0192132.

[ii] Jean Judge et al., "Surfers' Point Managed Shoreline Retreat Project," in *Case Studies of Natural Shoreline Infrastructure in Coastal California: A Component of Identification of Natural Infrastructure Options for Adapting to Sea Level Rise (California's Fourth Climate Change Assessment).* (The Nature Conservancy, 2017), 9-15, https://scc.ca.gov/files/2017/11/tnc_Natural-Shoreline-Case-Study_hi.pdf.

[iii] Napa County California website at https://www.countyofnapa.org/1096/Creating-Flood-Protection.

[iv] Will Allen, Ted Weber, and Jazmin Varela, *Green Infrastructure Vision: Version 2.3: Ecosystem Service Valuation.* (The Conservation Fund: 2014), 13-15, https://datahub.cmap.illinois.gov/dataset/c303fd2e-beaf-4a75-a9ec-b27c6da49b69/resource/028c9b69-bb19-425e-bb92-3d33656bea4c/download/tcfcmapgiv23ecosystemservicesfinalreport201412v2.pdf.

[v] American Rivers, Unnatural Disasters, Natural Solutions: Lessons From The Flooding Of New Orleans (2006) (Charles River Valley Natural Storage Area case study); and https://www.arcgis.com/apps/MapJournal/index.html?appid=0bf97d033a8642b18c2e8075d4b5ecfe.

[vi] Cooper Union, Institute for Sustainable Design, *The Staten Island Bluebelt: A Study In Sustainable Water Management* (http://cooper.edu/isd/news/waterwatch/statenisland). This effort began in 1990.

[vii] The Nature Conservancy, *Urban Coastal Resilience: Valuing Nature's Role*. (2015), https://www.nature.org/content/dam/tnc/nature/en/documents/urban-coastal-resilience.pdf.

[viii] "Johnson Creek Restoration, Portland, Oregon," Naturally Resilient Communities, accessed November 12, 2019, http://nrcsolutions.org/johnson-creek-restoration-portland-oregon/.

[ix] Exploration Green, 2018, https://www.explorationgreen.org/.

[x] Keri B. Watson, Ricketts T., Galford G., Polasky S., O'Niel-Dunne J., Quantifying flood mitigation services: The economic value of Otter Creek wetlands and floodplains to Middlebury, VT, Ecological Economics, Volume 130: 16-24 (2016), https://doi.org/10.1016/j.ecolecon.2016.05.015.