



**NATIONAL WILDLIFE FEDERATION®**

83 Valley Road  
San Anselmo, CA 94960  
415-762-8264 (office)  
415-577-9193 (cell)  
sametm@nwf.org

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Via Email: [Danny.D.McClendon@usace.army.mil](mailto:Danny.D.McClendon@usace.army.mil)

Danny D. McClendon  
Chief, Regulatory Branch  
U.S. Army Corps of Engineers  
St. Louis District  
1222 Spruce Street  
St. Louis, Missouri 63103

Re: Comments on Draft Environmental Assessment for Mosenthein/Ivory Landing Phase V  
Regulating Work Projects; Public Notice P-2919 (2015-105)

Dear Mr. McClendon:

The National Wildlife Federation appreciates the opportunity to submit these comments on the Draft Environmental Assessment with Unsigned Finding of No Significant Impact, Mosenthein/Ivory Landing Phase V Regulating Work Projects (the Phase V EA).

The National Wildlife Federation (NWF) is the Nation's largest conservation education and advocacy organization. NWF has more than 5.8 million members and supporters and conservation affiliate organizations in forty-nine states and territories. NWF has a long history of interest and involvement in the programs of the U.S. Army Corps of Engineers (Corps) and the management and protection of the Mississippi River. NWF is a strong supporter of ecologically sound efforts to restore the Mississippi River and the nation's many other damaged rivers, coasts, and wetlands.

### **General Comments**

The Phase V EA proposes construction of more than three-quarters of a mile (4,030 linear feet) of new river training structures within a two mile stretch of the Middle Mississippi River that already contains at least 66 such structures. The Phase V project will permanently bury more than three-quarters of a mile of river bottom habitat under 165,100 tons of rock.

The Phase V EA fails to provide the level of analysis needed to evaluate the environmental consequences of this enormous array of new river training structures, and does not comply with the requirements of the National Environmental Policy Act (NEPA). Among other problems, the Phase V EA: (a) fails to demonstrate project need and fails to establish why this project constitutes a wise use of federal taxpayer dollars; (b) fails to review an appropriate range of alternatives; (c) fails to adequately assess hydrologic impacts, including increased flood risks; (d) and fails to meaningfully assess a host of

environmental impacts, including the loss of diverse river habitats, impacts to endangered species, and impacts to other fish and wildlife.

Despite many decades of planning and constructing river training structures, the Corps has failed to develop an appropriate model to evaluate the potential impacts from such structures. The Phase V EA instead relies on a physical micro-model that has been demonstrated to lack predictive capability. The Corps should be using state of the art two-dimensional and three-dimensional hydrodynamic models with inputs that recognize the current conditions of the river system.

Despite the undeniable loss of habitat and fundamental morphological changes wrought by river training structures over the many decades that the Corps has been constructing them, the Corps still has not carried out the types of studies that allow a meaningful assessment of the impacts of river training structures on fish and wildlife, the river ecosystem, and public safety. The Phase V EA is utterly lacking in any meaningful assessment of potential impacts to fish and wildlife and the diverse river habitats that they rely on.

Despite extensive peer-reviewed science demonstrating the role of river training structures in increasing flood heights, the Phase V EA continues to disagree with and attack this science. As a result, the Phase V EA does not effectively evaluate the significant risks to public safety created by river training structures in the Mississippi River and does not meaningfully evaluate alternative approaches to reducing those risks.

The National Wildlife Federation repeats its call to the Corps to initiate a National Academy of Sciences study on the effect of river training structures on flood heights to inform its decision making in the Regulating Works Project and beyond. A National Academy of Sciences review is critical for ensuring that the Corps is making decisions based on the best possible scientific understanding of the role of river training structures on increasing flood heights, and for ensuring that the Corps' activities will provide the highest possible protection to the public.

### **Detailed Comments**

#### **A. The Corps Should Complete the Supplemental Environmental Impact Statement for the Regulating Works Program Before Making a Decision on the Phase V Project**

The National Wildlife Federation strongly supports the Corps' ongoing preparation of a supplemental environmental impact statement (SEIS) for the Middle Mississippi River Regulating Works Project. NWF urges the Corps to withdraw the Phase V EA and instead use the SEIS to evaluate the proposed Phase V project – and the Corps' other pending river training structure proposals.

This approach would help ensure that the impacts and long-term implications of the Phase V project will be fully assessed, and allow an appropriate evaluation of whether less environmentally damaging alternatives are available.<sup>1</sup> This approach would also give the Corps the time to correct the many

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<sup>1</sup> The Phase V EA, which evaluates construction of only one set of new river training structures, cannot satisfy the requirements of NEPA as it would constitute an impermissible piecemeal assessment of just one of the many activities carried out under the Regulating Works Program.

problems with the substantive adequacy of the Phase V assessments and ensure that the Phase V project makes sense in light of a full and comprehensive review of the Regulating Works Project.

As noted above, the National Wildlife Federation also urges the Corps to initiate a National Academy of Sciences study on the effect of river training structures on flood heights to inform its decision making in the Regulating Works Project and beyond. A National Academy of Sciences review is critical for ensuring that the Corps is making decisions based on the best possible scientific understanding of the role of river training structures on increasing flood heights, and for ensuring that the Corps' activities will provide the highest possible protection to the public.

#### **B. The Phase V EA Fails to Demonstrate That the Project is Needed And Authorized**

The Phase V EA is deficient because it fails to demonstrate a need for the proposed project. Properly demonstrating project need is fundamental to an adequate NEPA review. It is absolutely critical in this case given that threat to public safety posed by the Phase V project (see section D.1. below) and the fact that the current dredging regime is clearly able to effectively maintain safe and reliable navigation in this portion of the Mississippi River.

The Phase V EA concludes that the project is needed because:

“Frequent dredging has been required in the area of the proposed Regulating Works, Mosenthein/Ivory Landing Phase 5 construction work area (Mosenthein/Ivory Landing Phase 5 work area; see a detailed discussion of this in Section 3, Affected Environment).” Therefore, after analysis of this area, the District concluded that construction of the Mosenthein/Ivory Landing Phase 5 work area is reasonable and necessary to address the repetitive channel maintenance dredging in order to provide a sustainable, less costly navigation channel in this area. The District has concluded through analysis and modeling that construction of river training structures would provide a sustainable alternative to repetitive maintenance dredging.”

EA at 2.

Despite the stated purpose of reducing the need for repetitive dredging, the Phase V EA provides only the most generalized information on the amount and costs of dredging in the general area where the proposed project will be carried out: “[o]ver the last ten years dredging costs in the area (RMs 156 – 165) have averaged approximately \$359,925 per year. These expenditures would be expected to continue in the future.” EA at 22. This cost estimate covers a substantially larger portion of the river – 5 extra miles – than the portion of the river where the Phase V projects will be carried out and fails to address whether unique circumstances existed during this time period that may have affected the dredging regime. The Phase V EA acknowledges that some of the Phase V project river training structures are to be constructed in an area that has seen a low frequency of dredging, further calling into question the need and appropriateness of the project. EA at 3, Figure 3.

The Corps' cursory statements fail to provide a meaningful assessment of project need. To assist the public and decision makers in determining whether all or a portion of the Phase V projects are both

needed and a wise use of taxpayer dollars, the Phase V EA should provide the information outlined below in addition to fully assessing the project's environmental impacts:

- (1) The specific history of dredging over the past 20 years (through a yearly breakdown of amounts and costs) within the two mile stretch of river covered by the proposed Phase V project.<sup>2</sup>
- (2) An analysis of whether any of the dredging carried out in the two mile stretch during this 20 year history was the result of unique circumstances, such as the back to back 2011 flood and 2012 drought, and whether such unique circumstances are likely to re-occur.
- (3) The number of times, if any, when navigation in the two mile stretch of river covered by the proposed Phase V project could not be maintained through dredging.
- (4) The projected future costs of required dredging under the no action alternative calculated for the full life of the proposed Phase V project, and an assessment of the ability to maintain navigation in the project area through dredging alone.
- (5) The construction<sup>3</sup> and full life cycle maintenance costs of the proposed Phase V project.
- (6) The projected amount and costs of the dredging that will still be needed if the Phase V project is constructed. The Phase V EA makes clear that maintenance dredging will still be required even if the Phase V project is constructed, as implementation of the project is only "expected to reduce the amount and frequency of repetitive maintenance dredging necessary in the area." EA at 22. Since maintenance dredging would continue after construction of the Phase V projects, a meaningful assessment must include an accurate comparison of the future amount and costs of maintenance dredging both with and without the proposed project in place.
- (7) The increased risks of upstream or nearby levee failures should the proposed project increase flood heights; and the projected costs of any needed repairs.
- (8) The value of the ecosystem services that will be lost as a result of the Phase V project, which should be accounted for as a project cost.<sup>4</sup>

This information would assist the public and decision makers in assessing both the need for, and the true costs and benefits of, the project. Without such information it is not possible to make a reasonable determination of whether the proposed project is needed, whether it will reduce the costs of maintenance dredging, whether it is a wise investment of scarce taxpayer dollars, or whether it meets the Corps' stated goal of identifying "a long-term sustainable solution" that is "reasonable." EA at 1.

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<sup>2</sup> While some additional information on dredging is included in the HSR District's Technical Report M68, *The Mouth of the Meramec River HSR Model, Mississippi River, River Miles 165.00 – 156.00, Hydraulic Sediment Response Model Investigation* (USACE 2014), even this report does not include all the information required to meaningfully assess whether these projects are in fact needed. Moreover, none of this additional information is provided in the Phase V EA or the Appendices to the Phase V EA.

<sup>3</sup> The Environmental Assessment states that the cost of the proposed Phase V project "is not expected to exceed" \$3.5 million, but fails to provide any assessment of how that number was reached. It also fails to provide life cycle maintenance costs or the costs of dredging that will need to continue even if the proposed project is constructed. The Environmental Assessment also does not provide a benefit-cost analysis for the proposed project.

<sup>4</sup> Final Interagency Guidelines for the Principles and Requirements for Federal Investments in Water Resources (March 2013) at 21 ("Ecosystems provide services to people. Thus, Federal investment impacts on the environment or ecosystem may be understood in terms of changes in service flows. The process of identifying, evaluating, and comparing these changes provides a useful organizing framework to produce a complete accounting. **Reduced service flows over time amount to costs**, and increased services flows over time amount to benefits." (emphasis added)).

The Phase V EA should also clearly document whether any actions proposed in the EA can be carried out under the existing authorization, or whether new authorization from Congress would be required. According to the Phase V EA and the 1976 EIS for the “Mississippi River Between the Ohio and Missouri Rivers (Regulating Works)”, prepared by the Corps’ St. Louis District, the Regulating Works Project is authorized by the Rivers and Harbors Act of 1910, the Rivers and Harbors Act of 1927 and the Rivers and Harbors Act of 1930. Each of these Acts authorizes activities recommended in a Chief of Engineers Report prepared prior to enactment of each Act. These Chief of Engineers Reports are not readily accessible to the public, and the text of the reports was not provided in either the Phase V EA or the 1976 EIS. However, NWF has been able to locate and review these reports.

Our review strongly suggests that the Regulating Works Project did not intend to authorize ongoing river training structure construction for period of more than 100 years, but instead was far more limited in both scope, time, and costs. If our assessment is correct, new Congressional authorization would likely be required to carry out any additional construction of river training structures.<sup>5</sup> The Phase V EA should provide the public and decision makers with the precise language of the Chief’s Reports and authorizing language and provide an explanation of why the Corps has interpreted this language to allow for continuous and substantial construction of new river training structures. This would provide the public and decision makers with a clearer understanding of the precise activities currently authorized (including any limitations on those activities) and whether new authorization would be required.

### **C. The Phase V EA Fails to Evaluate a Reasonable Range of Alternatives**

An environmental assessment, like an environmental impact statement, “must evaluate a reasonable range of alternatives to the agency’s proposed action, to allow decision-makers and the public to evaluate different ways of accomplishing an agency goal.”<sup>6</sup> This is because the consideration of alternatives required by NEPA is both independent of, and broader than, the requirement to prepare an environmental impact statement.<sup>7</sup> As a result “[c]onsideration of alternatives is critical to the goals of NEPA even where a proposed action does not trigger the EIS process.”<sup>8</sup>

The Phase V EA is legally insufficient because it does not examine a reasonable range of alternatives. It looks only at the proposed alternative and the no action alternative.<sup>9</sup> Additional alternatives that should be examined include, but are by no means limited to:

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<sup>5</sup> It is also possible that the numerous other river training structure projects currently being carried out or planned by the Corps also exceed the existing authorization, and thus cannot be constructed without new Congressional authorization.

<sup>6</sup> *Pacific Marine Conservation Council v. Evans*, 200 F. Supp. 2d 1194, 1206 (N.D.Cal 2002); *Akiak Native Community v. United States Postal Serv.*, 213 F.3d 1140, 1148 (9th Cir. 2000) (EA must consider a reasonable range of alternatives).

<sup>7</sup> *Bob Marshall Alliance v. Hodel*, 852 F.2d 1223 (9th Cir. 1988), *cert. denied*, 489 U.S. 1066 (1988); *City of New York v. United States Department of Transportation*, 715 F.2d 732, 742 (2d Cir.1983), *cert. denied*, 465 U.S. 1055 (1984); *Environmental Defense Fund, Inc. v. Corps of Engineers*, 492 F.2d 1123, 1135 (5th Cir.1974).

<sup>8</sup> *Bob Marshall Alliance*, 852 F.2d at 1228-29.

<sup>9</sup> While other configurations of river training structures were examined prior to preparation of the environmental assessment, this does not exempt the Corps from the requirement to examine a reasonable range of alternatives in the EA. Moreover, evaluations of alternative configurations of river training structures cannot satisfy the

- (1) Utilizing restoration measures to reduce sedimentation in the navigation channel and/or otherwise reducing the need for dredging the navigation channel.
- (2) Removing and/or modifying existing river training structures to reduce flood risks and restore backwater, side channel, and braided habitat.
- (3) Maintaining the authorized navigation channel through alternative approaches, including such things as alternative dredging strategies, and/or removing sediment dredged from the river rather than pumping dredged sediment back into the river adjacent to the main channel.
- (4) Minimizing the use of new structures, including by placing restrictions on the number and/or types of structures that can be utilized in a given reach based on a robust scientific assessment of the cumulative impacts of the various types of river training structures.

Each alternative **must** include mitigation for any unavoidable adverse impacts as required by 33 U.S.C. § 2283(d) and the Clean Water Act.

To comply with the National Water Resources Planning Policy established by Congress in 2007, the Phase V EA must evaluate alternatives that would protect and restore the natural functions of the Mississippi River, and must ultimately select an alternative that achieves these objectives. That policy states that “all water resources projects” shall “protect[] and restor[e] the functions of natural systems and mitigat[e] any unavoidable damage to natural systems.” 33 U.S.C 1962-3 (established by § 2031(a) of the Water Resources Development Act of 2007, and immediately applicable to all water resources projects).<sup>10</sup>

The decision making process identified at page 4 of the EA does not satisfy the requirements of NEPA or the National Water Resources Planning Policy. EA at 4 (“Ameren representatives voiced concern about impacts to the Ameren facility in the area. The USFWS questioned why several alternatives that required less placement of rock, but seemed to yield satisfactory navigation channel results, were not considered. Ultimately, USACE chose Alternative 16 because it lowered the main channel elevation the most and was supported by agencies participating in the April 17, 2014, HSR Model Coordination Meeting.”)

The failure to comply with NEPA (which among many other things requires identification of less environmentally damaging alternatives) and the National Water Resources Planning Policy can be seen

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requirement to evaluate a reasonable range of alternatives because each alternative would have the same end result – construction of river training structures in the project area. *State of California v. Block*, 690 F.2d 753, 767 (9th Cir. 1982) (holding that an inadequate range of alternatives was considered where the end result of all eight alternatives evaluated was development of a substantial portion of wilderness).

<sup>10</sup> Enhancement of the environment has been an important federal objective for water resources programs for decades. Corps regulations in place since 1980 state that: “Laws, executive orders, and national policies promulgated in the past decade require that the quality of the environment be protected and, where possible, enhanced as the nation grows. . . . Enhancement of the environment is an objective of Federal water resource programs to be considered in the planning, design, construction, and **operation and maintenance of projects**. Opportunities for enhancement of the environment are sought through each of the above phases of project development. Specific considerations may include, but are not limited to, **actions to preserve or enhance critical habitat for fish and wildlife; maintain or enhance water quality; improve streamflow**; preservation and restoration of certain cultural resources, **and the preservation or creation of wetlands.**” 33 C.F.R. § 236.4. (emphasis added).

from the notes to the HSR Model Coordination Meeting referred to in (but not attached to) the Phase V EA). These notes clearly show that even within the extremely limited context of the HSR modeling effort, less environmentally damaging options were available:

“Matt Mangan of USFWS thought Alternatives 3, 4, and 6 achieved similar results as Alternative 16 while requiring less construction. Therefore, USFWS recommended a less aggressive, phased approach to minimize impacts to the environment. The USACE – St. Louis District agree that alternatives 3, 4, and 6 did achieve favorable results, the results of the alternative 16 were more favorable. During the HSR meetings there was no mention of Pallid Sturgeon, Least Tern, or any other form of habitat impact, so our plan is to move forward with alternative 16. Furthermore, the St. Louis District will evaluate the use of phased construction for the project.”

#### **D. The Phase V EA Fails to Properly Evaluate the Full Suite of Impacts to the Environment**

The Phase V EA fails to evaluate the full suite of impacts, provides only the most limited analysis of those impacts it does evaluate, and fails to provide a reasonable explanation between the information presented and the conclusions drawn. The Phase V EA also appears to ignore important information already assembled by the Corps on relevant impacts of the Regulating Works project. This includes extensive scientific information developed under the Long Term Resources Monitoring Program on navigation-related activities that have harmed the ecological health of the Mississippi River, and information utilized by the Corps when it “determined that there is sufficient significant new information regarding the potential impacts of the [Regulating Works] project on the human environment to warrant the preparation of a supplemental environmental impact statement.” 78 Fed. Reg. 77108 (December 20, 2013).

In comparing and analyzing potential alternatives, the Phase V EA must examine, among other things, the direct, indirect, and cumulative environmental impacts of alternatives, the conservation potential of those alternatives, and the means to mitigate adverse environmental impacts that cannot be avoided. 40 C.F.R. § 1502.16. This assessment is essential for determining whether less environmentally damaging alternatives are available.

Direct impacts are caused by the action and occur at the same time and place as the action. Indirect impacts are also caused by the action, but are later in time or farther removed from the location of the action. 40 C.F.R. § 1508.8. Cumulative impacts are:

“the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.”

40 C.F.R. § 1508.7. The cumulative impacts analysis ensures that the agency will not “treat the identified environmental concern in a vacuum.”<sup>11</sup> The cumulative impacts analysis must examine the

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<sup>11</sup> *Grand Canyon Trust v. FAA*, 290 F.3d 339, 346 (D.C. Cir. 2002).

cumulative effects of federal, state, and private projects and actions;<sup>12</sup> and the cumulative impacts of climate change.<sup>13</sup>

The Phase V EA must provide “quantified or detailed information” on the impacts, including the cumulative impacts, so that the courts and the public can be assured that the Corps has taken the mandated hard look at the environmental consequences of the Project.<sup>14</sup> **If information that is essential for making a reasoned choice among alternatives is not available, the Corps must obtain that information unless the costs of doing so would be “exorbitant.”** 40 C.F.R. § 1502.22 (emphasis added).

Importantly, as CEQ has made clear, in situations like those in the Mississippi River where the environment has already been greatly modified by human activities, it is **not** sufficient to compare the impacts of the proposed alternative against the current conditions. Instead, the baseline must include a clear description of how the health of the resource has changed over time to determine whether additional stresses will push it over the edge.<sup>15</sup>

### **1. The Phase V EA Fails to Properly Evaluate Hydrologic Impacts**

It is essential that the Corps properly assess the impacts of the project on flood heights, channel morphology, and diverse river habitats. Absent meaningful assessments of these impacts, it is not possible to assess the impacts of the proposed project on fish and wildlife or public safety; and it is not possible to assess whether the proposed project will in fact reduce – rather than simply relocate – dredging needs.

#### **(a) The Phase V EA Relies on a Fundamentally Flawed and Wholly Unreliable Model to Attempt to Evaluate the Impacts of the Project**

The Phase V EA relies on a fundamentally flawed and wholly unreliable HSR model. Because this flawed model drives the assessment of all hydrologic and habitat changes assessed in the Phase V EA, it makes the entire Phase V EA unreliable.

The proposed alternative was developed using a Hydraulic Sediment Response model (HSR model) that

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<sup>12</sup> The requirement to assess non-Federal actions is not “impossible to implement, unreasonable or oppressive: one does not need control over private land to be able to assess the impact that activities on private land may have” on the project area. *Resources Ltd., Inc. v. Robertson*, 35 F.3d 1300, 1306 (9th Cir. 1993).

<sup>13</sup> See *Center for Biological Diversity v. Nat’l Hwy Traffic Safety Administration*, 538 F.3d 1172, 1217 (9th Cir. 2008) (holding that analyzing the impacts of climate change is “precisely the kind of cumulative impacts analysis that NEPA requires agencies to conduct” and that NEPA requires analysis of the cumulative impact of greenhouse gas emissions when deciding not to set certain CAFE standards); *Center for Biological Diversity v. Kempthorne*, 588 F.3d 701, 711 (9th Cir. 2009) (NEPA analysis properly included analysis of the effects of climate change on polar bears, including “increased use of coastal environments, increased bear/human encounters, changes in polar bear body condition, decline in cub survival, and increased potential for stress and mortality, and energetic needs in hunting for seals, as well as traveling and swimming to denning sites and feeding areas.”).

<sup>14</sup> *Neighbors of Cuddy Mountain v. U. S. Forest Service*, 137 F.3d 1372, 1379 (9th Cir. 1998); *Natural Resources Defense Council v. Callaway*, 524 F.2d 79, 87 (2d Cir. 1975).

<sup>15</sup> Council on Environmental Quality, *Considering Cumulative Effects Under the National Environmental Policy Act* at 41 (January 1997).



is a “small-scale physical sediment transport model used by the District to replicate the mechanics of river sediment transport.” Phase V EA at 4. However, HSR models have been shown to be completely unreliable for planning purposes as they lack “predictive capability”. Stephen T. Maynard, Journal of Hydraulic Engineering, *Evaluation of the Micromodel: An Extremely Small-Scale Movable Bed Model* (April 2006). Maynard concludes that because of the “lack of predictive evidence, the micromodel should be limited to demonstration, education, and communication.” A copy of this study is attached to these comments at Attachment A.

The Phase V EA recognizes at least some of the failings of the HSR model, particularly noting that the model’s small scale prevents a full assessment of the hydrologic impacts: “The rootless Dike 161.50 was placed at an angle in an attempt to divert a small amount of additional flow towards the small side channel located along the left descending bank. **It should be noted that throughout testing, no sediment movement was observed within the side channel; however, at the model’s scale it may not have been observable.** Overall, this alternative enhanced navigation safety for industry by providing a deeper navigation channel while maintaining **and potentially creating** additional channel border habitat within the work area.” EA at 4 (emphasis added).

In addition, the HSR model can provide a non-predictive prototype only on a local basis and over short time scales. This approach and the Phase V EA as a whole fail to recognize that this incremental approach in no way addresses system-wide changes to the Middle Mississippi River system. This model also cannot evaluate whether the new surge in construction of training structures in the past several years has simply shifted the loci of sedimentation which could eventually lead to even more river training structure construction.

In carrying out its hydrologic analysis the Corps should utilize the most up-to-date modeling to evaluate the potential impacts of each alternative such as by using state of the art two-dimensional and three-dimensional hydrodynamic models with inputs that recognize the current conditions in the river system. The Corps should abandon its use of micro models to evaluate the impacts of river training structures (including the Corps’ Hydraulic Sediment Response or HSR model) as such models cannot be relied upon to provide accurate planning information as they lack “predictive capability”.<sup>16</sup>

Because of these failings, the public and decision makers cannot know what the impacts of the proposed Phase V project will be on the river channel and river habitat, on flooding, on the ecological health of the river, or on fish and wildlife.

**(b) The Phase V EA Incorrectly Rejects Overwhelming Scientific Evidence Showing That River Training Structures Significantly Increase Flood Risks**

The National Wildlife Federation recognizes that the Corps has consistently disagreed with the extensive peer-reviewed science demonstrating the role of river training structures in increasing flood heights, and that the Corps has repeatedly attempted to establish that this science is based, in part, on a flawed data set. See, e.g., EA at 14. NWF also recognizes that much of the Corps’ argument in this regard is set forth in Appendix A to the Phase V EA.

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<sup>16</sup> Stephen T. Maynard, Journal of Hydraulic Engineering, *Evaluation of the Micromodel: An Extremely Small-Scale Movable Bed Model* (April 2006).

However, highly respected independent scientists along with the National Wildlife Federation and many other conservation organizations, strongly disagree with the Corps' conclusions on this science. An extensive rebuttal to the Corps' conclusions have been set forth in two Declarations prepared by Dr. Nicholas Pinter, both of which are attached to these comments at Attachment B.

National Wildlife Federation wishes to highlight that the science shows that in the Upper Mississippi River, flood stages increase by more than 4 inches for each 3,281 feet of wing dike built within 20 river miles downstream. Declaration of Nicholas Pinter at paragraph 19; Reply Declaration of Nicholas Pinter at paragraph 24 (both found at Attachment B to these comments). This means that the Phase V projects (4,030 linear feet of new river training structures) could increase flood heights by 4.9 inches for 20 miles upstream from just these projects.

NWF also notes that even the studies commissioned by the St. Louis District and cited in the Phase V EA (e.g., Watson et al., 2013a) find statistically significant increases in water levels for flood flows. Watson 2013 and the Corps' assessment in Appendix A, minimize some flood-level increases and eliminate all others through incorrect "data assassination." Both analyses consider only: the Middle Mississippi River; only two stage gauges on the Middle Mississippi (at Chester and St. Louis); and only a limited record of data.

Since 1986, at least 51 scientific studies have been published linking the construction of river training structures to increased flood heights. More than 15 studies published from 2000-2010 demonstrate the role of river training structures on flood heights in the Mississippi River. These studies show that river training structures constructed by the Corps to reduce navigation dredging costs have increased flood levels by 10 to 15 feet and more in some locations of the Mississippi River during large floods. Independent scientists have also determined that the more than 40,000 feet of "wing dikes" and "bendway weirs" constructed by the Corps in the Mississippi during the 3 years prior to the great flood of 1993 contributed to record crests in 1993, 1995, 2008, and again in 2011. A list of the 51 studies assessing the role of instream structures on increasing flood heights is attached to these comments at Attachment C. NWF requests that these studies be included in the record for this project.

In light of the significant risks to public safety posed by the Corps' ongoing objection to well settled science, National Wildlife Federation once again strongly urges the Corps to initiate a National Academy of Sciences study to evaluate this issue. We note that such a study could be undertaken for the cost of just a portion of the proposed Phase V project, and that ensuring public safety is more than worthy of such a limited investment of funds. We also note that the burden of proof is on the Corps to establish the safety and efficacy of river training structures *before* building any additional structures.

## **2. The Phase V EA Fails to Adequately Evaluate Impacts to Fish and Wildlife, Including Endangered Species**

The Mississippi River is used by an astounding array of wildlife, including 360 species of birds, 260 species of fish, 145 species of amphibians and reptiles, 98 species of mussels, and 50 species of mammals. Forty percent of North America's waterfowl migrate through the Mississippi River flyway. An

accurate assessment of fish and wildlife impacts will require an accurate assessment of impacts to the full range of habitats that these species rely on.

The Phase V EA must examine the direct, indirect, and cumulative impacts on fish and wildlife. Direct impacts from this project include the impacts of construction and the impacts of burying more than three-quarters of a mile of the river bottom under 165,100 tons of rock. Indirect impacts will result from, among other things: changes to the river habitat, including loss of diverse habitats such as side channels, braided channel, crossover habitat, mid-channel bars, backwater habitat, riverine wetlands, and floodplain wetlands; changes to sedimentation patterns; and increased traffic. To fully assess the potential impacts from the proposed Phase V project the EA must carefully evaluate and quantify the potential for such habitat changes that can have cascading negative impacts on fish and wildlife.

Because the Corps has relied almost exclusively on the flawed and non-predictive HSR model to evaluate hydrologic and habitat changes, the Phase V EA does not – and cannot – evaluate the true scope of direct, indirect, and cumulative impacts to fish and wildlife. The Phase V EA also fails to identify the habitat needs of fish and wildlife species (and only generally mentions the types of fish and macroinvertebrates that might be found in the project area), adding significantly to the inadequacy of the Phase V EA.

The Corps has not conducted the modeling or monitoring needed to draw the conclusion that the project will have no adverse impacts to fish and wildlife. For example, as discussed elsewhere in these comments, the Phase V EA fails to adequately assess the hydrologic and cumulative impacts and thus it has no basis for assessing the resulting changes in habitat for fish and wildlife species.

Critically for the evaluation of fish and wildlife impacts, the Phase V EA also essentially ignores the large-scale loss of backwater and side channel habitat in the Mississippi River and the potential for additional losses of natural side channels, crossover habitat and mid-channel bars if the proposed project is constructed. The Corps' vague reference to using innovative designs and to other Corps programs working to restore and preserve this type of habitat does not cure this critical failing.

#### **(a) Impacts on Side Channel Habitat**

The Phase V EA fails to adequately evaluate the extent and resulting fish and wildlife impacts of lost side channel habitats for at least the following four reasons.

First, as noted above, the Corps relies on a flawed and non-predictive HSR model to conclude that side channel habitat will not be lost.

Second, the Phase V EA incorrectly assumes that the average planform width has remained relatively stable over the past four decades, and thus is no longer a key problem of concern for the river. However, this conclusion is contradicted by the information presented in the EA itself, which shows that the river has been losing an average of 4 feet of width each and every year since 1968: "In the 43 years between 1968 and 2011 the average planform width remained relatively steady with a net reduction in average planform width of 167 feet." EA at 10. And this is of course on top of the significant narrowing of the Mississippi River that occurred prior to 1968.

Third, while acknowledging a link between reduced stage at low flow and loss of side channel habitat (see EA at 14-15), the Phase V EA goes on to improperly conclude that the proposed project will not lead to additional losses of side channel habitat because “any impacts locally or cumulatively are being minimized through the use of innovative river training structures and through other District programs, which have currently seen success in restoring and preserving side channels affected by river training structures.” EA at 15. This vague and self-serving conclusion is not, and cannot be, supported by any evidence and is contradicted by the well-recognized fact that river training structures lead to reduced stages at low flows (they raise stages when the river is at flood stage).

Fourth, the Phase V EA essentially ignores the significant body of scientific evidence demonstrating the significant loss of side channel habitat in the Middle Mississippi River and the role of navigation-related activities, including the Regulating Works Project, in those losses. The EA also relies on the fact that revetment has been placed on the river banks to incorrectly conclude that additional side channel loss is not an issue of concern.

Loss of side channel habitat is a tremendous problem on the Mississippi River and preventing additional losses is a key component of the Biological Opinion. Before taking actions that may well result in additional losses of complex river habitat, the Corps should carry out the level of studies and detailed modeling needed to determine what the impacts will actually be on these vital habitats and the fish and wildlife that rely on those habitats.

#### **(b) Impacts on Fish and Wildlife**

The Phase V EA fails to provide any meaningful information on potential fish impacts and provides no information on potential wildlife impacts. The EA also fails to provide information on the habitat needs of species in the project area or how those needs might be affected by the project.

The EA acknowledges that the impacts on fish and wildlife will vary widely based on the type of structure and the location of that structure. However, the Phase V EA fails to provide any meaningful information on the impacts on fish from the types of structures that would be built in the Phase V project. As noted above, the EA provides no information on impacts to other wildlife.

For example, the EA provides some limited information on the changes from traditional dikes (perpendicular to the flow and tied in to the river bank), but the Phase V project does not include any of these structures. EA at 18. The EA provides limited information on the impacts of chevrons, but the project does not include any chevrons. EA at 19.

The Phase V EA recognizes that the Corps has only the most extremely limited information upon which to draw any conclusions on fisheries impacts. Given the extensive amount of river training structure construction carried out by the Corps in the Middle Mississippi River, it is unacceptable that they have not done more research on the impacts of these structures on fish and wildlife resources. In the absence of this information, the Corps cannot draw any legitimate conclusions about the potential impacts of the proposed project on fish and wildlife.

Understanding the impacts of the proposed project on vital river habitat and fish and wildlife resources is essential for making a reasoned choice among alternatives. As a result, the Corps must obtain this information unless the overall costs of doing so would be “exorbitant.” 40 C.F.R. § 1502.22.

### **(c) Impacts to Endangered Species**

The Phase V EA fails to properly evaluate the impacts to endangered species. While the EA acknowledges that the project may adversely affect endangered species, it goes on to conclude that those impacts would be “only limited” and that “the adverse effects of the work on the pallid sturgeon and the least tern are consistent with those anticipated in the programmatic Biological Opinion and the District has implemented the Reasonable and Prudent Measures and Terms and Conditions prescribed therein as appropriate.” EA at 6, 21.

But the Phase V EA fails to provide any evidence to support these conclusions. Minimizing loss of side channel habitat and sand bar habitat are key components of avoiding jeopardy under the Biological Opinion, but as noted above, the Phase V EA fails to acknowledge the significance of the existing losses, and has not conducted the modeling needed to determine that future losses will not be caused by the Phase V project.

It is far more likely that the proposed Phase V project will add to the loss of diverse river habitats, since like other river training structures, their very purpose is to create a deeper, self-scouring channel which in turn leads to losses in natural backwater and braided channel habitats. These impacts are well recognized by the U.S. Fish and Wildlife Service which has concluded that construction of river training structures have adversely affected the pallid sturgeon and least tern by destroying vital habitat.

### **3. The Phase V EA Fails to Properly Evaluate Cumulative Impacts**

The Phase V EA fails to properly evaluate – and account for – cumulative impacts. Notable failings in this section include the failure to assess the cumulative impacts of the Corps’ many other activities on the Mississippi River, including already constructed river training structures, and the failure to adequately account for the cumulative impacts of climate change.

Instead of conducting an appropriate cumulative impacts analysis, the Phase V EA inappropriately draws this sweeping, unsupportable, and self-serving conclusion:

The Regulating Works Project, in combination with the other actions throughout the watershed, has had past impacts, both positive and negative, on the human environment. However, this analysis is meant to characterize the incremental impact of the current action in the broader context of other actions affecting the same resources. Although past actions associated with the Regulating Works Project have impacted these resources, the current method of conducting business for the Project includes involving partner agencies throughout the planning process, avoiding and minimizing environmental impacts, and utilizing innovative river training structure configurations to provide fish habitat while still providing benefits to the navigation system. Although our understanding of the actions that bear upon the resources of the Middle Mississippi River continues to evolve, equilibrium in habitat conditions appears to have been

reached. Accordingly, only minimal impacts to the resources, ecosystem and human environment are anticipated for the Mosenthein-Ivory Phase 5 work area.

EA at 25.

These summary conclusions do not comport with a significant body of scientific evidence (much of which was prepared with the Corps' input) which document the severe decline in the ecological health of the UMR-IWW system, the fundamental alteration of the Upper Mississippi River's natural processes, and the significant role of navigation related activities in this decline.

In a 1999 report on the Status and Trends of the Upper Mississippi River System, the U.S. Geological Survey concluded that the Corps' O&M activities in the UMR-IWW system were: destroying critical habitats including the rivers' backwaters, side channels and wetlands; altering water depth; destroying bathymetric diversity; causing nonnative species to proliferate; and severely impacting native species.<sup>17</sup> The 1999 Status and Trends Report also rated the health of the Mississippi River System as follows:

1. The Lower Reach of the Illinois River is degraded for all 6 criteria of ecosystem health evaluated by the report.<sup>18</sup>
2. The Unimpounded Reach of the Mississippi River is degraded for 3 criteria, heavily impacted for 2 criteria, and moderately impacted for 1 criterion.
3. The Lower Impounded Reach of the Mississippi River (Pools 14-26) is degraded for 2 criteria, heavily impacted for 3 criteria, and moderately impacted for 1 criterion.
4. The Upper Impounded Reach of the Mississippi River (Pools 1-13) is degraded for 1 criterion and moderately impacted for 5 criteria.

The 1999 Status and Trends report further concluded that no segment of the Upper Mississippi River system was unchanged from historic conditions, or deemed to require no management action to maintain, restore or improve conditions. Equally important, no segment of the system was improving in quality.<sup>19</sup>

In December 2008, the U.S. Geological Survey issued a second report on the status and trends of selected resources in the Upper Mississippi River system which also found that the Corps' O&M activities were causing significant adverse impacts.<sup>20</sup> For example:

The current condition of the UMRS is heavily influenced by its agriculture-dominated basin and by the dams, channel training structures, dredging, and levees that regulate flow distribution during most of the year. Although substantial improvements in some conditions have occurred

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<sup>17</sup> *Id.*

<sup>18</sup> "Degraded" is the lowest possible grade issued by the report and is defined as a condition where the factors associated with the criteria "are now below ecologically acceptable levels" and where "[m]ultiple management actions are required to raise these conditions to acceptable levels." 1999 Status and Trends Report at 16-2.

<sup>19</sup> 1999 Status and Trends Report at 16-1 to 16.-2.

<sup>20</sup> Johnson, B. L., and K. H. Hagerty, editors. 2008. U.S. Geological Survey, *Status and Trends of Selected Resources of the Upper Mississippi River System*, December 2008, Technical Report LTRMP 2008-T002. 102 pp + Appendixes A-B (Upper Midwest Environmental Sciences Center, La Crosse, Wisconsin) (2008 Status and Trends Report).

since the 1960s because of improvements in sewage treatment and land use practices, the UMRS still faces substantial challenges including

1. High sedimentation rates in some backwaters and side channels;
2. An altered hydrologic regime resulting from modifications of river channels, the floodplain, and land use within the basin, and from dams and their operation;
3. Loss of connection between the floodplain and the river, particularly in the southern reaches of the UMRS;
4. Nonnative species (e.g., common carp [*Cyprinus carpio*], Asian carps [*Hypophthalmichthys* spp.], zebra mussels [*Dreissena polymorpha*]);
5. High levels of nutrients and suspended sediments; and
6. Degradation of floodplain forests.<sup>21</sup>

The 2008 Status and Trends report also recognized that there has been “a substantial loss of habitat diversity”<sup>22</sup> in the system over the past 50 years due in large part to excessive sedimentation and erosion:

In all reaches, sedimentation has filled-in many backwaters, channels, and deep holes. In the lower reaches, sediments have completely filled the area between many wing dikes producing a narrower channel and new terrestrial habitat. Erosion has eliminated many islands, especially in impounded zones.<sup>23</sup>

In addition to this significant environmental harm, as discussed above, an extensive body of peer-reviewed scientific literature also demonstrates that river training structures constructed by the Corps to help maintain the 9 foot navigation channel are significantly increasing the risks of floods for riverside communities. These structures, constructed by the Corps to reduce navigation dredging costs, have increased flood levels by up to 15 feet in some locations and 10 feet in broad stretches of the river where these structures are prevalent.<sup>24</sup>

#### **(a) Cumulative Impacts of Other Corps Activities on the Mississippi River**

The Phase V EA fails to meaningfully evaluate the cumulative impacts of the Corps’ many activities on the Mississippi River. These include the full suite of past, present, and reasonably foreseeable future Regulating Works Project activities, navigation operation and maintenance activities, flood damage reduction activities, and other reasonably foreseeable projects.

For example, the Phase V EA fails to discuss the cumulative impacts of the existing river training located

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<sup>21</sup> *Id.* at 3.

<sup>22</sup> *Id.* at 6.

<sup>23</sup> *Id.* at 6.

<sup>24</sup> Pinter, N., A.A. Jemberie, J.W.F. Remo, R.A. Heine, and B.A. Ickes, 2010. Empirical modeling of hydrologic response to river engineering, Mississippi and Lower Missouri Rivers. *River Research and Applications*, 26: 546-571; Remo, J.W.F., N. Pinter, and R.A. Heine, 2009. The use of retro- and scenario- modeling to assess effects of 100+ years river engineering and land cover change on Middle and Lower Mississippi River flood stages. *Journal of Hydrology*, 376: 403-416.

within the project area. See, EA at 131-135. The HSR model report (though not the Phase V EA) states that there are at least 66 existing river training structures in the project area. The Mouth of the Meramec River HSR Model at 5. However, the HSR report does not indicate the total length or size of these existing structures making it difficult to assess the effects on flood heights and habitat loss. The impacts of these existing structures have not been evaluated in the cumulative impacts assessment.

The Corps similarly appears not to have identified the full list of river training structures currently under construction or in planning for the Regulating Works Program. Compare the list of projects at EA page C-4 to C-5 with the list of projects from the St. Louis District website accessed on April 8, 2015. A copy of this list is attached to these comments at Attachment D. Moreover, the Phase V EA identifies only one additional future project as reasonably foreseeable, even though the Corps clearly believes that it will be constructing many new projects under the Regulating Works Program as it is in the process of supplementing the woefully out of date 1976 Regulating Works Program Environmental Impact Statement.

The numbers of river training structures, and their impacts, are significant. For example, the Phase V EA states that there are “1,375 river training structures on the MMR, which include wing dikes, bendway weirs, chevrons, and other configurations. Of this total, 175 are bendway weirs. The pace of construction has changed over time and the shape, size, elevation and configuration of river training structures has also changed. The St. Louis District built approximately 450 river training structures in the late 19th century and another 250 in the 1930s. The District constructed 150 bendway weirs from 1990 to 2000.” EA at C-4.

Information provided to the National Wildlife Federation suggests that between 1980 and 2009, the Corps built at least 380 new river training structures in the Middle Mississippi, including 40,000 feet of wing dikes and bendway weirs between 1990 and 1993. The Corps built at least 23 chevrons between 2003 and 2010.

The Corps also carries out other major operations and maintenance activities that affect the Middle Mississippi River and the entire UMR-IWW. These activities include: dredging and disposal of dredged material, water level regulation, construction of revetment, and operation and maintenance of the system’s 37 locks and dams. Maintaining this navigation system requires “continuous regular operations and maintenance” at a cost of more than \$120 million each year.<sup>25</sup> The Phase V EA fails to account for the cumulative impacts of any of these other navigation related activities.

In addition, the cumulative impacts analysis must evaluate the cumulative impacts of work carried out by the Corps under its flood damage reduction authority, including the construction and maintenance of Mississippi River levees and reasonably foreseeable future flood damage reduction projects. The cumulative impacts analysis should also evaluate such things as past, present, and reasonably foreseeable future: (a) lock and dam construction; reservoir and dam operations that affect the Mississippi River and its floodplain – including for such facilities located in areas outside of the Mississippi River; (b) residential and commercial development, including road construction, that affects

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<sup>25</sup> USACE Brochure, Upper Mississippi River – Illinois Waterway System Locks and Dams (September 2009) available at <http://www.mvr.usace.army.mil/brochures/documents/UMRSLocksandDams.pdf>; Congressional Research Service, *Inland Waterways: Recent Proposals and Issues for Congress* (July 14, 2011) at 15.



the Mississippi River and its floodplain; and (c) agricultural practices that have affected and will continue to affect floodplain wetlands and Mississippi River water quality.

In analyzing the cumulative effects of the activities discussed above, the Corps must compare the impacts to the historical, non-disturbed, Mississippi River and not compare the impacts to the current condition of the river. This includes both the historic ecological condition and the historical flow and flood level conditions. If this information is not currently available, the Corps must obtain this information unless the costs of doing so would be "exorbitant." 40 C.F.R. § 1502.22. To establish the proper baseline, the Phase V EA should document and evaluate the historical changes in the Mississippi River with respect to at least the following indicators:

- Historical flows and flood levels;
- Acres of river and floodplain wetlands lost;
- Acres of native upland habitats lost;
- Miles of streambed lost or modified;
- Changes in stream flows;
- Changes in ground water elevations;
- Changes in the concentrations of indicator water quality constituents;
- Changes in the abundance, distribution, and diversity of indicator fish, waterfowl, bird, mammal, reptile, amphibian, and mussel communities;
- Changes in rainfall, and reasonably foreseeable future changes.

#### **(b) Cumulative Impacts of Climate Change**

The National Wildlife Federation appreciates the Corps' recognition of the need to address the cumulative impacts of climate change and the discussion that has been included in the Phase V EA. However, NWF disagrees with the Corps' conclusion that climate change will not have any additive or magnifying effects on the impacts of the proposed Phase V projects. See EA at 24 (the basic functionality and ability of river training structures "should not be affected going forward" and "river training structures would not contribute any increase to potential future flood events.")

The National Wildlife Federation urges the Corps to expand its climate change assessment and reassess the climate change conclusions in the Phase V EA. Notably, climate change could significantly exacerbate the public safety impacts of the proposed Phase V project because climate change-induced variability in the Upper Mississippi River Basin will likely lead to more extreme weather and higher flows than have been experienced in the past. In addition, climate change could magnify the fish and wildlife impacts of the project, particularly for endangered species and migratory species that utilize the project area. Increased floods and storms caused by climate change could also affect the ability of the proposed river training structures to achieve their stated purposes, calling into question the value of construction even for navigation.

The National Wildlife Federation urges the Corps to carefully assess and/or reassess the following materials in connection with its cumulative impact analysis:

- The Midwest regional inputs to the National Climate Assessment.<sup>26</sup>
- The 2013 Regional Climate Trends and Scenarios for the Midwest U.S. showing that for the Midwest region, annual and summer trends for precipitation in the 20<sup>th</sup> century are upward and statistically significant; the frequency and intensity of extreme precipitation in the region has increased, as indicated by multiple metrics; and models predict increases in the number of wet days (defined as precipitation exceeding 1 inch) for the entire Midwest region, with increases of up to 60%.<sup>27</sup>
- The 2009 U.S. Global Change Research Program report showing that the Midwest experienced a 31% increase in very heavy precipitation events (defined as the heaviest 1% of all daily events) between 1958 and 2007.<sup>28</sup> That study also reports that during the past 50 years, “the greatest increases in heavy precipitation occurred in the Northeast and the Midwest.”<sup>29</sup> Models predict that heavy downfalls will continue to increase:

Climate models project continued increases in the heaviest downpours during this century, while the lightest precipitation is projected to decrease. Heavy downpours that are now 1-in-20-year occurrences are projected to occur about every 4 to 15 years by the end of this century, depending on location, and the intensity of heavy downpours is also expected to increase. The 1-in-20-year heavy downpour is expected to be between 10 and 25 percent heavier by the end of the century than it is now. . . . Changes in these kinds of extreme weather and climate events are among the most serious challenges to our nation in coping with a changing climate.<sup>30</sup>

- The March 2005 study by the U.S. Geological Survey showing upward trends in rainfall and streamflow for the Mississippi River.<sup>31</sup>

Climate change may also significantly exacerbate the impacts on the many migratory species that utilize the Mississippi River, Mississippi River Flyway, and the project area, and these impacts must be analyzed. As recognized by the United Nations Environment Program and the Convention on the Conservation of Migratory Species of Wild Animals, migratory wildlife is particularly vulnerable to the impacts of climate change:

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<sup>26</sup> The Midwest regional assessment can be accessed at [http://glisa.msu.edu/great\\_lakes\\_climate/nca.php](http://glisa.msu.edu/great_lakes_climate/nca.php) (visited January 22, 2014).

<sup>27</sup> Kunkel, K.E., L.E. Stevens, S.E. Stevens, L. Sun, E. Janssen, D. Wuebbles, S.D. Hilberg, M.S. Timlin, L. Stoecker, N.E. Westcott, and J.G. Dobson, 2013: Regional Climate Trends and Scenarios for the U.S. National Climate Assessment. Part 3. Climate of the Midwest U.S., NOAA Technical Report NESDIS 142-3, 95 pp. (available at <http://scenarios.globalchange.gov/regions/midwest>).

<sup>28</sup> Global Climate Change Impacts in the United States, Thomas R. Karl, Jerry M. Melillo, and Thomas C. Peterson, (eds.). Cambridge University Press, 2009, at page 32 (available at <http://nca2009.globalchange.gov/>).

<sup>29</sup> *Id.*

<sup>30</sup> *Id.*

<sup>31</sup> USGS Fact Sheet 2005-3020, Trends in the Water Budget of the Mississippi River Basin, 1949-1997.

“As a group, migratory wildlife appears to be particularly vulnerable to the impacts of Climate Change because it uses multiple habitats and sites and use a wide range of resources at different points of their migratory cycle. They are also subject to a wide range of physical conditions and often rely on predictable weather patterns, such as winds and ocean currents, which might change under the influence of Climate Change. Finally, they face a wide range of biological influences, such as predators, competitors and diseases that could be affected by Climate Change. While some of this is also true for more sedentary species, migrants have the potential to be affected by Climate Change not only on their breeding and non-breeding grounds but also while on migration.”

“Apart from such direct impacts, factors that affect the migratory journey itself may affect other parts of a species’ life cycle. Changes in the timing of migration may affect breeding or hibernation, for example if a species has to take longer than normal on migration, due to changes in conditions *en route*, then it may arrive late, obtain poorer quality breeding resources (such as territory) and be less productive as a result. If migration consumes more resources than normal, then individuals may have fewer resources to put into breeding . . . .”

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“Key factors that are likely to affect all species, regardless of migratory tendency, are changes in prey distributions and changes or loss of habitat. Changes in prey may occur in terms of their distributions or in timing. The latter may occur though differential changes in developmental rates and can lead to a mismatch in timing between predators and prey (“phenological disjunction”). Changes in habitat quality (leading ultimately to habitat loss) may be important for migratory species that need a coherent network of sites to facilitate their migratory journeys. Habitat quality is especially important on staging or stop-over sites, as individuals need to consume large amounts of resource rapidly to continue their onward journey. Such high quality sites may [be] crucial to allow migrants to cross large ecological barriers, such as oceans or deserts.”<sup>32</sup>

Migratory birds are at particular risk from climate change. Migratory birds are affected by changes in water regime, mismatches with food supply, sea level rise, and habitat shifts, changes in prey range, and increased storm frequency.<sup>33</sup>

The Phase V EA must carefully consider whether the impacts of climate change could exacerbate the impacts of the proposed Phase V project.

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<sup>32</sup> UNEP/CMS Secretariat, Bonn, Germany, *Migratory Species and Climate Change: Impacts of a Changing Environment on Wild Animals* (2006) at 40-41 (available at [http://www.cms.int/publications/pdf/CMS\\_CimateChange.pdf](http://www.cms.int/publications/pdf/CMS_CimateChange.pdf)).

<sup>33</sup> *Id.* at 42-43.

**E. The Phase V EA Fails to Properly Evaluate Mitigation Needs**

Because the Phase V EA fails to adequately evaluate project impacts, it also fails to adequately evaluate whether compensatory mitigation is required. It is virtually inconceivable that burying three quarters of a mile of river under 165,100 tons of rock would not cause adverse impacts to fish and wildlife resources that must be mitigated.

As a matter of law, the Phase V EA must include “a specific plan to mitigate for damages to ecological resources, including terrestrial and aquatic resources, and fish and wildlife losses created” by the proposed project unless the Secretary of the Army makes a determination that the project will have “negligible” adverse impacts. 33 U.S.C. § 2283(d).

**F. The Clean Water Act Section 404(b)(1) Evaluation Fails to Provide an Accurate Assessment**

The many failings in the Phase V EA have resulted in a Clean Water Act Section 404(b)(1) Evaluation that fails to provide an accurate and supportable assessment of the impacts of the proposed project.

**G. Conclusion**

For at least the reasons set forth in these comments, the Phase V EA is legally deficient and cannot be relied upon to satisfy the requirements of NEPA for the proposed project. The National Wildlife Federation urges the Corps to withdraw the Phase V EA and put the project on hold at least until the Corps completes a legally adequate supplemental environmental impact statement for the Regulating Works Program.

Sincerely,



Melissa Samet  
Senior Water Resources Counsel

Attachments