



DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
441 G STREET, NW
WASHINGTON, DC 20314-1000

AUG 30 2019

CECW-PC

MEMORANDUM FOR RECORD

SUBJECT: DuPage River, Illinois Feasibility Report and Integrated Environmental Assessment Independent External Peer Review

1. An Independent External Peer Review (IEPR) was conducted for the subject project in accordance with Section 2034 of the Water Resource Development Act of 2007, EC 1165-2-209 (superseded by EC 1165-2-214, 15 December 2012), and the Office of Management and Budget's Final Information Quality Bulletin for Peer Review (2004).
2. Battelle Memorial Institute, a non-profit science and technology organization with experience in establishing and administering peer review panels for the U.S. Army Corps of Engineers (Corps), was engaged to conduct the IEPR for the DuPage River, Illinois Feasibility Report and Integrated Environmental Assessment and its supporting documentation. The IEPR consisted of four members with expertise in civil engineering, economics and planning, environmental/National Environmental Policy Act, and hydrology and hydraulics.
3. The final written agency responses to the IEPR are hereby certified. The enclosed document contains the final written responses of the Chief of Engineers to the issues raised and the recommendations contained in the IEPR report. The IEPR report and the Corps responses have been coordinated with the vertical team, endorsed by the Risk Management Center and approved by the Great Lakes and Ohio River Division, and will be posted on the Internet, as required in EC 1165-2-214.
4. If you have any questions on this matter, please contact me or have a member of your staff contact Catherine Shuman, Deputy Chief, Great Lakes and Ohio River Division Regional Integration Team, at catherine.m.shuman@usace.army.mil or 202-761-1379.

Encl

A handwritten signature in blue ink, appearing to read "J. Dalton".

JAMES C. DALTON, P.E.
Director of Civil Works

DuPage River, IL Feasibility Report and Integrated Environmental Assessment

U.S. Army Corps of Engineers Response to Independent External Peer Review July 2019

Independent External Peer Review (IEPR) was conducted for the DuPage River, IL Feasibility Report and Integrated Environmental Assessment in accordance with Section 2034 of the Water Resources Development Act of 2007, the USACE peer review policy (currently, EC 1165-2-217) and the Office of Management and Budget's *Final Information Quality Bulletin for Peer Review (2004)*. The goal of the U.S. Army Corps of Engineers (USACE) Civil Works program is to always provide scientifically sound, sustainable water resources solutions for the nation. The USACE review processes are essential to ensuring project safety and quality of the products USACE provides to the American people.

Battelle Memorial Institute (Battelle), a non-profit science and technology organization with experience in establishing and administering peer review panels for the USACE, was engaged to conduct the IEPR for the Draft DuPage River, IL Feasibility Report and Integrated Environmental Assessment, and its supporting documentation, released for public review on August 23, 2018. The review panel consisted of four panel members with expertise in plan formulation/ economics, environmental law compliance, hydrology and hydraulic engineering and civil/geotechnical engineering.

Initial comments were received from Battelle via the *Final Independent External Peer Review Report* transmittal on October 26, 2018. The review resulted in 11 final panel comments, 5 comments rated as medium, 5 rated as medium/low and 1 rated low. The USACE concurred with eleven comments and non-concurred with no comments. As a result of the Panel Backcheck and subsequent USACE responses, there were 43 suggested recommendations. Of these 43 recommendations, 35 were adopted and 8 were not adopted.

Battelle issued its Comment Response Record for the Independent External Peer Review of the DuPage River Feasibility Report and Integrated Environmental Assessment: USACE Final Evaluator Response and Panel BackChecks document on February 25, 2019, completing the IEPR process for this project.

Following completion of the IEPR process and backcheck of all comment responses, the USACE project delivery team continued the feasibility study process including updating engineering, cost estimating, and the economic analysis. As a result, several items were changed in the final report, most significantly the Lacey Creek Restriction as a component of the Recommended Plan. Other significant changes included modifications of plan cost estimates and estimates of the average annual benefits of each plan. Due to these modifications, many of the responses to the IEPR comments documented in the summary below include statements and references to values that are no longer representative of the

final report recently approved by USACE. The final report, *DuPage River, Illinois Feasibility Report and Integrated Environmental Assessment*, was approved by USACE in July, 2019.

Responses to the IEPR comments were not updated to represent updated values because the IEPR process has already been completed and closed out. Notes to this effect have been included in the responses to each of the comments and recommendations that are no longer representative of the final document in the summary of IEPR responses below.

The following discussion presents a summary of the USACE final responses to the comments.

1. Medium Significance - The DFR/IEA does not clearly explain how the study objectives, constraints, and net benefits were applied to develop the final TSP selection.

NOTE: Following completion of the IEPR process and backcheck of all comment responses, USACE continued the feasibility study process including updating the engineering design, cost estimates, and economic analysis. As a result of that work several items were changed in the final report. Due to these modifications, the response to this comment includes statements and references to values that are no longer representative of the final report recently approved by USACE. The final Recommended Plan included Lisle Levee (EBLL2) and Lacey Creek (EB6) plans as well as 7 nonstructural plans.

USACE concurs with this comment.

Additional narrative describing the selection of the TSP was added to Section 3.10 (TSP). A last added analysis was conducted to determine whether both individually justified structural plans (EB6 and EBLL2) could be implemented together and still justified, but this analysis showed that both plans implemented together could not be justified, therefore the structural plan with the highest net benefits (EBLL2) was selected. The nonstructural plans are not hydraulically connected to each other, therefore each justified (or nearly justified) plan was included in the TSP.

Two recommendations were made with this comment. Both were adopted.

1. Describe the process for moving from the final array of alternative plans (Section 3.8.4, p. 72) to the TSP.

NOTE: The text included in this response no longer represents the final report. See explanation above.

USACE Response: Adopted.

The following additional description was added to Section 3.10 (TSP) about the process to identify the TSP based on the analysis of the focused array:

The National Economic Development (NED) Plan consists of the alternatives that best meet the study objectives, avoids constraints, and provides the highest net benefits

within the study area. For the purposes of the DuPage River Watershed Study, the NED plan is also identified as the Tentatively Selected Plan (TSP).

Structural components: As displayed in Table 3-11, both the Lacey Creek Restriction (EB6) and the Lisle levee repair and elevation (EBLL2) plans are estimated to result in positive net benefits if implemented alone. The development of the preliminary cost and benefit estimates used to evaluate the final array looked at each potential measure as a stand-alone action. Since both of these projects (EB6 and LL2) are located on the East Branch, they are not hydraulically independent, as the area that each project benefits is essentially the same. Therefore, a hydraulic model was constructed to understand the benefits that could be expected if both of these projects were constructed. As displayed in Table 3-11 (row labeled "Last Added Analysis", the benefits of implementing both projects is only slightly higher than the individual benefits of implementing the LL2 plan. While the benefits of implementing these two plans are not additive, the costs would be, so the total cost of implementing the two plans is estimated to be the same as the cost implementing each plan individually. Based on this analysis, the 'last added analysis' indicates that cost of implementing both plans does not outweigh the benefits, such that both plans cannot be recommended. Since EBLL2 provides more net benefits than EB6, \$68,000 equivalent average annual benefits as opposed to \$14,000, EBLL2 is selected as a component of the TSP.

Nonstructural components: As displayed in Table 3-11, 5 nonstructural plans are estimated to have positive net benefits: WBNS1, WBNS2, EBNS1, EBNS2, and DUNS2. Additionally, DUNS3 is estimated to provide nearly positive net benefits (-\$6,000 equivalent average annual benefits). Due to the level of uncertainty currently included in the nonstructural measures cost estimate, the PDT retained this alternative plan for the TSP because it is considered fairly likely that refined cost estimates based on more detailed design could reduce the cost of this plan such that it would provide positive net benefits.

2. Explain why some alternatives with slightly negative net benefits were retained in the TSP and others were not. Specifically, why DUNS3 was retained and EBLL1 was not.

USACE Response: Adopted.

An explanation of why DUNS3 is included in the TSP was added to Section 3.10, which is included in the response to Recommendation 1 above. LL1 was not included in the TSP, because LL1 and LL2 are different variations of a similar project (repairing the Lisle Levee) so since LL2 was selected, LL1 could not also be implemented.

2. **Medium Significance - The conclusion that the Lisle Levee is feasible, given the uncertainty in both benefits and costs, is not supported by the information provided in the DFR/IEA.**

NOTE: Following completion of the IEPR process and backcheck of all comment responses, USACE continued the feasibility study process including updating the engineering design.

cost estimates, and economic analysis. As a result of that work several items were changed in the final report. Due to these modifications, the response to this comment includes statements and references to values that are no longer representative of the final report recently approved by USACE. The final Recommended Plan includes Lisle Levee (EBLL2) and Lacey Creek (EB6) plans as well as 7 nonstructural plans. A cost and schedule risk analysis (CSRA) was completed prior to release of the final report.

A detailed summary of the cost estimate and final benefit to cost ratio (BCR) is included in the final report, as the response states would be done.

USACE concurs with this comment.

Additional information about the uncertainty related to economic justification of the Lisle Levee project has been added to the report through a new section (Section 5.1.4: Key Uncertainty: Economic Justification). This section highlights the low net benefits for the project and discusses the actions being taken to reduce uncertainty in the analysis.

Prior to release of the final report, additional analysis to refine the costs and benefits will be conducted and the benefit analysis will be updated. A cost and schedule risk analysis (CSRA) will be conducted and the costs of the recommended plan will be certified by the USACE Cost Mandatory Center of Expertise. The text in Section 5.1.4 will be updated based on the completion of this analysis prior to release of the final report

Seven recommendations were made with this comment. All were adopted.

1. Add a discussion that addresses the low feasibility of the Lisle Levee portion of the project.

NOTE: The values included in this response no longer represents the final report. See explanation in the note above.

USACE Response: Adopted.

Section 5.1.4 (Key Uncertainty: Economic Justification) was added to the report to explicitly highlight the risk of economic justification not being met. The text added to the report in this section is as follows:

The justification of the TSP is based on a comparison of estimated costs to estimated benefits. In most cases, benefits only slightly exceed the costs in order to demonstrate justification, as summarized in Table 3-12. A 30% contingency was included in all estimates for TSP identification, but if costs or benefits are significantly different than these estimates, justification of recommend projects could be impacted.

For the Lisle Levee proposed project (EBLL2), the estimated equivalent average annual benefits are \$370,000 while the equivalent average annual benefits are \$367,000, resulting in an annualized net benefit of \$3,000, which is an extremely low average net benefit. To reduce the uncertainty in the cost estimates, several actions were taken to

refine the feasibility level design following the release of the draft report for public review:

- *An additional site visit was conducted to identify any site specific design requirements or limitations to be considered in the refined design.*
- *Soil borings were collected to confirm geotechnical design assumptions and width and slope requirements.*
- *Point survey data was collected to confirm high ground locations at levee tie back and closure structure locations.*
- *Additional civil design analysis was conducted to refine the estimate of quantities required to repair and elevate the existing levee structure.*
- *Updated real estate maps were developed to refine extents of easements required.*

The economic benefits associated with the proposed Lisle Levee project currently account for structural and content damage, emergency management costs, and costs associated with traffic disruption. Refinements to the analysis are being made to finalize the report, however no additional benefit categories will be included. The only other possible category that was considered was recreational benefits, however there are no planned recreational features in conjunction with the levee project since no compatible recreation features were identified.

Additionally, several of the nonstructural plans included in the TSP are at risk of losing economic justification if the costs change significantly. Following release of the draft report for public review, additional effort was made to refine and confirm the parametric cost estimates used for non-structural measures to increase confidence in the parametric costs being used. At this time, the PDT feels that that parametric costs being used for nonstructural measures are conservative.

2. Explain why benefits and cost estimates differ between Table 3-12 and Table 3-13.
NOTE: The values and Recommended Plan included in this response no longer represent the final report. See explanation in the note above. An explanation of the differences between the costs in the two tables is included in the final report, as the response states would be done.

USACE Response: Adopted.

(NOTE: Subsequent to panel review, the table numbers were changed while addressing an Agency Technical Review (ATR) comment. Table 3-12, Economic Evaluation of Alternatives, is now Table 3-11 and Table 3-13, Tentatively Selected Plan Summary, is now Table 3-12 in the updated version of the report. The response refers to the updated table numbers.)

The difference between EBLL2 in Table 3-11 and Table 3-12 is \$5,000 and this was due to a small refinement in the total project costs based on refinement of the design following selection of the TSP from the focused array.

For the non-structural cost estimates, parametric costs which were provided by the USACE Civil Works Cost Engineering and Agency Technical Review Mandatory Center of Expertise (MCX), which operates out of the Walla Walla District's Cost Engineering Branch. These parametric estimates were used to provide the cost estimates for the focused array displayed in Table 3-11. After selection of the TSP but prior to release of the draft report for review, the MCX provided alternative parametric cost estimates for nonstructural measures. The alternative parametric costs were used to estimate costs for the nonstructural components of the TSP (WBNS1, WBNS2, EBNS1, EBNS2, DUNS2, DUNS3), as reported in Table 3-12. For some plans the costs increased while for other plans the costs decreased. In all cases, however, economic justification was not altered (positive net benefits were still demonstrated for all plans in the TSP). Following release of the draft report for public review, additional effort was made to refine and confirm the parametric cost estimates used for non-structural measures to increase confidence in the parametric costs being used.

An explanation of the differences between the costs in the two tables will be added to the report to clarify. Since these costs are still being refined and need to be certified, this information will be added prior to release of the final report.

3. Characterize the different degrees of uncertainty in the final benefit and cost estimates, and the resulting implications for feasibility of the Lisle Levee.

USACE Response: Adopted.

The uncertainty associated with the final benefit and cost analysis is included in Section 5.1.4, which is included in the response to Recommendation 1, above.

4. If the feasibility is still uncertain, research improved estimates of both benefits and costs for any project element that is not certain.

USACE Response: Adopted.

Additional analysis of the components included in the TSP have been ongoing following release of the draft report for public review and IEPR. A summary of this analysis is included in the response to Recommendation 2, above.

5. Add a summary in Appendix D showing the major components of the first costs of the Lisle Levee.

NOTE: A summary of the components of the cost estimate is included in Appendix D of the final report, as the response states would be done.

USACE Response: Adopted.

Additional feasibility level design is currently underway. Prior to release of the final report, a summary of the components included in the Lisle Levee cost estimate will be

included in Appendix D. Since these costs are still being refined and need to be certified, this information will be added prior to release of the final report.

6. Review the BCR any time the project costs or benefits change to ensure that the project is still economically viable.

USACE Response: Adopted.

The BCR is continually being reviewed as modifications to the feasibility level design impact project costs or benefits. The final version of the report will include the updated BCR based on this additional analysis.

7. Look for additional benefits that might strengthen the case for feasibility.

USACE Response: Adopted.

The economic benefits currently account for structural and content damage, emergency management costs, and costs associated with traffic disruption. Refinements to the analysis are being made to finalize the report, however no additional benefit categories will be included. The only other possible category that was considered was recreational benefits, however there are no planned recreational features in conjunction with the TSP since no compatible recreation features were identified.

3. Medium Significance - It is not clear why the Lacey Restriction storage alternative was dropped from the TSP, given its positive net benefits.

NOTE: Following completion of the IEPR process and backcheck of all comment responses, USACE continued the feasibility study process including updating the engineering design, cost estimates, and economic analysis. As a result of that work several items were changed in the final report. Due to these modifications, the response to this comment includes statements and references to values that are no longer representative of the final report recently approved by USACE. The final Recommended Plan includes Lisle Levee (EBLL2) and Lacey Creek (EB6) plans as well as 7 nonstructural plans.

USACE concurs with this comment.

(NOTE: Table numbers were changed while addressing an ATR comment. Table 3-12, Economic Evaluation of Alternatives, is now Table 3-11 and Table 3-13, Tentatively Selected Plan Summary, is now Table 3-12 in the updated version of the report. The response refers to the updated table numbers.)

This comment was addressed by the response to Final Panel Comment (FPC) #1. A last added analysis was conducted to determine whether both individually justified structural plans (EB6 and EBLL2) could be implemented together and still justified, but this analysis showed that both plans implemented together could not be justified, therefore the structural plan with the highest net benefits (EBLL2) was selected.

Two recommendations were made with this comment. Both were adopted.

1. Explain why the Lacey Restriction storage alternative was not part of the final TSP.
NOTE: The values and recommended plan included in this response no longer represent the final report. See explanation in note above.

USACE Response: Adopted.

The following additional description was added to Section 3.10 (TSP) about the process to identify the TSP based on the analysis of the focused array:

The National Economic Development (NED) Plan consists of the alternatives that best meet the study objectives, avoids constraints, and provides the highest net benefits within the study area. For the purposes of the DuPage River Watershed Study, the NED plan is also identified as the Tentatively Selected Plan (TSP).

Structural components: As displayed in Table 3-11, both the Lacey Creek Restriction (EB6) and the Lisle levee repair and elevation (EBLL2) plans are estimated to result in positive net benefits if implemented alone. The development of the preliminary cost and benefit estimates used to evaluate the final array looked at each potential measure as a stand-alone action. Since both of these projects (EB6 and LL2) are located on the East Branch, they are not hydraulically independent, as the area that each project benefits is essentially the same. Therefore, a hydraulic model was constructed to understand the benefits that could be expected if both of these projects were constructed. As displayed in Table 3-11 (row labeled "Last Added Analysis", the benefits of implementing both projects is only slightly higher than the individual benefits of implementing the LL2 plan. While the benefits of implementing these two plans are not additive, the costs would be, so the total cost of implementing the two plans is estimated to be the same as the cost implementing each plan individually. Based on this analysis, the 'last added analysis' indicates that cost of implementing both plans does not outweigh the benefits, such that both plans cannot be recommended. Since EBLL2 provides more net benefits than EB6, \$68,000 equivalent average annual benefits as opposed to \$14,000, EBLL2 is selected as a component of the TSP.

2. Clearly describe how and why the net benefit calculation was or was not used in identifying the TSP.

USACE Response: Adopted.

A description of how the net benefits (summarized in Table 3-11) were used was added to Section 3.10. This description is summarized in the response to FPC #1 and FPC #3 Recommendation 1, both above.

4. **Medium Significance - The structural damages analysis does not accurately assess damages because it uses a single universal 48-hour duration for the TSP.**

USACE concurs with this comment.

The critical duration analysis was reviewed. For the East Branch DuPage River, West Branch DuPage River and mainstem DuPage River a 48-hr critical duration was used. A 24-hr critical duration was used for Lily Cache Creek. For the mainstem DuPage River the 72-hr was the critical duration for the 20% ACE (5-year). However, the difference between the 72-hr and 48-hr water surface elevations are minor (less than 0.07 feet) and additional economic analysis isn't warranted. Language has been added to Appendix A (H&H) to clarify this.

Two recommendations were made with this comment. Neither were adopted.

1. Meet with the local sponsor to discuss the critical duration analysis, and determine resolution for structural damages estimates and impacts on the TSP.

USACE Response: Not Adopted.

During the model development, calibration and alternatives phase, the nonfederal sponsor reviewed the critical duration analysis. Therefore additional meetings are not warranted; language that stated that this topic needs to be discussed with the local sponsor was removed from the Appendix A.

2. Include determined values for critical duration in future HEC-FDA model updates.

USACE Response: Not Adopted.

No changes to the HEC-FDA model need to be completed. A reference to the critical duration of the hydraulic profiles used was added to the Economic Appendix (Appendix B).

5. Medium Significance - Details on the wetland assessment and mitigation of impacts have not been documented in the DFR/IEA.

USACE concurs with this comment.

Additional details related to the wetland delineation and impacts analysis associated with the recommended plan were added to the report. See responses to each individual recommendation below. In addition, the methodologies outlined by Cowardin were added to Appendix G (Coordination and Environmental Analysis).

Four recommendations were made with this comment. All were adopted.

1. Describe the methods used to conduct the wetland assessment/delineation in the DFR/IEA.

USACE Response: Adopted.

An additional paragraph was added to the Section 4.3.2.1 (Hydrologic Resources) under the wetland section to outline the process of the wetland delineation. Additionally, a summary of the methodology for wetland delineation outlined by Cowardin was added to Appendix G (Coordination and Environmental Analysis).

2. Modify Section 4.3.2.1 to provide more detail about the process that will be followed to develop the wetland mitigation plan.

USACE Response: Adopted.

Explanation: The following additional information was added to Section 4.3.1.1 (Physical Resources) under the wetland section to outline the process of the wetland delineation.

Additional language was added about the wetland delineation below. At this time, no mitigation is being recommended and details on a wetland mitigation plan are not available. Details on the final design of the levee will help determine if any mitigation is needed. Any mitigation that is needed will likely be onsite to save costs and provide direct benefits to the area impacted. A sentence was placed near the end of the following to address that, but no detailed mitigation plan will be produced until detailed design.

“A map of the proposed alternative was reviewed to ascertain if the levees had encroached in to any existing study area wetlands based on the most current aerial photography. Overlaying the proposed alternative in ArcGIS, it was evident that the toe of the levee had protruded into the DuPage River EB and portions of St. Joseph Creek. Preliminary design of the proposed levee includes the assumption that a dolomitic riprap toe or fluvial stone will be placed onto the existing river/levee bank and into the wetted river bottom. Based on the alternative design plate, of the total of 4.5-acres of riverine wetland habitat that exists within the work limits, in which about 1-acre of it would be impacted by extension of the levee toe riverward and the placement of dolomitic riprap. The impact zone was calculated by assuming a five (5) foot width along the entire length (8,900-feet) of the repaired levee, as recommend by the design team. However, detailed design will determine the exact amount of tow stone to be placed as it may be possible to significantly decrease the linear feet to decrease impacts.

The aerial extent of the riverine wetland was ground truthed to determine a qualitative quality and investigate the presence of any other wetlands that were not evident from aerial observation. Field investigations resulted in confirming the limits of the riverine wetland and the absence of other wetland types within the work limits, in which report photos were derived from.

The Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et. al, 1979) was utilized to classify the riverine wetland system. Further details on the methodology used can be gathered from reading the attached methodology in Appendix G.

To corroborate the wetland delineation, DuPage County and State of Illinois wetland GIS databases were queried. The County and State both delineated the study area DuPage River as riverine wetland, matching the Chicago District's delineation exactly.

Mitigation was not recommended and is dependent on coordination with USFWS, USEPA and the DuPage County Wetland Regulatory Department. If mitigation is required after coordination and additional detailed design, mitigation will occur on site to minimize costs and provide direct benefits to the impacted area.”

3. Add a sub-section on hydrology to Section 4.5 and describe the potential downstream impacts associated with the proposed wetland fill.

USACE Response: Adopted.

A paragraph outlining hydrologic resource impacts was added to section 4.5.2.1 (Hydrologic Resources). The focus of the impacts were on fill activities and impacts downstream. Overall, methods and materials for fill are being analyzed in detailed design to minimize any impacts.

“Impacts to the hydrologic resources in relation to any fill activities within or adjacent to wetlands is anticipated to be minor. The area is already heavily impacted due to past activities and the area impacted is mostly open water resources. The exact footprint for potential impacts will be analyzed during design and specifications. In an attempt to alleviate or minimize any impacts, fluvial stone may be used as much as possible for levee stabilization and provide important habitat features for aquatic organisms. In addition, any fill placement activities will be done following BMP’s to minimize any impacts adjacent or downstream of the project area.”

4. Revise Table 4.2 (p. 105) as needed once the effects determination has been updated

USACE Response: Adopted.

Table 4-2 (Environmental Impact Summary) was updated to indicate minor impact to hydrology associated with the recommended plan.

6. **Medium/Low Significance - It is unclear why the DFR/IEA relies upon unrelated and outdated studies to characterize the macroinvertebrate, bivalve, and fish communities when more recent studies from the project area are available.**

USACE concurs with this comment.

Additional references were reviewed and data were summarized to provide additional information on the status of macroinvertebrates within the DuPage River. Impacts of analysis were also validated for fish and mussels to ensure they were appropriately accounted for. Specific details are provided below. Overall, additional analysis found no changes in the impacts to resources.

Five recommendations were made with this comment. Four were adopted.

1. Review the 2008 and 2013 MBI reports on the Biology and Water Quality of the East Branch DuPage River, as well as other studies that MBI may have completed in the Lisle Levee area, and summarize the relevant findings for the project area.

USACE Response: Adopted.

Additional information and was added to Section 2.2.2 (Macroinvertebrates) with information related to the 2016 MBI report. Originally the older version was used because it was a larger watershed effort that provided a more holistic look at the health of the watershed and did not focus on just a portion of the watershed. In general, the other reports showed similar results to previous studies and further validates the description of the status and potential impacts to macroinvertebrates.

2. Modify Sections 4.3.2.3 and 4.3.2.4 of the DFR/IEA to more fully describe current macroinvertebrate, bivalve, and fish communities in the project area.

USACE Response: Adopted.

Additional details were added in Sections 4.3.2.2 (Macroinvertebrates) and 4.3.2.4 (Fishes and Mussels) about more recent collections. The species composition are similar to the table shown. That table shown was put there to describe the changes after serious modifications. Additional link was added to the watershed conditions for mussels as collection from this reach are very limited. Finally, additional details and a link to previous sections describing macroinvertebrates were added.

3. Verify the conclusions of the impact analysis for macroinvertebrates, fish, and mussels after completing Items 1 and 2. Revise Sections 4.5.2.2 and 4.5.2.3 of the DFR/IEA if any conclusions change

USACE Response: Not Adopted.

The conclusion of the impact analysis for macroinvertebrates, fish, and mussels were verified. No changes were made to the report, as the impact analysis remained the same.

4. Add the references to MBI's East Branch DuPage River studies to Section 6 of the DFR/IEA.

USACE Response: Adopted.

A reference to the 2016 MBI report was added to the reference section.

5. Evaluate the overall potential for beneficial or adverse environmental impacts from the levee and add this to the description of the benefits of the TSP (Section 5.1.1 in the DFR/IEA).

USACE Response: Adopted.

A brief sentence outlining benefits/impacts to the TSP plan was added. Being a FRM project the benefits are primarily associated with economic benefits. However, environmental costs and benefits may also result from the recommended plan. The following was added to summarize the findings of the EA.

"While the justification for this plan is primarily focused on cost benefits, environmental benefits or impacts are also considered. As documented in Section 4.5 (Effects Determination), minor adverse impacts may occur in areas near the levee, but minor environmental benefits are expected from the non-structural component."

7. Medium/Low Significance - The cumulative effects assessment does not consider other reasonably foreseeable impacts associated with long-term operation and maintenance of the levee.

USACE concurs with this comment.

An additional brief summary of impacts from O&M operations were added to the necessary locations based on the IEPR comments. The impacts and ways to offset the minor impacts from O&M were also addressed. Language identifying levee maintenance protocols as well as the responsibilities of the NFS and landowners were also added to Appendix C.

Seven recommendations were made with this comment. Five were adopted.

1. Evaluate and discuss the potential cumulative impacts related to levee and levee bank O&M as potential reasonably foreseeable future actions in DFR/IEA Section 4.6.

USACE Response: Adopted.

Additional language was added Section 4.6.2 (Cumulative Effects on Resources) for both physical resources and ecological resources. *While there may be some impacts associated with O&M activities, those impacts will be minor. Also, some benefits may be gained from the planting of native grasses and plants within the project area. However, O&M activities such as mowing may have effects on the benefits in the long term. In an effort to minimize the impacts and maximize the long term ecological benefits, species used will be tolerant of such activities. By selecting tolerant species, it provides an improved outlook for acquiring positive ecological benefits in the long term.* The following language was added to Section 4.6.2:

“In addition, O&M activities may result in some impacts to the project area. Re-occurring mowing, shrub removal, and tree removal may have some minor effects to the project area, but they will be minor in terms of the greater impacts that have already occurred. Any impacts to the soil/clay on the levee from these activities will be corrected with additional fill to ensure the levee maintains the appropriate height for protection.”

2. Revise Appendix C to identify acceptable mosquito control practices that will minimize potential adverse impacts on water quality; include an analysis of how mosquito control might impact indigenous aquatic life either in Appendix C or in the DFR/IEA.

USACE Response: Not-Adopted.

The language in the recommended easement language in Appendix C allows the sponsor to do all of the necessary activities and prevent the landowner from disturbing the project. The reference to mosquito control in the real estate flowage easement template is language from the standard easement language approved by USACE HQ. The fact that is in parenthesis indicates that is an option addition if necessary. The language includes this measure as an option to be used in the future if necessary, but it is not a requirement. The sponsor is not expected to conduct mosquito control operations on the site of the levee, and therefore no impacts associated with this

option included in the flowage easement are expected. To further elaborate, the county was contacted and the mosquito control is conducted by the village, a stakeholder, but they confirmed that the levee is not a location for spraying.

3. Revise Appendix C to clarify what aspects of vegetation planting and maintenance on the levee will be assumed by the project sponsor and what responsibilities and restrictions apply to the landowners.

USACE Response: Not Adopted.

The landowner does not have any maintenance responsibilities for the project. Restrictions are clearly laid out in the easements. The report states that all O&M is the responsibility of the local sponsor.

4. Revise DFR/IEA Section 4.6 to describe the mitigation measures that will be implemented to minimize these potential reasonably foreseeable cumulative impacts.

USACE Response: Adopted.

This comment was addressed through recommendation # 1. All operation and maintenance activities will be performed by the local sponsor not by the residential property owner. The vegetative species selected for the levee will be tolerant of planned O&M activities.

5. Evaluate the overall potential for positive or negative environmental impacts from the levee and add this to the description of the benefits of the TSP (DFR/IEA Section 5.1.1).

USACE Response: Adopted.

This comment was addressed through Comment 6.5. A brief summary concluding the overall findings was placed in section 5.1.1.

“While the justification for this plan is primarily focused on cost benefits, environmental benefits or impacts are also considered. As documented in Section 4.5 (Effects Determination), minor adverse impacts may occur in areas near the levee, but minor environmental benefits are expected from the non-structural component.”

6. Include additional details in Section 3.8.4 describing planned green infrastructure/low impact development features for structural and non-structural measures.

USACE Response: Adopted.

The specific details for nature based options are not fully designed at this phase. The details are purposely left broad. Minor details are provided in each section where they may be implemented, but greater details are listed in the TSP section in Section 5.1.6. However, a link to the section was added in Section 3.8.4.5 in order to provide a few more details on the types of features that may be used. Cost for seeding the levee are already built into the planning level costs, but the species mix and content specifics will be determined in design. Additionally, rounded river cobble if needed is also built into planning level costs and will be detailed in design. Potential benefits from the nature based features are also outlined in the cumulative effects section.

7. Include specifics of levee maintenance protocols into the PPA and Project O&M manual.

USACE Response: Adopted.

The Project Partnership Agreement (PPA) will include detailed specific information about the requirements for the nonfederal sponsor, including the requirement to provide Operation and Maintenance (O&M) activities for the completed project. O&M requirements will be thoroughly detailed in an O&M Manual, which will be provided to the sponsor at the completion of the project.

8. Medium/Low Significance - The DFR/IEA does not fully describe or evaluate the impacts of the non-structural alternative.

USACE concurs with this comment.

Section 4.3 (Affected Environment) introduction paragraph states that the non-structural impacts were only called out if effects were determined, whether positive or negative. Nonstructural effects were included in relevant sections of the report if impacts are thought to occur. A sentence outline when areas were updated within the effect determination was also added. Potential minor impacts from buyouts were included in the HTRW section

Five recommendations were made with this comment. Four were adopted.

1. Evaluate the impacts of the non-structural measures on the natural and human environments.

USACE Response: Adopted.

Overarching impacts from nonstructural measures were added throughout the affected environment section. In general, the only time they were specifically called out was if negative or positive benefits were assumed. This is also made clear in the intro paragraph to the affected environment section.

2. Revise the following sections of the DFR/IEA to present the findings from the evaluation conducted for Recommendation #1: 4.5.1.4, 4.5.1.5, 4.5.2.1, 4.5.2.4, 4.5.2.5, 4.5.2.6, and 4.3.

NOTE: Any positive or negative impacts associated with nonstructural measures on the natural and human environments are included in the final report, as the response states would be done.

USACE Response: Adopted.

The Physical and Ecological Resource in the Effects Determination Section (4.5) have been updated to account for potential impacts caused by nonstructural measures. Once the location are finalized for the non-structural plan, the remaining resources will be updated if a positive or negative impact is determined. A summary of the additions made to sections where impacts are anticipated include:

(4.5.1.4 Air Quality) – Once implemented, the project itself will be neutral in terms of air quality, with no features that either emit or sequester air pollutants. The project is not and will not be a source of greenhouse gas emissions. During the project construction, heavy equipment would cause minor, temporary air quality impacts. However, all equipment will comply with federal vehicle emission standards and dust control measures will be implemented during construction. Temporary mobile source emissions from this project are expected to be de minimis in nature according to the terms of the National Ambient Air Quality Standards and the State Implementation Plan. In addition, potential short term, minor impacts to local air quality may occur from temporary construction activities. These activities may also increase traffic congestion within the area due to detours or temporary road closures that can also have a short term, temporary impact to localized air quality

(4.5.1.6 Hazardous and Toxic Substances) (formerly 4.5.1.5) – “The non-structural plan may have minor, temporary impacts to HTRW. In the case of buyouts, the demolition of older homes may present minor impacts such as lead-based paints, asbestos and other household hazards. Overall, impacts are expected to be short term and minor.”

(4.5.2.1 Native Plant Communities) (formerly 4.5.2.1) – “The nonstructural measure consists of flood proofing, raising, or buyouts of properties. These properties primarily consist of residential, but some are listed as commercial. The terrestrial habitats with and adjacent to these structures are limited to non-existent. The areas are primarily mowed lawns with trees. In general, this environment is supportive of urban flora and fauna common to the Chicagoland area. Flood proofing and raising of structures will not have an impact to the terrestrial habitat. Buyouts may provide some net benefits as these areas can be planted with native species, slightly improving the ecosystem in a mostly urban area”

3. Include a discussion of the impacts that may be expected at those locations where acquisition and removal of structures is implemented.

USACE Response: Adopted.

An additional paragraph was placed in the HTRW section to account for potential impacts from older homes. Specifically, lead based paints asbestos and other household materials were discussed. Overall, impacts are expected to be short term and minor.

4. Revise Appendix C to clarify what aspects of site restoration and maintenance will be assumed by the project sponsor at the properties where the non-structural measure of acquisition is implemented.

USACE Response: Adopted.

The following text was added to appendix C (Real Estate):

For properties where acquisition is implemented, the cost of regrading and vegetating the properties following removal of the structure(s) are considered a project cost.

Ongoing maintenance of the sites will include vegetation maintenance/ mowing and any incidental trash or debris removal as necessary. All maintenance will be the responsibility of the project sponsor.

5. Add a discussion of the environmental quality changes to the section on selection of the TSP (Section 3.10 of the DFR/IEA)

USACE Response: Not Adopted.

The addition of that information in the suggested section does not fit well with the story telling of the feasibility report. With the updated sections from ATR and IEPR comments, the impact changes have been sufficiently documented.

9. Medium/Low Significance - The DFR/IEA does not include a comparison of the effective FIS floodplain delineation with the with-project TSP.

NOTE: A comparison between FEMA FIS floodplain maps and the study base floodplain maps is included in Appendix A of the final report, as the response states would be done.

USACE concurs with this comment.

Maps depicting the FEMA FIS and without-project floodplains will be added to Appendix A. The with-project TSP floodplain will not be different than the without-project as nonstructural measures won't change the floodplain and the proposed levee would have to go through FEMA accreditation before the area behind it can be removed. The text in Appendix A was also updated to state that there are no adverse impacts to the floodplain from the TSP.

Three recommendations were made with this comment. Two were adopted.

1. Provide floodplain mapping in Appendix A, comparing the FEMA FIS, without-project, and with-project floodplains.

NOTE: A comparison between FEMA FIS floodplain maps and the study base floodplain maps is included in Appendix A of the final report, as the response states would be done.

USACE Response: Adopted.

Maps depicting the FEMA FIS and without-project floodplains will be added to Appendix A. The with-project TSP floodplain will not be different than the without-project as nonstructural measures won't change the floodplain and the proposed levee would have to go through FEMA accreditation before the area behind it can be removed.

2. Discuss in Appendix A floodplain mapping impacts on the watershed in the locations of the TSP projects.

USACE Response: Adopted.

Additional language was added to Appendix A stating that there are no floodplain mapping impacts, due to the TSP, on the watershed.

3. Discuss in Appendix A any constraints that could impact model updates in the Will County portion of the watershed.

USACE Response: Not Adopted.

As discussed in Appendix A, new survey data was obtained and utilized in the modeling of the Will County portion of the watershed. These updated hydrologic and hydraulic models were developed for Will County and will be available for their use for the future in any FEMA remapping efforts and/or review of development impacts. However, FEMA remapping of the Will County floodplain on the Flood Insurance Rate Maps (FIRMs) is beyond the scope of the feasibility study and is up to the local sponsor to implement.

10. Medium/Low Significance - The basis of the engineering design and cost estimate is unclear due to the inclusion of two geotechnical reports in Appendix E that provide design suggestions that were not included in the final design.

USACE concurs with this comment.

The geotechnical appendix has been modified in order to clarify the recommendations. This includes adding additional detail per Recommendation 1 and removing a conflicting report cited in the appendix that was not providing value.

Three recommendations were made with this comment. All were adopted.

1. Add a paragraph to Appendix E describing the proposed levee geometry (side slopes, crest width, and centerline location relative to existing levee centerline) and confirm that the proposed geometry is consistent with the last two pages of Appendix D.

USACE Response: Adopted.

Slope cross section assumptions were added to Paragraph 39 of Appendix E based on preliminary analysis of new borings (2.5:1 grades are adequate). The proposed geometry cited in Appendix D are consistent with the assumptions stated in Appendix E.

2. Revise Appendix E to explain what parts of the two ERA reports are being used and relied upon by USACE. Consider removing all portions of the ERA reports that are not being relied upon.

USACE Response: Adopted.

“East Branch DuPage River Levee Study Middleton Avenue to Maple Avenue Final Report” is taken out of Appendix E, Attachment 2 as the recommendations are not consistent with USACE design and the report does not provide additional information not included elsewhere.

3. Revise the reports in Appendix E to remove references and portions of the reports that are not consistent with current USACE design guidance.

USACE Response: Adopted.

References to the removed report are also removed.

11. Low Significance - Potential impacts on several protected species that could occur in the study area are not discussed in the DFR/IEA.

USACE concurs with this comment.

Overall, additional analysis was added to document potential impacts to T&E resources. Language to document and explain how and why the rusty patched bumblebee, eastern prairie fringed orchid was added to eliminate any confusion. In general the determinations remain the same.

Three recommendations were made with this comment. Two were adopted.

1. Modify the DFR/IEA to address potential impacts on listed fish and mussels. Discuss potential distribution of these species in the project area in Section 4.3.2.8, and potential impacts on them in Section 4.5.2.6.

USACE Response: Not Adopted.

Illinois DNR maintains a database as a resource for the distribution of state listed species. The program is an interactive map called EcoCat. This program provides a list of potentially impacted state species. During the use and analysis of the EcoCat tool, the only state listed species to potentially occur in the area was the Black Crowned Night heron. In a letter from ILDNR located in the Planning and Coordination appendix, they determined unlikely to impact. Therefore, other state listed fish and mussel species are unlike to occur in the area since they were not addressed via EcoCat. However, section 4.3.2.8 was updated to the following for clarification.

“The Illinois Ecological Compliance Assessment Tool (ECOCAT; 13-Feb-2018) was used to review State threatened and endangered resources in the project area. This tool is a provided by the Illinois DNR to document any impacts to state resources and it specifically determines any potential state listed species or natural areas in and adjacent to the project area. The tool identified the potential occurrence of Black-crowned Night Heron (Nycticorax nycticorax). Based on field visits to the site by USACE ecologists, this species was not observed nor were any potential nesting sites or nests observed.”

2. In DFR/IEA Section 4.3.2.8 update the description of the potential listed species (Federal, state, aquatic, terrestrial) that may occur in the project area.

USACE Response: Adopted.

Additional information on the Rusty Patched Bumblebee was added to Section 4.3.2.8. *The project area is listed as a potential foraging area, but not critical habitat. While the Rusty Patched Bumblebee could potentially use the project boundaries, USFWS has the*

project area listed as a potential dispersal zone for the species and is unlikely to be present. Dispersal zones are areas in which the species feed during the day and these areas are not considered critical habitat. Therefore, adverse impacts to the species is unlikely. In coordination letters from USFWS, concern of impacts on the Federally listed Eastern Fringed Prairie Orchid were outlined. At the time of scoping the entire watershed was included in the potential impacts. Based on the TSP project boundaries, potential impacts to the Eastern Fringed Prairie orchid are unlikely. Therefore, the determination of “not likely to adversely affect” was made.

3. Modify DFR/IEA Section 4.5.2.6 to fully justify the determination that the project is not likely to adversely affect each of the protected species analyzed.

USACE Response: Adopted.

Language was added in section 4.5.2.6 to account for the eastern fringed prairie orchid and rusty patched bumble bee and explaining that the project is unlikely to impact. The text now states:

“All tree clearing for Lisle Levee will be scheduled to minimize potential impacts to Northern Long-eared Bats. Tree clearing will be completed in the winter and avoid the period when bats are most active, between April 1 and October 31. No tree clearing will be completed between June 1 and July 31, when the bats are roosting. The study team has coordinated with USFWS through the Northern Long-Eared Bat 4(d) Rule Streamlined Consultation Form and expect concurrence with USACE’s determination of “may effect but is not likely to adversely affect” the Northern Long-eared Bat. The consultation form is included in Appendix G (Coordination and Environmental Analysis). While the Rusty Patched Bumblebee could potentially use the project boundaries, USFWS has the project area listed as a potential dispersal zone for the species and is unlikely to be present. Dispersal zones are areas in which the species feed during the day and these areas are not considered critical habitat. Therefore, adverse impacts to the species is unlikely. In coordination letters from USFWS, concern of impacts on the Federally listed Eastern Fringed Prairie Orchid were outlined. At the time of scoping the entire watershed was included in the potential impacts. Based on the TSP project boundaries, potential impacts to the Eastern Fringed Prairie orchid are unlikely. Therefore, the determination of “not likely to adversely affect” was made”