

**Final**  
**Supplemental Environmental Assessment**  
**Appendix I: Public, Agency, and Tribal**  
**Coordination**

**Arkansas River Navigation Study**  
**Arkansas and Oklahoma**

**September 2024**

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**ARKANSAS RIVER NAVIGATION STUDY, ARKANSAS AND OKLAHOMA  
SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT  
PUBLIC INVOLVEMENT**

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# 1 Introduction

The United States Army Corps of Engineers (USACE) Final Feasibility Report (FR) and Environmental Impact Statement (FEIS) for the Arkansas River Navigation Study, Arkansas and Oklahoma (ARNS), McClellan-Kerr Arkansas River Navigation System (MKARNS) dated August 2005 (herein referred to as the 2005 ARNS FR/EIS) and the Report of the Director of Civil Works (Director's Report) signed on 27 September 2005 recommended modifications and improvements for navigation and channel maintenance. Since the completion of these documents conditions have changed warranting changes in the design of the Proposed Action and the implementation of a new Dredge Material Management Plan (DMMP). A Supplemental Environmental Assessment (SEA) to the 2005 FEIS has been prepared in compliance with the National Environmental Policy Act (NEPA) of 1969 (as amended), the Council on Environmental Quality (CEQ) guidelines (40 Code of Federal Regulations [CFR] Parts 1500-1508), and ER 200-2-2 Procedures for Implementing NEPA. The purpose of this SEA is to: 1) provide a concise summary of the history and status of the originally-authorized ARNS Project; 2) document the changes and refinements made to the MKARNS 12-Foot Channel design during the Pre-Construction Engineering and Design (PED) and Construction phases, including mitigation, and; 3) evaluate the potential environmental effects of the updated construction and design plans that may have changed since the FEIS was completed.

## 1.1 Project Area

The MKARNS system is approximately 445 miles in length and consists of a series of 18 locks and dams. USACE's Tulsa and Little Rock Districts cooperatively control flows in the Arkansas River system in Kansas, Oklahoma, and Arkansas. The authorized project area includes the MKARNS from the Port of Catoosa near Tulsa, Oklahoma, downstream to the confluence of the Mississippi River in southeastern Arkansas.

- A 50-mile reach of the Verdigris River from the Port of Catoosa to Muskogee (navigation miles 445-394).
- Lower Arkansas River, which comprises 375 miles of the MKARNS (navigation miles 394 to 19).
- The Arkansas Post canal, a 9-mile canal connecting the Arkansas River to the lower portion of the White River (navigation miles 19 to 10).
- The lower 10 miles of the White River (navigation miles 10 to 0).

## 1.2 Purpose of this Report

The following report summarizes the public participation process for, and the public comments resulting from, the MKARNS 12-Foot Channel public involvement process.

## 2 Scoping Comment Period

In accordance with NEPA and ER 200-2-2, USACE initiated public involvement for the MKARNS 12-Foot Channel SEA. Scoping is the process of determining the scope, focus, and content of a NEPA document. A scoping period for the MKARNS 12-Foot Channel SEA was held from June 5, 2023, to July 8, 2023. Members of the public, industry, resource agencies, and Tribal Nations were invited to provide their input on the project. The 2005 ARNS documents, additional project information, maps, and an online comment form were available at the website below.

<https://www.swl.usace.army.mil/Missions/Planning/MKARNS-12-foot-Channel/>

### 2.1 Outreach

#### 2.1.1 Public Involvement

The public was notified of the scoping comment period via a public notice (Attachment A) distributed by the Tulsa and Little Rock Districts' Public Affairs Offices on their websites and various social media platforms. Additionally, notification emails were sent to a list of 63 industry representatives. Four workshop-style meetings were held at different locations along the MKARNS and open to the public to solicit feedback on the MKARNS 12-Foot Channel Project. Table 1 below depicts the dates and locations of the public workshops. A total of 11 members of the public attended the four workshops.

**Table 1. Public Scoping Meetings**

| Date/Time                                 | City        | Location  | Address  |
|---|-------------|---|--|
| Monday, June 5, 2023<br>4:00-7:00pm       | Tulsa       | Homewood Suites by Hilton<br>Tulsa/Catoosa  | 201 Elliott Lane,<br>Catoosa, OK 74015                     |
| Tuesday, June 6, 2023<br>4:00-7:00pm      | Fort Smith  | Arkansas Game & Fish<br>Commission Janet Huckabee<br>Arkansas River Valley Nature<br>Center | 8300 Wells Lake Rd,<br>Ft Smith, AR 72916                  |
| Wednesday,<br>June 7, 2023<br>4:00-7:00pm | Little Rock | Port of Little Rock   | 10600 Industrial<br>Harbor Drive, Little<br>Rock, AR 72206 |
| Thursday,<br>June 8, 2023<br>4:00-7:00pm  | Pine Bluff  | Governor Mike Huckabee Delta<br>Rivers Nature Center (Pine<br>Bluff)                        | 1400 Black Dog Dr,<br>Pine Bluff, AR 71601                 |

At the workshops, storyboards were provided to detail the existing MKARNS project and the need and benefits of the authorized 12-foot channel (Attachment B). USACE staff were available to talk through the project and answer questions at the meeting. Comment forms were available at the workshops for participants to submit feedback (Attachment C).

### 2.1.2 Agency Involvement

Resource agencies were notified of the scoping comment period via a public notice (Attachment D) distributed by email. The following natural resource agencies were notified of the scoping comment period.

#### Arkansas:

- Arkansas Department of Agriculture
- Arkansas Department of Energy and Environment, Division of Environmental Quality (ADEQ)
- Arkansas Department of Health (ADH)
- Arkansas Department of Parks and Tourism
- Arkansas Department of Parks, Heritage, and Tourism (ADPHT)
- Arkansas Department of Transportation
- Arkansas Game and Fish Commission (AGFC)
- Arkansas Natural Heritage Commission (ANHC)
- Arkansas Waterways Commission
- Department of Agriculture
- Department of Finance & Administration
- FEMA, Region VI
- National Park Service, Intermountain Region
- National Park Service, Midwest Region
- The Nature Conservancy, Arkansas Field Office
- Southwestern Power Administration (SWPA)
- Southwestern Power Resources Association
- U.S. Coast Guard
- U.S. Department of Agriculture
- U.S. Department of the Interior
- U.S. Environmental Protection Agency, Region 6
- U.S. Fish and Wildlife Service
- U.S. Geological Survey

#### Oklahoma:

- FEMA, Region VI
- Oklahoma Archaeological Survey
- Oklahoma Department of Environmental Quality
- Oklahoma Department of Wildlife Conservation
- Oklahoma Farm Bureau
- Oklahoma Water Resources Board
- Oklahoma Wheat Commission
- Southwestern Power Resources Association
- State Historic Preservation Office
- SWPA
- U.S. Department of Agriculture
- U.S. Department of the Interior

- U.S. Environmental Protection Agency, Region 6
- U.S. Fish and Wildlife Service
- U.S. Geological Survey

Two workshop-style meetings were held in Little Rock and Tulsa (Table 2). A total of 11 resource agency personnel attended the two agency workshop, with representation from ADEQ, ADH, ADPHT, AGFC, ANHC, and SWPA. At the agency meetings, the primary topics discussed were impacts to energy and environmental resources. In Little Rock, the most frequent request was to provide more detail on impacts the project would have on aquatic resources like fishes, mussels, and gravel bars. No official comment submission from agencies was received on the aquatic resource concerns during the comment period, though these concerns are addressed in the SEA in the mitigation chapter.

**Table 2. Agency Scoping Meetings**

| <b>Date</b>                               | <b>City</b> | <b>Location</b>                            | <b>Address</b>   |
|---|-------------|--|--|
| Monday, June 5, 2023<br>1:00-3:00pm       | Tulsa       | Homewood Suites by Hilton<br>Tulsa/Catoosa | 201 Elliott Lane,<br>Catoosa, OK 74015                     |
| Wednesday,<br>June 7, 2023<br>1:00-3:00pm | Little Rock | Port of Little Rock                        | 10600 Industrial Harbor<br>Drive, Little Rock, AR<br>72206 |

### 2.1.3 Additional Scoping Advertisements

Multiple news articles also addressed the request for comment on the MKARNS 12-Foot project. The articles are summarized and linked below (Table 3).

**Table 3. Summary of Scoping News Advertisements**

| <b>Article Title</b>  | <b>Source</b>             | <b>Link</b>   | <b>Notes</b>                |
|---|---------------------------|---|-----------------------------|
| <b>Army Corps of Engineers Begins Effort to Deepen Arkansas River</b>   | Arkansas Business         | <a href="https://www.arkansasbusiness.com/article/145234/army-corps-of-engineers-begins-effort-to-deepen-arkansas-river">https://www.arkansasbusiness.com/article/145234/army-corps-of-engineers-begins-effort-to-deepen-arkansas-river</a>         | Reposted on KSFM            |
| <b>Corps seeks public input on Upper Miss channel deepening project</b> | WorkBoat                  | <a href="https://www.workboat.com/coastal-inland-waterways/corps-seeks-public-input-on-upper-miss-channel-deepening-project">https://www.workboat.com/coastal-inland-waterways/corps-seeks-public-input-on-upper-miss-channel-deepening-project</a> |                             |
| <b>Plans underway to deepen Arkansas River Navigation System</b>        | 40/29 News                | <a href="https://www.4029tv.com/article/plans-underway-to-deepen-arkansas-river-navigation-system/44215500">https://www.4029tv.com/article/plans-underway-to-deepen-arkansas-river-navigation-system/44215500</a>                                   | News report with transcript |
| <b>OPINION: EDITORIAL: Up around the bend</b>                           | Arkansas Democrat Gazette | <a href="https://www.arkansasonline.com/news/2023/jun/14/up-around-the-bend/">https://www.arkansasonline.com/news/2023/jun/14/up-around-the-bend/</a>   |                             |

## 2.2 Summary of Scoping Comments

USACE accepted comments on the MKARNS 12-Foot Channel throughout the scoping period from June 5, 2023, to July 8, 2023. Agencies, industry members, elected

officials, members of the public, and other interested parties submitted a total of 19 letters, emails, online comment forms, and comment cards during this period. Table 4 provides a summary count of the topics discussed. While this table does not include every comment received, it provides a general summary of the topics most frequently submitted during the comment period. It should be noted that the combined numbers of comments listed in the summary table is greater than the total number of comment submissions as most people discussed multiple topics in their submission.

Among the 18 total comments submitted, 13 were positive and five were neutral, primarily with project-specific questions. Three of these comments were formal letters of support from the Arkansas Department of Commerce, The Arkansas Waterways Commission, and the Economic Development Corporation of Jefferson County, Arkansas. Additional comments were received from the Agricultural Council of Arkansas, the World Recovery Group, and the Conway County Judge, among other individuals.

**Table 4. Summary of Scoping Comments Received**

| <b>Topic</b>                           | <b>Related Comments Received and Count</b>   |
|--|--|
| Pro-Project                            | <ul style="list-style-type: none"> <li>• General support of the project – 13</li> </ul>  |
| Commerce and Economics                 | <ul style="list-style-type: none"> <li>• Supports efficient transportation of goods – 6</li> <li>• Lowers transportation/product costs – 5</li> <li>• Supports critical commerce abilities – 5</li> <li>• Benefits employment and new industry – 3</li> <li>• Increases safety on roads and railways – 3</li> <li>• Cohesion with the Mississippi River – 2</li> <li>• Benefits the agricultural community– 1</li> </ul> |
| Flood Risk Management and Water Supply | <ul style="list-style-type: none"> <li>• MKARNS supports irrigation – 2</li> <li>• Deepening the channel would decrease flooding – 1</li> <li>• Concerns that deepening the channel would increase flooding – 1</li> <li>• Desire pools to be raised for irrigation – 1</li> </ul>   |
| Environment and Energy                 | <ul style="list-style-type: none"> <li>• Positive effects on greenhouse gas emissions – 5</li> <li>• Concern for impacts to cultural resources – 1</li> <li>• Support for project if risk to environment is acceptable – 1</li> <li>• Decreases dependency on outside energy sources – 1</li> </ul>  |
| Timeline                               | <ul style="list-style-type: none"> <li>• Project is overdo/should begin as soon as possible – 5</li> </ul>   |

## 2.3 Next Steps After Scoping

The purpose of scoping is to provide an opportunity for the public, agencies, Tribal Nations, and other interested entities to comment on the purpose, need, and alternatives proposed for analysis, as well as aid the project development team in identifying issues that should be evaluated in the NEPA documentation. The SEA evaluates potential impacts resulting from the MKARNS 12-Foot Channel updated



design and the 2023 DMMP. Comments received during scoping were thoroughly considered and incorporated where appropriate into the Draft SEA. An additional public comment period will be conducted to solicit additional feedback on the Draft SEA. An analysis of comments received during the draft comment period will be included in this appendix upon completion.

### **3 Draft Comment Period**

In accordance with NEPA and ER 200-2-2, USACE conducted a 40-day public comment period for the MKARNS 12-Foot Channel SEA. Members of the public, industry, resource agencies, and Tribal Nations were invited to review and comment on the draft SEA and its appendices February 1, 2024, to March 1, 2024. The SEA documents, 2005 ARNS documents, additional project information, maps, and an online comment form were available at the website below.

<https://www.swl.usace.army.mil/Missions/Planning/MKARNS-12-foot-Channel/>

Due to technical issues resulting in an inability to open documents online, the comment period was extended from March 1, 2024, to March 10, 2024, to ensure maximum participation in the review period. The public and agencies were notified of the extension via email and press release.

#### **3.1 Outreach**

##### **3.1.1 Public Involvement**

The public was notified of the scoping comment period via a public notice (Attachment F) distributed by the Tulsa and Little Rock Districts' Public Affairs Offices on their websites and various social media platforms. Because of the lack of interest in the scoping meetings, no public meetings were held during the draft comment period.

##### **3.1.2 Agency Involvement**

Resource agencies were notified of the scoping comment period via a public notice (Attachment G) distributed by email. The same resource agencies notified during the scoping period were contacted for the draft comment period (see Section 2.1.2 above). A virtual agency workshop was held on February 15, 2024, and a copy of the agency meeting presentation can be found in Attachment H. The following agencies attended the kickoff meeting:

- Arkansas Department of Agriculture
- Arkansas Department of Energy and Environment, Office of Water Quality
- Arkansas Game and Fish Commission
- Arkansas Department of Health
- Arkansas Heritage Commission
- Arkansas State Historic Preservation Office
- Oklahoma Department of Environmental Quality
- Oklahoma Department of Wildlife Conservation

- U.S. Fish and Wildlife Service
  - Arkansas Ecological Services Field Office
  - Oklahoma Ecological Services Field Office
- Southwestern Power Administration

Following the agency comment period kickoff meeting, virtual meetings have been held every two weeks with all agencies invited to hear USACE project updates, ask questions, voice concerns, and resolve issues with outstanding compliance documents. These meetings will continue even after NEPA compliance is completed to keep agencies informed on project progress, develop site specific mitigation plans, and track mitigation success. Additional, targeted in-person agency meetings were also held to resolve specific comments submitted on the SEA and resolve issues on agency-issued compliance documents (Table 5).

**Table 5. Additional Agency Meetings**

| Meeting Details                | Attendees               | Purpose  |
|--------------------------------|-------------------------|--|
| May 7, 2024<br>Little Rock, AR | USFWS-AR,<br>ADEE, AGFC | Discuss and resolve outstanding concerns over the SEA, mitigation plan, Coordination Act Report, and Arkansas Water Quality Certification. |
| May 15, 2024<br>Tulsa, OK      | ODWC                    | Discuss and resolve outstanding concerns over the SEA, mitigation plan, and Coordination Act Report.                                       |
| May 22, 2024<br>Tulsa, OK      | USFWS-OK                | Discuss and resolve outstanding concerns over the Biological Opinion.  |

### 3.1.3 Additional Draft Comment Period Advertisement

Multiple news articles also addressed the request for comment on the MKARNS 12-Foot project. The articles are summarized and linked below (Table 6).

**Table 6. Summary of Draft Comment Period News Advertisements**

| Article Title   | Source                              | Link  | Notes                 |
|---|-------------------------------------|---|-----------------------|
| <b>Corps Taking Commend on MKARNS 12-Foot Channel Project</b>                                       | The Waterways Journal Weekly        | <a href="https://www.waterwaysjournal.net/2024/02/03/corps-taking-comments-on-mkarns-12-foot-channel-project/">https://www.waterwaysjournal.net/2024/02/03/corps-taking-comments-on-mkarns-12-foot-channel-project/</a> |                       |
| <b>Input sought on assessment of Arkansas River dredging project</b>                                | Northwest Arkansas Democrat Gazette | <a href="https://www.nwaonline.com/news/2024/feb/19/input-sought-on-assessment-of-arkansas-river/">https://www.nwaonline.com/news/2024/feb/19/input-sought-on-assessment-of-arkansas-river/</a>                         |                       |
| <b>NWA Editorial: A deeper channel in the Arkansas River will be an economic boost to the state</b> | Northwest Arkansas Democrat Gazette | <a href="https://www.nwaonline.com/news/2024/feb/25/nwa-editorial-a-deeper-channel-in-the-arkansas/">https://www.nwaonline.com/news/2024/feb/25/nwa-editorial-a-deeper-channel-in-the-arkansas/</a>                     |                       |
| <b>Public Input sought for AR River deepening plan</b>  | KVOM 101.7 FM                       | <a href="https://www.kvom.com/news-sports-headlines/public-input-sought-for-ar-river-deepening-plan">https://www.kvom.com/news-sports-headlines/public-input-sought-for-ar-river-deepening-plan</a>                     | Radio show transcript |

## 3.2 Summary of Draft Comments Received

A total of 20 comments were received during the draft public comment period. These comments can be found in Attachment I and are summarized in the following sections. Some comments received warranted further discussion and revisions to reach a resolution, and those responses are also summarized below as appropriate.

### 3.2.1 Public Comments

A total of 11 comments were received from members of the public, including nine in support of the 12-foot channel deepening, one neutral comment, and one comment relaying feedback on the economic analysis in the SEA. Table 7 below provides a summary and count of the topics discussed in the public comments received.

**Table 7. Summary of Public Comments Received**

| Topic                   | Related Comments Received and Count   |
|-------------------------|---|
| Pro-Project             | <ul style="list-style-type: none"><li>• General support of the 12-foot channel deepening – 9</li></ul>  |
| Commerce and Navigation | <ul style="list-style-type: none"><li>• 12-foot channel would increase quantity of cargo that can be transported – 6</li><li>• Will decrease transportation on roads and railways – 6</li><li>• Most of the river is already at a 12-foot depth – 6</li><li>• Provides for further development of ports along river system – 1</li><li>• Supports other industries served by the river – 1</li><li>• River uses have improved since the creation of the MKARNS – 1</li><li>• Traffic projections portrayed are inconsistent – 1</li></ul> |
| Economics               | <ul style="list-style-type: none"><li>• Increased channel depth makes economic sense – 6</li><li>• Supports economic stability – 1</li><li>• Information presented in the NED account is incomplete – 1</li><li>• Period of analysis is not depicted consistently – 1</li><li>• NED analysis does not account for the social cost of carbon – 1</li></ul>   |
| Environment             | <ul style="list-style-type: none"><li>• Increased channel depth makes ecological sense – 6</li></ul>  |
| Timeline                | <ul style="list-style-type: none"><li>• Project should be implemented as soon as possible – 2</li></ul>   |

#### 3.2.1.1 Public Comment Responses

While most of the public comments expressed support for the project and/or referenced requests outside of the scope of the project, one public comment posed informed feedback geared towards the SEA economics analysis. The comments made and USACE responses are recorded below.

##### Comment Received:

“Information presented on the NED account is incomplete. Section 4.9.2 contains information on NED benefits and extends the evaluation period into 2075 but presents no associated NED costs. Nor is there anywhere a presentation of NED Net Benefits as

required in P&G or any other measure of economic efficiency as required by PR&G. Even the instance of mentioning costs in Table 4-6 and its accompanying text is presented as a benefit-cost savings. And the dollar figures in the document are not identified as to their basis -- 2021 \$ or something else? The failure to present NED account information is particularly confounding in that the earlier Appendix B noted in Section B.11.4.2 that the Action alternatives C, D, and E were "compared economically" to Alternative B rather than the No Action alternative.

Information presented in the document, as in Figure 3-1 would seem to indicate that traffic on the MKARNS has plateaued. This is not consistent with the projections shown in the prior Executive Summary, which anticipated an annual growth rate of 1.1% through 2060, including a 1.9% annual increase for coal (Table E-1). It would appear the projected use shown in Figure 3-2 is based on usage back through the early 1970s rather than on use over the past 20 years or so. Recommend reviewing the projections for potential effect on the NED account. Note that the projected growth rates shown in Table 4-6 are lower than the projections shown in the aforementioned Table E-1.

The analysis does not consistently depict the new evaluation period. Nor is it consistent with that used in the prior analysis which ended in 2060. Coupling the 8-year installation period identified on page 61 with the 50-year evaluated life and a start date in 2024 would extend the project life to 2082. The 2082 date is not consistent with the 2075 projection shown in section 4.9.2.

The social cost of carbon has apparently not been included in the NED account analysis."

#### USACE Response:

While impacts to navigation and socioeconomics are analyzed in the SEA, NEPA documents themselves do not typically contain a full NED analysis. An updated NED analysis was included to depict the impacts of deepening the navigation channel on navigation resources. Revision made to clarify that dollar figures are based on FY2024 dollars. While the historical traffic data depicted in Figure 3-1 appears to plateau, updated traffic projections over a 50-year period of analysis show a total projected commodity flow growth rate of 0.8%. Projections are stochastic and show a range of possible traffic (95 percent chance of exceedance to a 5 percent chance of exceedance assuming a cumulative probability density function). Projections in the higher exceedance ranges show either a decline or no growth. The baseline is an average of years 2016 through 2018. In 2019, there was historic flooding on the Arkansas River in 2020 and 2021, and since these were "black swan" type of events are not included in traffic projections. Coal in the revised projections assume zero growth over the period of analysis. Although domestic consumption of coal is likely to decline, exports will likely continue to nations without coal reserves such as China and India. The evaluation period is inconsistently depicted because the updated NED analysis was prepared for this SEA well before construction costs and periods were developed and reviewed. While the social cost of carbon is not included in the NED analysis, it is evaluated under sections 3.3 and 4.2 on Climate and Climate Change to fulfill all requirements of applicable executive orders, including EOs 13990, 14008, and 14072 and the CEQ's Interim Guidance on Greenhouse Gas Emissions and Climate Change.

### **3.2.2 Industry Comments**

Two letters of support for the 12-foot channel alternative were received from the Arkansas Waterways Commission and Five Rivers Distribution, LLC. These letters stated that the channel deepening will enable cargo ships to increase carrying capacity while benefitting the economy, decreasing congestion of rail and highway transportation, and benefiting fuel efficiency.

### **3.2.3 Agency Comments**

A total of seven comments were received from four resource agencies, including the Arkansas Historic Preservation Program, Arkansas Game and Wildlife Commission, Environmental Protection Agency, Oklahoma Department of Wildlife Conservation, U.S. Fish and Wildlife Service (one from the Arkansas Ecological Field Office and one from the Oklahoma Ecological Field Office), and Southwestern Power Administration. Table 8 below summarizes agency comments received during the Draft SEA public comment period.

**Table 8. Summary of Agency Comments Received**

| Agency | Comment Summary   |
|--------|---|
| AGFC   | <ul style="list-style-type: none"> <li>• Coordination that has occurred with the USFWS under the Fish and Wildlife Coordination Act should also be extended to State agencies.</li> <li>• Would like to see more continuity between 2005 EIS mitigation plan and this mitigation plan.</li> <li>• Concern over the use of the “Marsh Model” to accurately account for shallow backwater habitat impacts. Concern that the Marsh Model underestimates aquatic mitigation required. Recommend evaluating the use of the Mississippi River Hatchie-Loosahatchie Model to account for riverine impacts.</li> <li>• Concern over loss of backwater habitat, connectivity, and angler access to these areas.</li> <li>• Would like to see site specific mitigation plans prior to construction and/or modifications and would like to have a say in what in-water disposal sites are used and locations for mitigation efforts.</li> <li>• Request updated gravel mapping and mussel surveys as 2005 data is likely out of date.</li> <li>• Disagree that aquatic resources along the MKARNS have not significantly changed since 2005. Reference Rhodes et al. 2019 and Spurgeon et al. 2021.</li> <li>• Concerns over dredging and headcutting in the White River portion of the project.</li> <li>• Request surveys for Pallid Sturgeon, Lake Sturgeon, and Alabama Shad.</li> <li>• Concerns over mussel impacts as a result of dredging in the Post Canal. Mussels should be translocated and, in the event of take, mitigated for at American Fisheries Society fish kill monetary values.</li> <li>• Instead of monitoring for vegetation success, mitigation success criteria should evaluate (1) acreages of aquatic habitat converted to terrestrial habitat, and (2) acreage of backwater aquatic habitat greater than 3.5-feet in depth, which is important for maintaining fisheries.</li> <li>• Mitigation for aquatic habitat impacts should be done in the pool where the impacts occur and if mitigation is done at a different pool than the impact the mitigation performed should be at a higher ratio.</li> <li>• Do not agree with the statement that the American Alligator is not likely to occur in the project area.</li> <li>• Fish kills as a result of blasting should be mitigated for using the American Fish Society fish kill monetary values.</li> <li>• Surveys should be implemented to mitigate for impacts to the Alligator Snapping Turtle.</li> <li>• Do not support any “double dipping” by counting existing mitigation areas twice.</li> <li>• Access to fisheries is an important consideration for a mitigation plan as access to important habitats is often reduced by navigation improvements.</li> </ul> |

|      |  |
|------|--|
|      | <ul style="list-style-type: none"> <li>• The USACE has suggested in recent meetings that fish notches that are 4-feet wide x 1-foot deep. It is important for the USACE to recognize these are “micro-notches” for fish passage only and not the notches used for mitigation to prevent aquatic habitat losses.</li> <li>• Numerous comments on site specific features provided.</li> </ul>  |
| AHPP | <ul style="list-style-type: none"> <li>• Numerous previously recorded archeological sites and historic properties on the Arkansas River.</li> <li>• Request to be updated on project efforts as these historic properties are assessed and anticipate further discussion on mitigation efforts.</li> </ul>   |
| EPA  | <ul style="list-style-type: none"> <li>• Reviewed the Draft SEA pursuant to NEPA, CEQ regulations 40 CFR Parts 1500-1508, and EPA’s authority under Section 309 of the Clean Air Act.</li> <li>• With the USACE findings reported in the draft SEA, EPA has no further comments and looks forward to the receipt of the Final SEA and FONSI.</li> </ul>  |
| ODWC | <ul style="list-style-type: none"> <li>• Coordination that has occurred with the USFWS under the Fish and Wildlife Coordination Act should also be extended to State agencies.</li> <li>• Updated mussel and gravel bar surveys requested as significant flooding has occurred since 2005.</li> <li>• Concern over potential take of mussels associated with the use of clam shell dredging. Requesting mussel mitigation and included a list of potentially affected species, especially in light of mussel kills resulting from 2019 Webbers Falls drawdown.</li> <li>• Concern over take related to both open water and benthic fish species with multiple types of dredging proposed. List of potentially affected fish species included.</li> <li>• Proposed river training structure at RM 351 and 352 could adversely affect backwater connectivity and habitat and inhibit boating access into the Sequoyah NWR.</li> <li>• Requesting assurances that dredged material will not be placed in or negatively impact aquatic species and anglers from accessing backwaters. Maintaining secondary channel connectivity to the main channel is imperative as habitats are vital for the life stages of many aquatic organisms.</li> </ul> |
| SWPA | <ul style="list-style-type: none"> <li>• The project is not anticipated to negatively affect Congressionally-authorized purposes, water surface elevations, or operations of the MKARNS projects with hydropower, and should have a net-zero impact to power pool storage. However, SWPA is concerned that deepening the channel will result in a need for more maintenance dredging which could negatively impact hydropower operations.</li> <li>• Deviations from water control plans and authorized power pool elevations have been utilized to hold the pool elevations higher to minimize impacts to navigation until depth is restored during flooding events. These deviations limit Southwestern’s ability to generate at hydropower projects, resulting in increases to both off-peak</li> </ul>   |

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|  | <p>generation and spill. The channel deepening could increase the duration of such and thus adversely impact Southwestern.</p> <ul style="list-style-type: none"> <li>• Project funding needs to sustain 12-foot depth below the bottom of the power pool elevations at hydropower lakes and should address backlogged maintenance needed to avoid unplanned lock and dam closures that may impact hydropower operations.</li> <li>• Dredge spoils should be used to create Interior Least Tern (ILT) islands on the MKARNS in support of ILT recovery</li> </ul>  |
| USFWS,<br>Arkansas<br>Ecological<br>Services<br>Field Office | <ul style="list-style-type: none"> <li>• This letter was prepared in accordance with the Fish and Wildlife Coordination Act. On June 13, 2023, the Service submitted a letter agreeing to sign on as a cooperating agency and regularly attend coordination meetings. The Corps recently completed a draft FWCA Report which was not included in the draft SEA but will be included in the final report to Congress following review, editing, and approval by the Service and States.</li> <li>• Because of the phased approach to implementing construction features and the associated mitigation measures, it is difficult to provide comprehensive detailed recommendations at this point in the planning process.</li> <li>• Early coordination should occur prior to the selection of specific dredging, disposal, or dike construction alternatives to aid in avoidance of significant resources (including recreation), development of mitigation, and beneficial use of dredge material.</li> <li>• Concern over the use of the “marsh model” to account for aquatic impacts. Recommend a different model such as the one used in the USACE Mississippi River Hatchie-Loosahatchie Ecosystem Restoration Study.</li> <li>• Major change from 2005 FEIS is an increase in dredging volume in river miles 0.6 to 10.3 at the Post Canal near the Dale Bumpers White River National Wildlife Refuge and Trusten Holder Wildlife Management Area, which may be used seasonally by the endangered Pallid Sturgeon and Lake Sturgeon and the Alabama Shad, petitioned for listing. Study should ensure the project will not increase head cutting or exacerbate existing head cutting that could result in habitat loss.</li> <li>• Mississippi River is currently maintained to a 9-foot depth, and the efficacy of increased dredging in this reach should be coordinated with other appropriate districts.</li> <li>• The 2005 FEIS indicated that mussel beds in the Post Canal would be mitigated for, but now USACE doesn’t have the mechanism to mitigate for non-federally listed species. Coordination with AGFC needs to occur to ensure State laws would not be violated due to proposed actions, and avoidance and minimization measures for high-value State regulated resources need to be in place.</li> <li>• Mitigation features identified in the 2005 EIS and already constructed using non-Corps funds should not count as mitigation for impacts associated with future project features. Features built using USACE funding may be considered mitigation for future selected project features assuming they are functioning properly.</li> </ul> |



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| USFWS,<br>Oklahoma<br>Ecological<br>Services<br>Field Office | <ul style="list-style-type: none"> <li>• Comments provided at this time should be considered preliminary. Additional comments will be provided through time as the projects develops, and commenting should be flexible since the implementation of this project may be several years out.</li> <li>• This study iteration does not include the upland mitigation that was included in the 2005 FEIS, CAR, and PBO. Most of the upland habitats impacted are located on the Sequoyah National Wildlife Refuge and ODWC managed WMAs. These impacts, and even impacts to cropland, could adversely affect federally-listed bat species, migratory birds, and local wildlife.</li> <li>• Aquatic habitat impacts could adversely affect backwater habitat, boating access, and gravel bars.</li> <li>• SEA needs to provide more detail on gravel bar mitigation. Unlikely that gravel bars can be moved to locations that do not currently have gravel substrate without changing hydrology. Need to analyze newer data to identify existing gravel substrate ahead of dredging efforts, and need improved monitoring and management efforts.</li> <li>• For ESA compliance, the initial BA has been reviewed. USFWS concurs with most determinations, but have concerns or need additional information for some species. Working with USACE staff to develop a final BA for a formal consultation on the project. With the long-term timing and uncertainty in funding, species statuses may change during the life of the project, and consultation will need to address those changes.</li> </ul> |
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### 3.2.3.1 Agency Comment Responses

USACE evaluated every agency comment submitted during the draft SEA comment period and prepared responses as warranted. Additional meetings were held with USFWS, AGFC, and ODWC to ensure appropriate resolutions were made in response to the comments received. Revisions to the SEA, mitigation plan, map book, Biological Assessment, and/or Coordination Act Report were made as needed to ensure agency feedback was integrated into the project documents. Table 9 below provides a summary of agency comments warranting a response grouped by topic, the USACE response, and resulting revisions made when needed. Coordination was also conducted with USFWS, AGFC, and ODWC under the Fish and Wildlife Coordination Act (FWCA). USFWS and AGFC recommendations provided under the FWCA can be found in Appendix D, Fish and Wildlife Coordination Act Report. AGFC adopted their draft comment period feedback as recommendations in their Fish and Wildlife Coordination Act Report letter dated July 12, 2024. USACE responses to AGFC's recommendations below also serve as responses under the FWCA.

**Table 9. Summary of Agency Comments and Responses**

| Agency                    | Comment Summary   | USACE Response  |
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| <b>General Mitigation</b> |   |   |
| AGFC                      | While it is understood that project details are still being developed, more detail on proposed mitigation plans should be included in the SEA for agency and public review. | <b>Partially Adopt.</b> While the site-specific plans to reflect mitigation for each phase of construction have not yet been determined, the mitigation plan as a whole should serve as an overarching account of the intended mitigation. The 2024 SEA mitigation plan will utilize those features and locations proposed in the 2005 FEIS mitigation plan, and these documents were made available with the SEA draft comment period for review, so another public review of the mitigation plan is not anticipated prior to finalization. USACE intends to work closely with resource agencies when developing the site-specific mitigation plans ahead of construction to ensure agency input and buy-in.   |
| AGFC                      | AGFC would like to see more continuity between the proposed mitigation from the 2005 MKARNS 12-foot Channel EIS and what is proposed in the 2024 SEA.                       | <b>Partially Adopt.</b> The mitigation included in the 2024 SEA is carried over from the 2005 EIS. We utilized the same bottomland hardwood models as the 2005 mitigation plan, as well as the same marsh model that was certified for the project. While the Paddlefish model was used to account for gravel bar impacts, the mitigation needed to offset impacts resulted in the same acreage identified. The primary difference is that policy dictates we cannot mitigate for non-significant habitat, resulting in the lack of upland and grassland mitigation in the 2024 SEA. While not explicitly stated in the SEA, we will use the same list of mitigation features/locations that were developed in 2005 to offset actual project impacts. We expect current impacts to be significantly less than what were anticipated in 2005, therefore not all of the 2005-identified features may be needed. We can prioritize features/locations within that list based on agency preference so long as it is hydrologically suitable. The draft SEA will be updated to reflect the use of the 2005 list of proposed mitigation features/locations. |
| AGFC, USFWS-AR            | Mitigation features identified in the 2005 FEIS and already constructed using non-USACE funding should not count towards MKARNS 12-foot                                     | <b>Partially Adopt.</b> Concur with no “double dipping” into previously constructed mitigation efforts. If mitigation has been completed to account for structures identified in the 2005 EIS and already   |

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|   | Channel mitigation. There should be no “double dipping” by counting mitigation twice.  | constructed, then those mitigation features will not be used as a “bank” to apply to future construction. However, if mitigation features have been constructed for the MKARNS 12’ channel but are not associated with offsetting impacts from existing features, then they may be put towards the mitigation of future MKARNS 12’ construction efforts.  |
| AGFC                                      | Mitigation plan indicates that the district engineer may reduce or waive monitoring requirements if performance standards are deemed met, but this is arbitrary and appears to suggest that all monitoring could be waived which is not supported.   | If it is clear that USACE meets performance standards and success criteria ahead of the end of the established monitoring period (i.e., 10-year plan), then additional monitoring may not be required. Agencies will be involved in establishing performance standards as well as monitoring efforts. Coordination and concurrence with agencies will occur before USACE determines success criteria has been met and monitoring can end early as a result of that determined success. We will amend the language in the mitigation plan to reflect this required coordination to determine success.  |
| <b>Marsh Model and Aquatic Mitigation</b> |  |   |
| AGFC,<br>USFWS-<br>AR                     | Why was the “Marsh Model” chosen and how does it work to describe and mitigate for impacts to riverine habitat? The marsh model is not suitable to account for aquatic habitat loss for fisheries as metrics do not reflect this kind of habitat. Its use underestimates mitigation needs because shallow aquatic habitats have high value. Look into the Mississippi River Loosahatchie-Hatchie study models. | Considerable effort was made during the 2005 EIS by the interagency team to develop metrics that assess aquatic impacts. The resulting marsh model was slightly modified in mid-2023 after agency input and certified (internal QA process) for USACE use on the project. The marsh model contains metrics that account for adjacent land use and vegetation, water depths, aquatic vegetation, flow regime, etc. These metrics and 2005 data collected were utilized along with assumptions that erred in favor of habitat values for existing conditions. This resulted in higher habitat values for future without project habitat conditions than what is likely actually occurring. Similar assumptions were carried through the future with project and mitigation modeling that also erred on the side of the habitat. The overall result is a mitigation plan that accounts for a project with far more impacts than are likely to occur given that the project is scaling down expected dredging and placement needs. The marsh model is used to account for marsh/wetland habitat impacts resulting from all project activities with aquatic impacts that result in compensatory mitigation needs. Dredging is not anticipated to |

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|      |  | <p>have compensatory mitigation requirements as it is deepening the deepest parts of the river and conditions are expected to be similar between future with and future without project conditions. The modeling efforts are used to identify net losses of habitats requiring compensatory mitigation as well as project mitigation efforts to offset those losses. However, mitigation design and monitoring metrics that will be used to determine when success is achieved are not specifically tied to the modeling metrics. We will work with agencies to agree upon the ideal features of the resulting mitigation features, including metrics such as water depth as well as specific locations and features to be included in the mitigation plans. Specific resource agency meetings have been held to further discuss and understand how the mitigation models and processes work.</p> |
| AGFC | <p>The anticipated dike notching mitigation acreage is drastically lower than expected impact acreage from dredging alone. This makes it seem that the Marsh Model underestimates aquatic habitat impacts for economically important and recreationally popular fishing areas. The full 2005 mitigation plan will be needed to offset habitat losses caused by dredging and dike notching.</p> | <p><b>Partially Adopt.</b> The acres of impact were identified using worst case scenario from current and 2005 proposed plans, thus allowing the project to develop a worst case scenario mitigation plan. As mentioned above, not only did the modeling metrics assume worst case scenario, so did the total acreage. This further ensures that the mitigation plan is sufficient to offset losses for compensatory mitigation eligible habitats, which are aquatic habitats and bottomland hardwood forest. The 2024 mitigation plan accounts for dredging, placement, and upland disposal area construction impacts to aquatic habitats and bottomland hardwood forests.</p>   |
| AGFC | <p>Dike notching success criteria needs to be improved. Suggest (1) acreages of aquatic habitat converted to terrestrial habitat, and (2) acreage of backwater habitat greater than 3.5-feet in depth, which is important to maintaining fisheries. AGFC would support aquatic species monitoring as approved in the 2005 EIS.</p>   | <p><b>Partially Adopt.</b> Concur that success criteria needs improvement and more detail. Suggested metrics are noted and discussions anticipated to further refine how these metrics would be implemented. Aquatic species monitoring as approved in the 2005 EIS is not part of this mitigation plan as it does not meet USACE policy, thus is not something we can pursue. Fish species are transient and as such, are not guaranteed to utilize habitat even if it is suitable and available, therefore species monitoring is not indicative of success per USACE policy.</p>  |
| AGFC | <p>Mitigation for aquatic habitat impacts should be done in the pool where the impacts occur and if</p>  | <p><b>Partially Adopt.</b> Concur that aquatic mitigation should be completed in the same pool as the impacts to the greatest extent</p>  |

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|                    | mitigation is done at a different pool than the impact the mitigation performed should be at a higher ratio (e.g., 3 acres of mitigation for 1 acre of impact).   | possible. In the event that there are not enough mitigation projects identified in the same pool as provided in the 2005 mitigation feature list, coordination to identify the next best features in adjacent pools will occur.<br>Do not concur that mitigation features in adjacent pools would require a higher mitigation ratio. While features may be implemented in a different pool, it will be the same type of mitigation to account for the same kind of impact and quantity is based off of modeled impacts as required by USACE policy.  |
| <b>Gravel Bars</b> |   |  |
| AGFC               | AGFC would like to see updated gravel mapping rather than locations provided in the 2005 EIS. A 1:1 gravel bar mitigation ratio is supported, but close monitoring is needed to ensure success. Sensitive success criteria for this critical and relatively rare habitat is needed. We do agree that gravel should be placed in-water close to the impact location as long as it is likely to function similarly to what was damaged.   | <b>Adopt.</b> Concur that updated gravel mapping is needed. In 2023, particle size substrate surveys were conducted. We will use this data to identify high probability gravel bar locations that may be impacted by dredging and placement efforts. Detailed surveys will be conducted in those areas prior to construction to confirm gravel presence and the size of the gravel bar.<br><br>Concur that monitoring of sensitive success criteria will be conducted to ensure success and gravel replacement will be located as close to the impacted area as hydrologically possible. Committing to developing more specific success criteria during site-specific mitigation planning to take place prior to each phase of construction. |
| USFWS-OK           | No details are described in the SEA for how the Corps would accomplish the replacement of gravel bars. It is unlikely that gravel can be moved to locations that do not currently have gravel substrate without changing how water flows through that area. Deposition of silt and clay substrate on top of the gravel would be likely unless the hydrology is changed to keep it clean.<br><br>Gravel bar locations and sizes have likely changed in the past 20 years and new surveys are needed ahead of dredging to evaluate appropriate mitigation needed. | <b>Partially Adopt.</b> See above response. Non-concur with utilizing a higher ratio to account for questionable success. Monitoring will be conducted to ensure success criteria are met; therefore, gravel will be mitigated for commensurate with impact.   |

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|  | <p>The success of efforts to move gravel is questionable and unless restored gravel bars are monitored and maintained, the goal of no net loss is not likely to be achieved. A higher ratio of mitigation would be more appropriate to address questionable success in moving dredged gravel bars and monitoring should be implemented for assessing both the area and quality of gravel bar habitat.</p>   |  |
| <b>Mussels, Fisheries, and Other Aquatic Resources</b> |   |  |
| USFWS-AR   | <p>USACE indicated there is no mechanism to mitigate for the loss of significant non-federally regulated fish and wildlife or habitat resources. Surveys indicate dense mussel beds present in the Post Canal. Though no federally listed species were recorded, the 2005 FEIS indicated mitigation would take place for adverse impacts. Coordination with AGFC should occur to ensure State laws are not violated and avoidance and minimization measures are in place to avoid mussel resources.</p> | <p><b>Partially Adopt.</b> Per policy, USACE can only implement mitigation measures for Federally listed species. Mussel surveys were not previously included in the project plans as previous discussions with USFWS did not indicate concern over Federally listed mussel species. USACE requested further information from USFWS and the States on historical locations, records of last known live specimens, and characteristics of potential habitats for any federally listed mussel species to inform where impacts may occur and surveys would be needed. If it is reasonable to assume that federally listed mussel species have existing habitat in areas that will be impacted by dredging or in-water placement of dredge material, mussel surveys prior to construction efforts by a certified entity may be considered. USACE will work with States to develop and implement BMPs and select feature locations in a way to reduce impacts to non-listed mussel species.</p> |
| AGFC   | <p>There is a great need for updated mussel surveys, particularly in areas where dredge impacts will be highest. Information from 2005 surveys are not sufficient. Although concerns of encountering threatened or endangered mussel species are relatively low within the project footprint, ignoring common species is how they become threatened or endangered. The Little Rock District staff has indicated that dredging in the Post Canal possibly</p>  | <p>See above response.</p>   |

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|      | less than indicated in the SEA. However, the mussel survey for the post canal is 25 years old, and Fat Pocketbook have been collected nearby at mile 11-12.4 in the White River (BA; page 26). It seems prudent that mussel surveys be performed before any dredging in the lower White River and the post canal to ensure endangered mussels are not impacted. It is illegal to purposely kill mussels (AGFC Code 31), and all appropriate precautions should be made to avoid killing mussels. Mussels should be translocated to prevent killing them, and any accidental killing of mussels should be mitigated for at American Fisheries Society (AFS) fish kill monetary values per individual killed.   |  |
| AGFC | Considering the substantial amount of dredging in the lower White River, we believe that winter surveys for endangered Pallid Sturgeon and the petitioned Lake Sturgeon are warranted. We request these surveys due to the adjacent proximity of the lower White River to known Pallid Sturgeon habitat in the Mississippi River, and the recently documented tendency for Pallid Sturgeon to swim up tributaries in the winter (i.e., the Arkansas River). The petitioned Lake Sturgeon is known to occur or swim through the White River section of the MKARNS. Also, the National Oceanic and Atmospheric Administration petitioned Alabama Shad ( <i>Alosa alabamae</i> ) appears to swim through this area, as juveniles have been captured up river near Newport, AR. | <b>Not Adopt.</b> USFWS has agreed on a May Affect, but Not Likely to Adversely Affect determination for the endangered Pallid Sturgeon. Previous surveying efforts identified a handful of specimen on the lower Arkansas River outside of the MKARNS, but impacts anticipated from the 12-foot channel construction are not anticipated to impact these areas. USACE lacks the fiscal authority to expend federal funds to survey for non-listed species (including petitioned species). |
| AGFC | Site-specific surveys for the alligator snapping turtle should occur prior to any construction to reduce impacts to the species.  | <b>Partially Adopt.</b> Part 402 of the ESA, Section 402.10 – Conference on Proposed Species or Proposed Critical Habitat requires each federal agency to confer with the USFWS on any action which is likely to jeopardize the continued existence of any proposed species or result in the destruction or adverse modification of proposed critical habitat. The proposed project is   |

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|      |   | unlikely to jeopardize the continued existence of the AST because direct and indirect effects are localized to the immediate project area and not expected to affect upstream or downstream, thereby having no effect on AST outside of the immediate area. Should the alligator snapping turtle be uplisted as threatened or endangered, we will reconsult with USFWS and find new conservation measures to implement at that time. Currently, BMPs are in place to avoid and minimize impacts to AST.   |
| AGFC | Disagree with the statement on page 37 of the SEA that American Alligator are “Not likely to occur in the project area,” as the species is known to frequent Pool 2 and Merrisach Lake area (see Roberts 2019).   | <b>Concur.</b> The 2005 EIS determined that the American alligator was not likely to occur in the project area when it was a Federally listed species. While we now expect it to occur in the areas mentioned, the American alligator is no longer Federally protected. Even with an unprotected status, avoidance and minimization measures as well as BMPs will be implemented to prevent adverse impacts. Language in the SEA has been revised to reflect this.  |
| AGFC | Currently most all dike fields are labeled as potential aquatic disposal sites. AGFC would like to discuss the use of these areas as disposal sites to identify where disposal could be placed to cause the least amount of impact to aquatic resources. Dike fields, particularly those notched, serve as important recreational fisheries for anglers. AGFC would like to refine in-water dredge disposal locations along the MKARNS in Arkansas. | <p><b>Partially Adopt.</b> Concur. Most dike fields are currently labeled as potential disposal sites, indicating that they either have permits or are under consideration for such use. These designations present an opportunity to engage with relevant agencies to minimize environmental impacts or ideally even enhance the ecological value of these areas. The input and perspectives of various stakeholders will be crucial in refining the locations for dredge disposal along the MKARNS in Arkansas.</p> <p>However, given the vast spatial extent and changing conditions, it may be more practical to conduct detailed discussions as smaller sections of work progresses through design phases. While the existing permitted areas have large footprints, it's important to ensure that notched revetments maintain their intended functionality. Therefore, discussions on refining footprints should coincide with the development and nearing construction phases of specific designs.</p> <p>A comprehensive update of dredge disposal locations can be implemented gradually over time, focusing on individual reaches</p> |



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|      |   | as designs progress. This phased approach allows for careful consideration of environmental impacts and ensures the success of the overall endeavor.  |
| AGFC | <p>Access to fisheries is an important consideration for a mitigation plan as access to important habitats is often reduced by navigation improvements.</p> <p>AGFC is concerned that the continuous placement of dredge material on the inside of river bends could eventually restrict both angler and aquatic life access. AGFC would like to discuss the possibility of dike notching, or other methods, to maintain openings to these secondary channels that serve as important habitats for the life stages of many aquatic organisms.</p> | <p><b>Partially Adopt.</b> These sites either currently have permits or are under consideration, offering opportunities for updated discussions with resource agencies to minimize environmental impact or potentially even enhance ecological benefits. It's imperative to gather input from various stakeholders to refine dredge disposal locations. However, given the extensive spatial coverage and dynamic conditions, it's advisable to conduct detailed discussions as smaller sections of work progress through design phases.</p> <p><b>Adopt.</b> Dike notching or other methods to maintain openings to secondary channels are excellent options that necessitate coordination with resource agencies to optimize performance. Drawing on data and experiences from multiple sources will be key to ensuring success. This collaborative approach aligns perfectly with our goals for effective management and conservation.</p> |
| AGFC | <p>The USACE has suggested in recent meetings that fish notches are 4-feet wide x 1-foot deep. It is important for the USACE to recognize these are "micro-notches" for fish passage only and not the notches used for mitigation to prevent aquatic habitat losses.</p>  | <p><b>Partially Adopt.</b> These dimensions are typical for structures currently in place within the system. The larger notch at NM 222, approximately 200 feet wide and significantly deeper, aims to enhance and maintain the secondary channel, particularly in the Shoal Bay area where sedimentation was occurring. However, when creating larger notches, it's crucial to prioritize bank stability and protection due to increased flows and velocities. USACE is committed to adhering to proper procedures, scientific principles, and collaborative efforts to size notches appropriately to achieve objectives while mitigating potential risks to banks, land, and other nearby infrastructure that could be threatened by erosion.</p>   |
| AGFC | <p>Appendix K notes that blasting maybe used to help excavate the river in several locations. Blasting is likely to kill fish and all fish killed should be</p>   | <p><b>Not Adopt.</b> Blasting is a possibility for a few locations as a means to quickly aid in channel deepening as opposed to drilling for months on end, but it is not included in the first few phases of</p>   |

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|      | <p>mitigated for at AFS fish kill monetary values. Several blasting sites are known areas (e.g., Plummerville Cutoff area; Fouché La Fave River mouth) for Alligator Gar, which is a species that requires high adult survival and is very difficult to mitigate for loss.</p>   | <p>construction as no dredging is taking place for the first few years. We agree that blasting could result in fish kills, however BMPs will be in place to avoid and minimize these impacts: aquatic species deterrents (noise or physical) will be employed ahead of any blasting, minimal blasting will be employed, etc. USACE as a federal entity with an authorized purpose for navigation is exempt from AGFC Code 31. However, through continued project coordination under the FWCA, USACE will work with USFWS and the States to ensure all necessary BMPs are in place if blasting does occur to avoid, minimize, and mitigate impacts to aquatic resources to the greatest extent practicable.</p>   |
| AGFC | <p>While the quantity of some project features is decreasing from what was planned in the 2005 FEIS, more dredging locations are anticipated from Lake Dardanelle to Fort Smith than what was originally projected. We are skeptical of the conclusion in the SEA on page 76 that “Long-term, minor adverse, not significant impacts” will occur to Aquatic Resources with the 12-foot Channel. We find it highly unlikely that cumulative impacts of dike modification and dredging will not have significant impacts to aquatic habitat since the USACE is proposing to use in-water dredge disposal. Appendix F (mitigation plan) indicates, “unavoidable adverse impacts are direct and indirect to bottomland forests and aquatic resources.” Appendix F, page 5 describes aquatic habitat loss as major and adverse.</p> | <p>Concur that significant impacts to aquatic habitats are expected as a result of the proposed project. These impacts are identified and disclosed in the 2005 FEIS, and the 2024 SEA serves to account for changes in the project plans identified in the 2005 FEIS. Those changes include fewer project features and slightly different locations of those features compared to what was originally proposed, therefore adverse impacts are expected to lessen compared to those identified in the 2005 FEIS. While impacts to aquatic resources are indeed significant, avoidance, minimization, and compensatory mitigation efforts will decrease those impacts to a less than significant threshold. A substantial quantity of bottomland hardwood, marsh/backwater, and gravel bar habitat mitigation is anticipated commensurate with habitat impacts, and through interagency collaboration on mitigation feature identification, implementation, and success determination, habitat loss will be fully offset.</p> |
| SWPA | <p>Dredge spoils should be used to create Interior Least Tern (ILT) islands on the MKARNS in support of ILT recovery.</p>  | <p>Concur. When dredge material type, dredging location, and hydrologic conditions are suitable, dredged material will be utilized to create new or improve existing sandbar islands in support of provided suitable migratory bird habitat, particularly in support of the Interior Least Tern (ILT) in line with the ILT recovery plan and USACE Tulsa and Oklahoma District programmatic biological opinion. Language across SEA</p>  |

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|  |   | documents, including in Section 4.7.2 of the SEA and Appendix F, has been revised to ensure consistency.  |
| <b>Design, Construction, and Maintenance</b> |   |   |
| USFWS-AR                                     | The Montgomery Point Lock and Dam at the mouth of this reach was constructed with the anticipation of reduced dredging. We recommend investigating operational changes of this structure or other measures as opposed to an increase of dredging in this sensitive reach. The efficacy of increased dredging in this reach, or perhaps the entire study area, should also be considered in the context of existing conditions on the Mississippi River. | Operational changes fall outside of the scope of the MKARNS 12-Foot Channel Deepening Project.  |
| AGFC   | Many of the proposed training structures and sandbars already exist. Is the intent to make these structures larger?   | <p>Regarding the proposed training structures, the aim is to extend their length and/or increase their height. When a structure is heightened, its width will naturally expand to maintain structural stability. This heightening is intended to narrow the river flow at slightly higher rates for longer periods, inducing local scour in the navigation channel or at least reducing the likelihood of deposition in targeted areas, thereby lessening the need for initial and ongoing dredging efforts.</p> <p>As for the sandbars, these were initially identified in the 2005 Feasibility Study and are conceptual options rather than finalized design plans. If the creation of sandbars proves to be beneficial and hydraulically sustainable for habitat, it could be considered at various locations. However, detailed discussions on sandbar locations are best approached incrementally, focusing on smaller portions of work as design phases progress. Input from stakeholders will be crucial in refining these plans to ensure their effectiveness and environmental sustainability.</p> |
| AGFC   | Nearly all of the Arkansas post-canal is proposed for dredging. However, per conversations with USACE, it seems that the majority of the channel is already at a 12-foot or greater depth. AGFC would like specific locations for where the channel is not  | The Arkansas Post-Canal was initially designed to accommodate a depth of 17 feet with a bottom width of 290 feet to facilitate hinged pool operations. Presently, the existing width within the 9-foot authority range fluctuates between 220-250 feet. The additional width may pose challenges due to tow "wheel wash,"   |

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|      | <p>at 12-foot or greater depth and where dredging impacts will be the most substantial.</p>  | <p>which churns up sediment from the center of the canal and deposits it on the sides.</p> <p>The dredging recommendation for the Feasibility Study was to dredge to a depth of 14 feet across the full 300-foot authorized width. Subsequent updates in 2020 suggested a dredging depth of 13 feet for the same width. Further discussions and detailed surveys in 2023 led to a recommendation to dredge the post-canal to a depth of 13 feet for a 250-foot width to ensure safe passage.</p> <p>Although most of the canal currently meets the depth requirements for deeper draft tows, there are concerns about the width, particularly regarding tow movement between Lock 1 and Lock 2. Collaboration with the navigation industry, including discussions with Captain Pete Ciarametaro of Southern Towing, revealed passing zones upstream of Lock 2 where installation of mooring cells could be beneficial.</p> <p>The decision to maintain a design criteria of 13 feet depth at 250 feet width was made to be conservative in terms of quantities, cost, and mitigation discussions. The design team intends to further reduce the dredging and design footprint in the post-canal, but this requires additional coordination with the navigation industry and resource agencies to make fully informed decisions. There's a plausible design that could result in infrequent "spot" dredging with passing zones upstream of Lock 2.</p> |
| AGFC | <p>The Mississippi River is authorized to a 12-foot depth but is only maintained to a 9-foot depth. How will this difference in depth work if the MKARNS is maintained at 12-feet?</p> | <p>The Lower Mississippi River is authorized to 12-foot of depth for 300 feet of width, but only appropriated to maintain 9-foot of depth for 300 feet of width. This does not imply that tows sized for 12-foot of depth and 250-foot of width on the Arkansas would not be able to navigate the Lower Mississippi River at all. The minimum design depth on the Arkansas River is based upon minimum pool limits at the Dams while the minimum design depth on the Lower Mississippi River is based upon a Low Water</p>  |

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|          |   | Reference Plane (LWRP) which statistically describes water levels that are equaled or exceeding 97% of the time. Other than drought conditions, tows could expect a reasonable duration of level of service on the Lower Mississippi River.   |
| USFWS-AR | Recent coordination with the New Orleans, Vicksburg, and Memphis Districts of the Corps regarding the Lower Mississippi River Comprehensive Study revealed that while the Mississippi River downstream of the White River mouth is authorized for a 12-foot channel, it is currently only maintained to a 9-foot depth.   | See above response.   |
| AGFC     | What are the changes that need to be made to existing locks and dams along the MKARNS to support deeper tows (SEA page 67)? Is the current infrastructure going to be sufficient immediately? If not, will the MKARNS truly be able to support these deeper drafting vessels? Is there funding available to bring these navigation structures up to their needed specifications to support a 12' channel depth? | Currently, the only change planned is in regards to the lock guidewalls. Guidewalls that were structurally determined not to have an adequate factor of safety will need to be pinned to mitigate the risk of significant damage if there were to be an allision. Operationally, no changes need to be made. Navigators will be restricted to slightly slower speeds entering and existing the lock chamber. The current infrastructure would be sufficient immediately to accommodate these deeper drafting vessels.   |
| AGFC     | AGFC would like to retain all rock or similar hard structures, such as those located at RM 151 and 140, be retained in-water rather than removed from the system entirely.  | <p><b>Adopt.</b> The rock found at NM 151 and 140 is not a result of removing river training structures. Instead, it is to be the removal of hardpan clay or rock from the channel bed, pending geotechnical investigations, to ensure sufficient depth for deeper draft vessels. There is historical evidence of excavation and blasting in this area. In the late 1980s, blasting occurred at Hickman Bend (NM 149-150) to enhance the channel for the 9-foot authority, with the material mainly used for bank paving or dike repairs nearby.</p> <p>Similarly, in the fall of 2006, hardpan clay with boulders was excavated around NM 146 to accommodate the 12-foot authority, with funding earmarked for the purpose. Much of the excavated rock was strategically placed in the stream under the coordination of US Fish and Wildlife Service for habitat creation.</p> |

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|      |  | At present, there are no concerns regarding retaining in-water disposal of the hard material.  |
| AGFC | <p>Many new extensive dredge locations are located in the White River section of the Arkansas River navigation system, and this is one of the major changes in the SEA. We request the risk of head cutting from this dredging be assessed, including the projects potential impacts on the White River National Wildlife Refuge as RAMSAR Wetlands of International Importance. Any new head cut has the possibility to drain important oxbow lakes and wetlands and damage the mussel beds of the lower White River. Head cutting has already been an issue in the lower White River in the past 25 years (e.g., Cooks Lake situation). The draft SEA Appendix K indicates that the lower White River will have 343,015 CY of sediment removed, whereas the 2005 EIS indicated no extra dredging in this area. The navigation depth in the White River section of the MKARKNS will increase to 12-feet, but the depth authorized for the White River upstream of the MKARNNS is much lower at 5-feet thereby increasing the channel depth difference among river sections (i.e., gradient of the river). Riverbed gradient changes are a known factor that may influence head cutting.</p> | <p><b>Adopt.</b> The locations identified in the White River section are based on surveys compared against the minimum pool depth that Montgomery Point can sustain, set at elevation 115 feet. These areas were not considered in the 2005 EA due to the anticipated reduction in dredging needs resulting from the construction of Montgomery Point. Indeed, Montgomery Point has significantly decreased the need for dredging in the White River portion of the navigation system. For instance, navigation miles 8-6 have only required dredging three times since the construction of Montgomery Point, compared to over 70 times prior to its construction.</p> <p>However, recent low water levels on the Mississippi River prompted the inclusion of areas of potential concern for sustainable depth. These areas will only be dredged to the deeper depth once the deeper draft system is operational and when the Mississippi River falls below elevation 115. Dredging these areas prematurely or in any other manner would not be beneficial, as adequate depth typically exists in the White River portion when the Mississippi River is not low. Furthermore, the natural backwater effect from the Mississippi River often leads to natural deposition in this area.</p> <p>The depths in this region are highly dynamic, and the current dredging footprint conservatively represents challenges that need continual monitoring, better understanding, and consideration moving forward. It is likely that actions in the White River portion of the channel will be deferred until after the official project completion and may become part of future Operations and Maintenance (O&amp;M) activities if needed for maintaining the 12-foot channel. None of the dredging sites are new from the perspective of current O&amp;M for the 9-foot authority and appropriations.</p> |

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|          |  | <p>Concerns about headcutting on the White River due to potential future spot dredging are highly improbable. Montgomery Point effectively acts as a grade control structure, mitigating changes to river gradient. Dredging actually flattens the slope relative to the Mississippi River, as indicated by current survey data. While headcutting is generally associated with steep slopes or large changes in slope (neither of which exist or are proposed), there is also very little sustained velocity of appreciable duration in the White River Entrance Channel reach to indicate risk of headcutting on the White River as a result of current navigation system function or any future proposed increased level of service. the two slopes. Additionally a t-test was performed with a resulting p-value &lt; 2.2e-16.</p> <p>Regarding the disparities in authorizations and appropriations for the depths of the White River and the MKARNS, it's important to recognize that nature's laws do not adhere to legal discrepancies. In reality, there is no existing discrepancy in channel depths. The bed elevations exhibit significant continuity, which remains independent of navigational depth authorities.</p> |
| USFWS-AR | <p>A major change from the 2005 EIS to the current SEA is an increase in dredging volume in river miles 0.6 to 10.3. This represents the portion of the McClellan-Kerr Arkansas River Navigation System (MKARNS) that uses the lower White River to connect the Mississippi River with the Post Canal and Arkansas River. This area is adjacent to the Dale Bumpers White River National Wildlife Refuge and the Trusten Holder Wildlife Management Area. It may be used seasonally by endangered Pallid Sturgeon and Lake Sturgeon and Alabama Shad, petitioned for listing under the ESA. This portion of the lower White River has experienced head cutting in the past that resulted in the loss of upstream terrestrial and wetland habitats including oxbow lakes on public lands. Studies should take</p> | <p>See above response.</p>  |

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|      | place to ensure that dredging in this reach does not reinitiate head cutting or exacerbate existing head cutting that could increase modification or loss of aquatic and terrestrial habitats.   |  |
| AGFC | We would like to continue to work with the USACE to develop site-specific plans for dike notching and dredge disposal islands for Least Terns. Numerous disposal islands were successfully created in Pool 9 near the base of Petit Jean Mountain, and these habitats are reminders that we can accomplish great things for fish and wildlife when we work together in a cooperative fashion. During construction, please avoid addition of dredge materials to existing tern islands during the nesting season. | <b>Adopt.</b> We anticipate significant collaboration as we identify locations for and implement dike notching and dredge disposal for sandbar islands. Concur with avoiding dredge placement on existing islands during migratory bird nesting season.  |
| SWPA | The project is not anticipated to negatively affect Congressionally-authorized purposes, water surface elevations, or operations of the MKARNS projects with hydropower, and should have a net-zero impact to power pool storage. However, SWPA is concerned that deepening the channel will result in a need for more maintenance dredging which could negatively impact hydropower operations.   | Concur that the project is not anticipated to adversely impact existing, Congressionally-authorized purposes and operations, including hydropower. After the 12-foot navigation channel deepening occurs, maintenance dredging efforts are expected to be comparable to existing 9-foot channel efforts. The creation and modification of river training structures is intended to scour sediment in support of the 12-foot channel and thereby reduce the need for continued maintenance dredging, primarily in Arkansas and at three areas prone to sedimentation in Oklahoma. The creation of new upland disposal sites, primarily in Oklahoma, will serve as locations to deposit dredge material produced from deepening dredging, but also long-term maintenance dredging efforts. However, the maintenance dredging efforts for the deeper navigation channel are not expected to be significantly more frequent than existing 9-foot channel efforts. The majority of the MKARNS navigation channel is already at a 12-foot navigable depth. Areas prone to sedimentation will be the same locations regardless of navigation channel depth and are expected to fill at comparable rates. Therefore, the maintenance dredging required to maintain those |



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|                             |  | problemated areas is expected to be the same despite the channel depth once deepening dredging is completed.   |
| SWPA                        | Deviations from water control plans and authorized power pool elevations have been utilized to hold the pool elevations higher to minimize impacts to navigation until depth is restored during flooding events. These deviations limit Southwestern's ability to generate at hydropower projects, resulting in increases to both off-peak generation and spill. The channel deepening could increase the duration of such and thus adversely impact Southwestern.   | Deviations to hold pool elevations are currently necessary following flood events due to deposition of sediment as the flood recedes. The main component of the project is to construct new, or improve existing, rock navigation structures which move that sediment through the system. These improvements are designed to both deepen the channel and reduce deposition within the navigation channel. Less deposition within the navigation channel will reduce the duration and frequency of those deviations.  |
| SWPA                        | Project funding needs to sustain 12-foot depth below the bottom of the power pool elevations at hydropower lakes and should address backlogged maintenance needed to avoid unplanned lock and dam closures that may impact hydropower operations.  | Current and future funds specifically allocated for this project are intended to fund the 12-foot channel deepening itself, however future Operations and Maintenance (O&M) funding streams will serve to maintain the channel to its intended depth as is currently done at the 9-foot depth. Lock and dam maintenance falls outside of the authorized scope of this project, however USACE continuously has and will continue to perform necessary evaluations and maintenance at MKARNS projects to ensure public safety and navigation are sustained and avoid impacts to hydropower operations. |
| <b>Compliance Documents</b> |  |  |
| AGFC                        | Section 10.1.3 Fish and Wildlife Coordination Act of the Draft SEA makes no mention of coordination with the state wildlife agencies affected by the MKARNS 12-foot Channel Deepening Project. The language of the FWCA Sec. 2. [16 U.S.C. 662] (a) states, "... whenever the waters of any stream or other body of water are proposed or authorized to be impounded, diverted, the channel deepened, or the stream or other body of water otherwise controlled or modified for any purpose whatever, including navigation and drainage, by any department or agency of the United States, or by any public or private agency under Federal permit or license, such department or agency first shall | <b>Adopt.</b> State agencies will be included in the CAR development and USACE will request that USFWS provide their documents to the States for final reviews and the opportunity to provide their own individual recommendation letters prior to CAR finalization.   |

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|  | <p>consult with the United States Fish and Wildlife Service, Department of the Interior, <u>and with the head of the agency exercising administration over the wildlife resources of the particular State</u> wherein the impoundment, diversion, or other control facility is to be constructed, with a view to the conservation of wildlife resources by preventing loss of and damage to such resources as well as providing for the development and improvement thereof in connection with such water-resource development.” The FWCA coordination that has occurred between the U.S. Army Corps of Engineers and the U.S. Fish &amp; Wildlife Service for the MKARNS 12-foot Channel Deepening Project should also be extended to the Arkansas Game and Fish Commission and the Oklahoma Department of Wildlife Conservation.</p> |  |
| <b>Site Specific Comments</b>  |  |  |
| <p>AGFC provided an extensive list of comments related to specific sites of anticipated new and modified river training structures, in-water disposal, dike notching, and other mitigation features. USACE has made note of this feedback and anticipates frequent collaboration with all resource agencies to develop site-specific mitigation plans to account for each phase of project construction.</p> |  |  |

### 3.3 Next Steps Following the Draft Comment Period

The purpose of the Draft MKARNS 12-foot Channel SEA comment period was to provide an opportunity for the public, members of industry, and resource agencies to learn about the draft alternatives and provide input on the SEA to inform any needed revisions to the proposed alternatives, NEPA analysis, and mitigation plan, or otherwise comment on project plans.

USACE will consider the comments and issues identified during the draft release comment period as the final SEA documents are developed. Many comments particularly from resource agencies resulted in numerous refinements to the mitigation plan itself as well as the path forward to accomplish necessary compensatory mitigation for such a long-term project. Many specific agency comments were responded to in detail as necessary to reach a resolution, in particular for interagency compliance documents. However, comment responses were not developed for all comments received during the preparation of this SEA.

The Final SEA will be made available to the public on the MKARNS 12-foot Channel Project website. Final documents are expected to be made available in the fall of 2024.

## 4 Tribal Nation Coordination

All federally recognized Tribes are inherent sovereign governments that have not relinquished powers of self-governance and will be treated with dignity and respect. The United States government has responsibilities to Tribal Nations resulting from the Federal Trust Doctrine, which is derived from Treaties, statutes, regulations, Executive Orders, case law, and agreements between the Federal government and Tribal governments. Coordination and consultation with Tribal Nations regarding natural and cultural resources is ongoing, and will continue throughout the life of the project.

In addition to other laws and regulations, cultural resources are being addressed under Section 106 of the National Historic Preservation Act (NHPA) through execution of a Programmatic Agreement (PA) (Appendix E). Portions of the project will occur within the exterior boundaries of the reservations of The Muscogee (Creek) Nation, Cherokee Nation, and The Choctaw Nation of Oklahoma, and will therefore occur on tribal lands. As such, these Nations are full signatories to the PA.

The USACE has determined that project-related activities may have an effect upon properties potentially eligible for inclusion in the National Register of Historic Places (NRHP), and has consulted with the Advisory Council on Historic Preservation (ACHP), Arkansas and Oklahoma State Historic Preservation Officers (SHPO), the Muscogee (Creek) Nation Tribal Historic Preservation Office (THPO), Cherokee Nation THPO, the Choctaw Nation THPO, the Oklahoma Archaeological Survey (OAS), and fifteen additional tribes with interest in the project area pursuant to Sections 106 and 110 of the National Historic Preservation Act (NHPA) (54 USC 306108) and its implementing regulations (36 CFR Part 800). All agreed that subsequent to completion of the NEPA documentation, a Programmatic Agreement (PA) shall be implemented to satisfy the Corps' Section 106 responsibility for all individual aspects of the proposed action. A PA has been prepared and will be implemented by the USACE for the identification, evaluation, and treatment of cultural resources adversely affected by the Proposed Action. The draft PA is included in Appendix E to the SEA, along with documentation of communication and comments from the consulting parties.

While Tribes are involved as Signatories, Invited Signatories, and Consulting Tribes to the PA for NHPA Section 106 compliance, USACE is also consulting Tribes regarding real estate, beneficial use of dredge materials, and other concerns associated with the project in accordance with EO 13175 and the *USACE Civil Works Tribal Consultation Policy*, which was updated in December 2023.

USACE welcomes receiving Indigenous Knowledge through the consultation process and will respect and consider such Indigenous Knowledge throughout the course of the project. USACE will ensure that it continues to consider and addresses Tribal concerns regarding protected Tribal resources (including cultural and natural resources), Tribal rights (including treaty rights), and lands in a respectful way, taking measures to ensure that agency actions do not impair Tribes' ability to exercise those rights.

## **Attachment A: Public Period Scoping Notice**



**US Army Corps  
of Engineers** ®

# Public Notice

Date issued: May 26, 2023

Close of comment period: July 8, 2023

USACE Point of Contact: Kelly Dobroski

**TITLE:** McClellan-Kerr Arkansas River Navigation System 12-ft Channel Deepening Public Open House Workshops & 30-day Comment Period

**SUBJECT:** The U.S. Army Corps of Engineers (USACE) Little Rock and Tulsa Districts are initiating the preparation of a Supplemental Environmental Assessment (SEA) pursuant to the National Environmental Policy Act (NEPA) of 1969, as amended, for the McClellan-Kerr Arkansas River Navigation System (MKARNS) 12' Channel Deepening Project to account for potential changes in the project and changes in the project area. In 2005, the USACE completed an EIS for the MKARNS 12-foot project.

**REQUESTER:** US Army Corps of Engineers, Little Rock and Tulsa Districts

**DATES & LOCATION:** Public open house workshops will be held from 4:00pm to 7:00pm at the following dates and locations:

**June 5, 2023 - TULSA, OK**

Homewood Suites by Hilton Tulsa/Catoosa  
201 Elliott Lane, Catoosa, OK, 74015

**June 6, 2023 - FORT SMITH, AR**

Janet Huckabee Arkansas River Valley Nature Center  
8300 Wells Lake Rd, Ft Smith, AR 72916

**June 7, 2023 - LITTLE ROCK, AR**

Port of Little Rock  
10600 Industrial Harbor Drive, Little Rock, AR 72206

**June 8, 2023 - PINE BLUFF, AR**

Governor Mike Huckabee Delta Rivers Nature Center  
1400 Black Dog Dr, Pine Bluff, AR 71601

**DESCRIPTION OF THE ACTION:** This project would deepen the navigation channel to a minimum navigable depth of 12-ft throughout the MKARNS. This would require placing rock structures to scour the channel, dredging the channel, and utilizing in-water and upland dredge disposal sites throughout the project area. Additionally, some lock modifications are planned to accommodate the increase in vessel size that the deepened channel would allow. These changes are due to changes in river-sediment dynamics and changes in project area resources, such as federally protected species.

**REGULATORY AUTHORITY:** The MKARNS 12-ft Channel Deepening Project is authorized by Section 136 of the Energy and Water Development Appropriations Act of 2004.

**SOLICITATION OF COMMENTS:** The USACE is soliciting comments from the public; federal, state, and local agencies and officials; federally recognized Tribes; and other interested parties to consider and evaluate the impacts of the proposed alteration. Comments received will be considered by the USACE to determine whether to modify this action. The public comment period will begin June 5, 2023 and end July 8, 2023. At each workshop, project information will be available for viewing and USACE staff will be available for discussions. Project information provided at the workshops will also be available for viewing at:

<https://www.swl.usace.army.mil/Missions/Planning/MKARNS-12-foot-Channel/12-footchannel-documents/>

It is presumed that all parties receiving this notice will wish to respond to this public notice, therefore, a lack of response will be interpreted as meaning that there is no objection to the proposed alteration as described herein.

**CLOSE OF COMMENT PERIOD:** Comments must be submitted in writing and mailed to "U.S. Army Corps of Engineers, ATTN: Kelly Dobroski (RPEC), 2000 Fort Point Rd, Galveston, TX 77550" post-marked by July 8, 2023. Comments can also be submitted electronically to [CESWL-NAV-MKARNS12FOOTCHANNEL@usace.army.mil](mailto:CESWL-NAV-MKARNS12FOOTCHANNEL@usace.army.mil), or online at: <https://www.swl.usace.army.mil/Missions/Planning/MKARNS-12-foot-Channel/Comment-Card/>

## **Attachment B: Workshop Story Boards**

## MKARNS 12-Foot Channel

### What is it?

- Authorized under Section 136 of the Energy and Water Development Appropriations Act of 2004, the MKARNS 12-Foot Channel purpose is to improve commercial navigation operation by deepening the current 9-foot navigation channel to a 12-foot operational depth. Over 85% of the MKARNS is already at this 12-foot operational depth.

### Why is it needed?

- Deepening the channel will allow the existing inland commercial fleet to sail at deeper drafts that are consistent with those on the Lower Mississippi River and load more cargo onto their barges thereby lowering transportation costs. This benefits producers and consumers throughout the region and nation. Roughly \$5 billion of goods are moved on the MKARNS annually. In addition, shipping more cargo on the MKARNS versus road or rail may have the added benefit of reducing landside congestion on roads and railways. Lastly, air emissions from barges on ton per mile basis are far less than trucks or rail.

1

## MKARNS 12-Foot Channel Construction Features

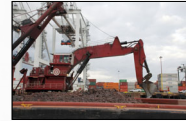
Features are designed based on updated hydrologic and sediment modeling done since 2021 and include:

### Rock weirs



Re-directive or resistive structures that use the river's energy to deepen and enhance the navigation channel, increase environmental diversity, and maintain system status.

### Dredging



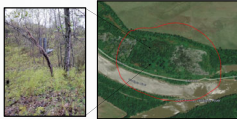
Removal of sediment and debris from the channel to allow ships to pass and maintain river flow.

2

## MKARNS 12-Foot Channel Construction Features

Features are designed based on updated hydrologic and sediment modeling done since 2021 and include:

### Upland disposal sites



Disposal sites allow dredge material to be used to improve habitat. Image depicts habitat available after fill placement.

### Lock modifications



Modifications strengthen locks to accommodate barges with a draft of more than 9ft.

3

## MKARNS 12-Foot Benefits

- Increased cargo capacity by deepening the channel
- Potentially reduces roadway congestion by allowing more cargo to ship on the MKARNS, rather than using truck and rail routes
- Beneficial use options available for dredge material
- Deepening the channel will allow the existing inland commercial fleet to sail at deeper drafts that are consistent with those on the Lower Mississippi River



4

## MKARNS 12-Foot Schedule

| July 8, 2023          | Late summer or fall 2023                     | Late 2023/early 2024  | 2025                  |
|-----------------------|--|-----------------------|-----------------------|
| • Comment period ends | • Draft SEA available for review and comment | • Final SEA available | • Construction begins |

5

## How Can You Participate?

- Today's Workshop**
  - Review information on the display boards and handouts
  - Ask the USACE Staff questions

### How to Provide Comments (4 options)

- Place comment cards in comment box tonight
- Submit comments online at:  
<https://www.swl.usace.army.mil/Missions/Planning/MKARNS-12-foot-Channel/Comment-Card/>
- E-mail comments to:  
CESWL-NAV-MKARNS12FOOTCHANNEL@usace.army.mil
- Mail comments to:

U.S. Army Corps of Engineers  
Attn: Kelly Dobroski (RPEC)  
2000 Fort Point Rd.  
Galveston, TX 77550

Comments must  
be postmarked  
by: **July 8, 2023**

6



## **Attachment C: Comment Card**



# Public Workshop

## Comment Form

### MKARNS 12-Foot Channel

Your input on the MKARNS 12-Foot Channel is valuable. Your participation is key to developing the Supplemental Environmental Assessment that is being developed in accordance with the National Environmental Policy Act (NEPA). Please write your questions, comments, or suggestions in the space provided below. Feel free to use additional pages if needed. Forms may be submitted at the public workshop or by July 8, 2023, to the address below. Thank you for your participation!

[illegible]

Name: \_\_\_\_\_ Affiliation: \_\_\_\_\_

Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_

Zip code: \_\_\_\_\_ Phone: (\_\_\_\_) \_\_\_\_\_ Email: \_\_\_\_\_

U.S. Army Corps of Engineers, ATTN: Kelly Dobroski (RPEC)  
2000 Fort Point Rd, Galveston, TX 77550

<https://www.swl.usace.army.mil/Missions/Planning/MKARNS-12-foot-Channel>



## **Attachment D: Agency Scoping Notice**



DEPARTMENT OF THE ARMY  
LITTLE ROCK DISTRICT, CORPS OF ENGINEERS  
POST OFFICE BOX 867  
LITTLE ROCK, ARKANSAS 72203-0867

May 25, 2023

## **McClellan-Kerr Arkansas River Navigation System 12-ft Channel Deepening Federal and State Agency Workshop Notification**

The U.S. Army Corps of Engineers (USACE) Little Rock and Tulsa Districts are initiating the preparation of a Supplemental Environmental Assessment (SEA) pursuant to the National Environmental Policy Act (NEPA) of 1969, as amended, for the McClellan-Kerr Arkansas River Navigation System (MKARNS) 12' Channel Deepening Project, authorized by Section 136 of the Energy and Water Development Appropriations Act of 2004.

The USACE is requesting information and comments that would assist in preparing the SEA. Two Federal and State Agency workshops will be held to accommodate agency staff in Oklahoma and Arkansas. The purpose of these meetings is to provide a project overview and discuss agency coordination efforts.

### **Tulsa, OK Federal, and State Agency Workshop**

June 5, 2023 - 1:00 p.m. to 3:00 p.m.  
Homewood Suites by Hilton Tulsa/Catoosa (Great Room)  
201 Elliott Lane, Catoosa, OK 74015

### **Little Rock, AR Federal, and State Agency Workshop**

June 7, 2023, 1:00 p.m. to 3:00 p.m.  
Port of Little Rock  
10600 Industrial Harbor Drive, Little Rock, AR 72206

If you are unable to attend one of these workshops, the USACE will host public workshops from 4:00 p.m. to 7:00 p.m. on the same days at each location to provide a project overview, allow the public to ask questions from USACE staff, and accept comments. You are welcome to attend one of these meetings as well.

The focus of the Supplemental EA is to assess and/or update the analyses previously completed for deepening the MKARNS to 12 feet, as project design and needs may have changed since the analyses conducted as part of the 2005 Arkansas River Navigation Study Final Feasibility Report (FR) and Environmental Impact Statement (EIS). The SEA will capture any additional project benefits and adverse impacts on the environmental conditions within the project area not previously analyzed or disclosed in previous NEPA documents. The previous documents and additional project history are available to view at:

**<https://www.swl.usace.army.mil/Missions/Planning/MKARNS-12-foot-Channel/>**

Your agency has been identified as having interest in the proposed project based on your jurisdiction by law and/or special expertise. As the lead Federal agency under

NEPA, in accordance with the Council on Environmental Quality (CEQ) final implementing regulations for NEPA (40 CFR § 1501.6 and § 1508.5), we invite you to be a Participating Agency with the USACE in the development of the SEA. As a Participating Agency, you would be requested to provide the following during development of the Draft SEA:

- Participation in coordination meetings, and/or field visits;
- Meaningful and early input on the overall scope of the document, analyses and assessment methodologies, range of alternatives, and proposed mitigation;
- Identification of the impacts and important issues to be addressed in the Draft SEA pertaining to the intersection of the alternatives with the resource(s) in your jurisdiction;
- Guidance on relevant technical studies as required for the Draft SEA; and
- Timely review and comment on NEPA documents that explain the views and concerns of the agency on the adequacy of the document, anticipated impacts, and mitigation.

If your agency does not wish to be a Participating Agency, the USACE respectfully requests that you decline this invitation in writing, indicating that your agency (A)(I) has no jurisdiction or authority with respect to the project; (II) has no expertise or information relevant to the project; or (III) does not have adequate funds to participate in the project and does not intend to submit comments on the project; or (B) does not intend to submit comments on the project. Please note, your designation as a Participating Agency does not imply you support the proposed project nor does it diminish or otherwise modify your agency's independent statutory obligations and responsibilities under applicable federal laws, regulations, and Executive Orders.

In order to give your agency adequate opportunity to weigh the relevance of your participation in the environmental review process, a written response to accept or decline this invitation is requested by July 8, 2023. Your written response may be transmitted electronically to Mr. Craig Hilburn, Biologist, Environmental Branch, Regional Planning and Environmental Center at David.C.Hilburn@usace.army.mil or by mail to "U.S. Army Corps of Engineers, ATTN: Craig Hilburn (RPEC), 700 West Capitol Avenue, Room 7500, Little Rock, AR 72203." Mr. Hilburn may also be reached by telephone at 501-324-5735 for any questions you may have.

We look forward to working with your agency to prepare the SEA.

Sincerely,

*Brandon Wadlington*

Brandon Wadlington  
Chief, NEPA & Natural Resources Section  
Regional Planning and Environmental Center

## **Attachment E: Letters of Support Received**



Sarah Huckabee Sanders  
GOVERNOR

Hugh McDonald  
SECRETARY OF COMMERCE

June 30, 2023

U.S. Army Corps of Engineers  
Attn: Kelly Dobroski (RPEC)  
2000 Fort Point Rd.  
Galveston, TX 77550

RE: MKARNS 12-Foot Channel Supplemental Environmental Assessment

Dear Ms. Dobroski:

The Arkansas Department of Commerce is fully supportive of the MKARNS 12-foot channel project.

This project would significantly increase Arkansas' ability to compete for major industrial development projects with adjacent states that currently have the ability to load each barge with up to 43% more cargo on the deeper channel of the lower Mississippi River.

The MKARNS 12-foot channel will dramatically decrease the number of trucks on Arkansas highways, reduce the amount of fuel consumed and emissions released, increase highway safety, and lower transportation costs. The resulting energy savings, reduction in greenhouse gasses and other environmental advantages demonstrate this project is a win-win, not only for the Natural State, but for all concerned.

Our nation faces ever-growing dependence on others for energy as well as the need to protect and improve our environment. Greater use and development of our navigable inland waterways will significantly help in relieving these problems. The 12-foot channel is vital to economic and environmental success, and it will enable Arkansas to compete favorably for new jobs and continued economic growth.

We urge the project to continue without delay and look forward to a 12-foot channel.

Sincerely,

A handwritten signature in blue ink, appearing to read "Hugh McDonald", is written over a horizontal line.

Hugh McDonald  
Secretary



Hugh McDonald  
SECRETARY OF COMMERCE

Cassandra Caldwell  
DIRECTOR,  
ARKANSAS WATERWAYS  
COMMISSION

June 27, 2023

U.S. Army Corps of Engineers  
Attn: Kelly Dobroski (RPEC)  
2000 Fort Point Rd.  
Galveston, TX 77550

Subject: MKARNS 12-foot Channel Supplemental Environmental Assessment

Dear Ms. Dobroski:

The Arkansas Waterways Commission expresses its highest recommendation and support for the execution of the MKARNS 12-foot channel project.

While the economic benefits of commercial navigation are frequently in the spotlight, the many positive environmental benefits of waterborne transportation are too often passed over with a minimum of concern and not given the recognition they deserve.

Barge transportation is over ten times more fuel efficient than trucks. The improvements under consideration in this project will further reduce the emissions of the transportation mode that already boasts the smallest carbon footprint. A 12-foot navigation channel will make an efficient system even more so without detriment to other beneficiaries. The combination of fuel savings, reduction in greenhouse gases and pollution resulting from the ability to load over 1/3 more cargo in each barge is beneficial for the environment and the economy, alike.

Global trade is predicted to increase by 70% in the next seven years. The importance of this critical resource as a freight transportation artery can only grow as our interstates and rail lines continue to become more congested. If we are to maintain the quality of life that we enjoy today, it is imperative that we invest in the greenest and most efficient means of transportation.

The Commission deeply appreciates the extraordinary time and effort the US Army Corps of Engineers, Little Rock and Tulsa Districts have given to communicate to and elicit input from MKARNS stakeholders. Please let us know how we may assist forward progress on this project.

Sincerely,

Cassandra Caldwell  
Director  
Arkansas Waterways Commission



# Economic Development Corporation of Jefferson County, AR

P.O. Box 5069 ♦ Pine Bluff, Arkansas 71611 ♦ Phone 870.535.0110 ♦ Fax 870.535.1643

June 23, 2023

U.S. Army Corps of Engineers  
Attention: RPEC-12 ft. Channel  
2000 Fort Point Road  
Galveston, Texas 77550

Dear U.S. Army Corps of Engineers,

The Economic Development Corporation of Jefferson County, Arkansas (EDCJC) is in support of the McClellan-Kerr Arkansas River Navigation System (MKARNS) 12-Foot Channel Deepening Project. We believe the project will help existing industry, in addition to recruiting new industry, to the Jefferson County area since each additional foot of draft would allow a barge to carry another 200 tons of cargo.

The EDCJC offers a financial assistance program to help qualified businesses in Jefferson County, or looking to locate in Jefferson County, to offset the costs of capital expansion projects, creating new jobs, and/or training workers. The EDCJC is committed to helping industry grow and expand in Jefferson County and this deepening project would help achieve this goal. It would help lower transportation costs as well as improve air quality since emissions from barges on a ton-per-mile basis are far less than other means of transportation.

Lastly, inland waterways transportation is one of the safest, most economical, and fuel-efficient ways to move our nation's goods for use domestically and export. The MKARNS is vital to the economy of Arkansas as whole, but especially Jefferson County. With a consistent 12-foot channel, the MKARNS would have the capacity to carry as much as 40-45 million tons, placing us in a more competitive position when we talk to prospective businesses looking to call Jefferson County home.

Sincerely,



W. Scott McGeorge  
Chairman of the Board

**Attachment F: Public/Agency Draft  
Comment Period Notice**



DEPARTMENT OF THE ARMY  
LITTLE ROCK DISTRICT, CORPS OF ENGINEERS  
POST OFFICE BOX 867  
LITTLE ROCK, ARKANSAS 72203-0867

January 29, 2024

## PUBLIC NOTICE

### **McCLELLAN-KERR ARKANSAS RIVER NAVIGATION SYSTEM 12-FOOT CHANNEL DEEPENING, ARKANSAS AND OKLAHOMA**

The public is hereby notified of the availability of the draft Supplemental Environmental Assessment (SEA) and draft Finding of No Significant Impact (FONSI) for the McClellan-Kerr Arkansas River Navigation System (MKARNS) 12-Foot Channel Deepening Project, authorized by Section 136 of the Energy and Water Development Appropriations Act of 2004. A 30-day public comment period will be held January 31, 2024, to February 29, 2024. The SEA and supporting appendices, previous project documents, and project history will be available on the Little Rock District website at:

**<https://www.swl.usace.army.mil/Missions/Planning/MKARNS-12-foot-Channel/>**

The U.S. Army Corps of Engineers (USACE), Little Rock and Tulsa Districts have prepared the draft SEA in accordance with the National Environmental Policy Act (NEPA) of 1968, as amended, to supplement the 2005 Final Environmental Impact Statement (FEIS) for the Arkansas River Navigation Study, Arkansas and Oklahoma (ARNS). The 2005 ARNS study recommended deepening the navigation channel throughout the MKARNS from nine feet to 12 feet and updating the existing MKARNS dredge material disposal plan. This SEA serves to 1) provide a concise summary of the history and status of the originally-authorized ARNS project; 2) document the changes and refinements made to the MKARNS 12-Foot Channel design during the Pre-Construction Engineering and Design (PED) and Construction phases, including mitigation; and, 3) evaluate the potential environmental effects of the updated construction and design plans that may have changed since the FEIS was completed.

The 30-day comment period is provided to solicit public feedback on the project. Comments submitted will be considered in preparing final documentation for completion of the NEPA process. Interested parties are invited to submit written comments by February 29, 2024 online at the comment form available on the website above; by mail to: USACE, ATTN: Craig Hilburn (RPEC), 700 West Capitol Avenue, Room 7500, Little Rock, AR 72203; or by email to [ceswl-nav-mkarns12footchannel@usace.army.mil](mailto:ceswl-nav-mkarns12footchannel@usace.army.mil). We appreciate your interest and look forward to receiving your feedback.

Sincerely,

*Brandon Wadlington*

Brandon Wadlington  
Chief, NEPA and Natural Resources Section  
Regional Planning and Environmental Center

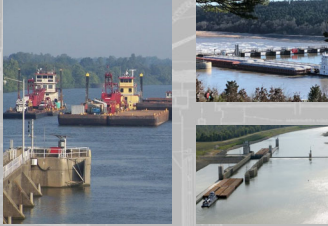

**Attachment G: Agency Draft  
Comment Period Kickoff Presentation**

## McClellan-Kerr Arkansas River Navigation System 12-Foot Channel Deepening

**Supplemental Environmental  
Assessment**

**Agency Workshop**



**February 15, 2024  
1:00 to 3:00**

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## Agenda



- Project Overview
- 2005 vs. 2024 Design Plans
- Mitigation Policy
- 2005 vs. 2024 Mitigation Efforts
- Mitigation Models
- Site Selection and Monitoring
- Project Delivery and Next Steps

2

## Project Overview

- Deepening the MKARNS to navigation channel from current 9-ft depth to congressionally authorized 12-ft depth to increase barge carrying capacity consistent with the Lower Mississippi River, thereby lowering transportation costs while potentially reducing landside transportation congestion and air emissions
- Flow management component of 2005 plan already implemented
- 2024 update to the 12-foot project involves...
  - Creation of new and modification of existing river training structures (dikes and revetments)
  - Dredging to realize 12-ft depth
  - Construction of new upland disposal sites (majority in OK)
  - Potential construction of new and use of existing in-water disposal sites (AR)
  - Creation of sandbar islands (beneficial use of dredge material)






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## 2005 vs. 2024 Design Plans

- Magnitude of project footprint is trending downward due to updated surveys and modeling efforts, and will continue to change slightly with further project modifications
- Construction will be completed in phases based on priority and funding, and subsequent features in the following phases will be implemented in response to the effectiveness of those prior



| Feature   | 2005               |          | 2024                      |          |
|---|--------------------|----------|---------------------------|----------|
|   | New                | Modified | New                       | Modified |
| Number of New or Modified River Training Structures | 90                 | 103      | 23                        | 89       |
| Dredging Quantity                                   | 10,985,339 CY      |          | 5,791,099 CY              |          |
| Number of Dredging Locations                        | 73                 |          | 96                        |          |
| Number of New Upland Disposal Sites                 | 55                 |          | 39 (37 in OK, 2 in AR)    |          |
| In-Water Disposal Areas                             | AR - 172<br>OK - 8 |          | AR only - 170<br>(41 new) |          |

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## Mitigation Policy

- **ER 1105-2-100, Section 906(d) of WRDA 1986** (amended by Section 1040 of WRDA 2014 and Section 1162 of WRDA 2016): requires compensatory mitigation for aquatic habitat loss (including bottomland hardwoods, wetlands, and gravel bars) or "significant habitats"
- **ER 1005-2-412**: requires the use of USACE Eco-PCX certified habitat models
  - MKARNS-specific Bottomland Hardwood and Marsh models used
  - Pre-existing certified Paddlefish Model used for gravel bar habitat to replace 1:1 ratio used in 2005
- **Section 2036(a) of WRDA 2007**: requires monitoring and adaptive management for mitigation plans
  - "Preparation of mitigation plans, including objectives, plan design, determination of success criteria and monitoring needs will be undertaken in coordination with Federal and State resources agencies to the extent practicable"
  - Annual consultation with appropriate Federal and State agencies
- **Implementation Guidance for Section 2039 of WRDA 2007**: only allows up to 10 years of Federally-funded monitoring and adaptive management, so success criteria must fall within a 10-year timeframe

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## 2005 vs. 2024 Mitigation Efforts

|                                    | 2005     |        |            |       | 2024   |        |            |       |
|------------------------------------|----------|--------|------------|-------|--------|--------|------------|-------|
|                                    | Impact   |        | Mitigation |       | Impact |        | Mitigation |       |
|                                    | Acres    | AAHUs  | Acres      | AAHUs | Acres  | AAHUs  | Acres      | AAHUs |
| Bottomland Hardwood Forest (BLHF)* | -15      | -7.3   | 130        | 91.0  | -74    | -45    | 135        | 45    |
| Wetland/ Marsh                     | 0        | 0      | 248        | 197.9 | -3,780 | -1,365 | 2,225      | 1,365 |
| Terrestrial Impacts                | -4,974** | -3,780 | 5,117**    | 525   |        |        |            |       |
| Aquatic Impacts                    |          |        |            |       |        |        |            |       |
| Gravel Bar                         | -165     | N/A    | 165        | N/A   | -165   | -165   | 165        | 165   |

\*2005 bottomland hardwood and wetland mitigation AAHUs and acreages included mitigation for impacts to upland forest (-76.4 AAHUs), old field (-123.8 AAHUs), and open field (-71.0 AAHUs) habitats, which are not part of the 2024 compensatory mitigation plan



\*\*Aquatic mitigation acreage was not provided in the 2005 documents, so acreage was back-calculated using known AAHUs and anticipated HSI values

**2005 Mitigation Plan**

- Mitigated for lost upland forest, old field, and open field habitat AAHUs lost with bottomland hardwood forest or wetland AAHUs
- Used a 1:1 ratio for gravel bar mitigation

**2024 Mitigation Plan**

- Worst case scenario mitigation plan: uses quantities from the 2005 plan and assumptions (i.e. existing habitat quality) to estimate the mitigation needed in favor of the habitat
- Per policy (ER 1105-2-100), mitigates for impacts to bottomland hardwood, emergent wetland/marsh, and gravel bar habitat only
- Uses the Paddlefish HEP model for gravel bar mitigation

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| 2024 Mitigation Plan                                    |                                  |              |                   |              |                        |               |
|---|----------------------------------|--------------|-------------------|--------------|------------------------|---------------|
| Net Change in AAHUs by Habitat Type                     |                                  |              |                   |              |                        |               |
| Habitat   | Existing FWP                     |              | FWP               |              | Net Change (AAHU)      |               |
|   | Acres                            | AAHU         | Acres             | AAHU         |                        |               |
| Bottomland Hardwood Forest                              | 74                               | 45           | 0                 | 0            |                        | -45           |
| Wetland/Marsh   | 4,974                            | 3,780        | 1,194             | 2,416        |                        | -1,365        |
| Gravel Bars   | 165                              | 165          | 0                 | 0            |                        | -165          |
| <b>Total</b>  | <b>5,213</b>                     | <b>3,990</b> | <b>1,194</b>      | <b>2,416</b> |                        | <b>-1,575</b> |
| Mitigation Needed to Offset Unavoidable Adverse Impacts |                                  |              |                   |              |                        |               |
| Habitat   | Existing FWP at Mitigation Sites |              | FWP w/ Mitigation |              | Mitigation Need (AAHU) |               |
|   | Acres                            | AAHU         | Acres             | AAHU         |                        |               |
| Bottomland Hardwood Forest                              | 135                              | 3            | 135               | 48           | +45                    | <b>45</b>     |
| Wetland/Marsh   | 1,405                            | 2,095        | 3,629             | 3,460        | +1,365                 | <b>1,365</b>  |
| Gravel Bars   | 165                              | 0            | 165               | 165          | +165                   | <b>165</b>    |
| <b>Total</b>  | <b>1,705</b>                     | <b>2,098</b> | <b>3,921</b>      | <b>3,673</b> | <b>+1,575</b>          | <b>1,575</b>  |

Total AAHUs/acres needed to mitigate for impacts to each habitat type are at most...

**BLHF**  
45 AAHUs  
135 acres

**Emergent Wetland/Marsh**  
1,365 AAHUs  
2,225 acres

**Gravel Bars**  
165 AAHUs  
165 acres

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| Bottomland Hardwood Forest Model   |  |  |  |
|--|--|--|--|
| $\text{Forest HSI} = \frac{\text{FBIO} + \text{FLANDSCAPE}}{2}$ $\text{FBIO} = \frac{\sqrt{V_{\text{CANTREE}}} + \sqrt{V_{\text{CANHMAST}}} + \sqrt{V_{\text{NUMTREES}}} + \sqrt{V_{\text{DBTREE}}} + \sqrt{V_{\text{VEGSTRATA}}}{2}$ $\text{FLANDSCAPE} = \frac{\sqrt{V_{\text{PATCH}}} \times \sqrt{V_{\text{CORE}}} \times \sqrt{V_{\text{EDGE}}} \times \sqrt{V_{\text{ADJLANDUSE}}} + \sqrt{V_{\text{DISTOPW}}} + \sqrt{V_{\text{NEIGHBOR}}}}{3}$ |  |  |  |
| Variable   | Description  | FWP Assumptions  | FWP Assumptions  |
| CANTREE  | Tree canopy cover (%)  | Best case – 100% canopy cover (1.0)                      | Assumed no minimum canopy cover until TY25 (TY0=0.0; TY50=0.75)  |
| CANHMAST   | Proportion of tree canopy comprised of hard mast species (%)         | Best case – 100% canopy cover of hard mast species (1.0) | Total loss of forested area; no mast production until TY25 (TY0=5+0.0; TY25=50+0.94)                               |
| NUMTREES   | Number of tree species present (count)                               | Nearly best case – 3 species (0.88)                      | Total loss of forested area; no trees of appropriate dbh until TY25 (TY25=50+0.75)                                 |
| DBTREE   | Avg tree diameter (dbh) (cm)   | Best case – 25 cm dbh (1.0)                              | Total loss of forested area; minimal dbh growth until TY25 (TY25=0+5; TY50=0.75)                                   |
| VEGSTRATA  | # of vegetation strata present (count designated categories present) | Based on EIS – 6 strata types (0.63)                     | Total loss of forested area; strata (midoverstory) not formed until TY25 (TY0=5+0.13; TY25=50+0.38)                |
| PATCH  | Size of sampling area polygon for each cover type (acres)            | 100 acres (0.43)   | All conditions assumed 100 acres as a worst-case scenario for impacts and targeted size of mitigation lands (0.43) |
| CORE   | Area that is core cover type (%)                                     | Best case – 20% core cover (0.66)                        | Assumed no increase in habitat until 25 years after planting (TY0=5+0.30; TY25=0+48; TY50=0.57)                    |
| EDGE   | Area that is edge (100 m inside polygon) (%)                         | Overestimation – 80% edge (0.65)                         | Assumed no edge habitat from TY0=5 (0.0); 40% edge habitat at TY25 (1.0), and 70% edge habitat at TY50 (0.83)      |
| ADJLANDUSE   | Land use type adjacent to sampling points                            | Pasturelands (0.8)                                       | All conditions assumed pasturelands (0.8)  |
| DISTOPW  | Avg distance to open water (m)                                       | 200 m (0.67)   | All conditions assumed water within 200 m (0.67)   |
| NEIGHBOR   | Distance to nearest similar cover type (m)                           | 600 m (0.52)   | All conditions assumed nearest neighbor within 600 m (0.52)  |

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## Bottomland Hardwood Forest Mitigation

- FWOP BLHF acres derived from NLCD GIS data – 74 acres of woody wetland habitat within upland disposal site permanent impact area
- 2005 EIS had FWOP HSI of 0.5, but HSI of 0.61 by overestimating quality of existing habitat
- Assumptions made to account for unknowns as project specifics are still being defined; favored overestimating mitigation needs
  - Impact acreage assumed the project will cause a total loss of all habitat located within the upland disposal site permanent impact footprint
  - FWOP: assumed similar conditions as 2005 EIS and overestimated existing habitat quality
  - FWP: assumed minimum canopy, strata, and dbh, criteria would not be met until TY25

Future Without Project Condition: Existing Habitat

| Target Year | Acres | HSI  | HUs   | CHUs     | AAHUs |
|-------------|-------|------|-------|----------|-------|
| 0           | 74    | 0.61 | 45.14 |          |       |
| 1           | 74    | 0.61 | 45.14 | 45.14    |       |
| 5           | 74    | 0.61 | 45.14 | 180.56   |       |
| 25          | 74    | 0.61 | 45.14 | 902.80   |       |
| 50          | 74    | 0.61 | 45.14 | 1,128.50 | 45    |

Future With Project Condition: BLHF Mitigation

| Target Year | Acres | HSI  | HUs   | CHUs     | AAHUs |
|-------------|-------|------|-------|----------|-------|
| 0           | 135   | 0.02 | 2.70  |          |       |
| 1           | 135   | 0.02 | 2.70  | 2.70     |       |
| 5           | 135   | 0.02 | 2.70  | 10.80    |       |
| 25          | 135   | 0.48 | 64.80 | 675.00   |       |
| 50          | 135   | 0.52 | 70.20 | 1,687.50 | 48    |

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| Emergent Wetland/Marsh Model  |  |  |  |
|---|--|--|--|
| Utilized Marsh HSI model from 2005 (with minor revisions – scores for willows and lotus in the DIVERSVEG variable increased at agency suggestion); certified by ECO-PCX in 2023   |  |  |  |
| $\text{Marsh HSI} = \frac{\text{MBIO} + \text{MLANDSCAPE}}{2}$ $\text{MBIO} = \frac{V_{\text{DIVERSVEG}} + V_{\text{CANEMERG}} + V_{\text{DEPTHWATER}} + V_{\text{REGIME}} + V_{\text{CANWOODS}}}{4}$ $\text{MLANDSCAPE} = \frac{V_{\text{PATCHSIZE}} \times \sqrt{V_{\text{ADJLANDUSE}}} + \sqrt{V_{\text{NEIGHBOR}}}}{2}$ |  |  |  |
| Variable  | Description  | FWP Assumptions  | FWP Assumptions  |
| DIVERSVEG   | Marsh indicator species (Smartweed, millet, sedges, barnyard grasses (native emergent) (1.00)) | FWP (no mitigation) – species quality decreases over time                | FWP (w/ notching) – species quality increases (TY0=0.00; TY50=1.00)  |
| CANEMERG  | Emergent herbaceous canopy cover (%)   | 50% emergent veg cover (0.75)  | FWP (no mitigation) – emergent canopy cover decreases over time  |
| DEPTHWATER  | Average water depth (cm)   | Water depth of 20 cm as it's optimal for emergent habitat (1.00)         | FWP (w/ notching) – emergent cover increases (TY0=0.00; TY50=1.00)   |
| REGIME  | Hydrologic regime of the marsh cover type (Cowardin Classification System)                     | Intermittently exposed – represents flood stage to drought levels (0.60) | Assumed to be 20 cm for all conditions, and 10-50 cm depths achieve a score of 1.00  |
| CANWOODS  | Woody canopy cover <6m (%)   | 20% woody cover (0.89)   | FWP (no mitigation) – from intermittently exposed to intermittently flooded (regime quality decreases over time as dikes fill) |
| PATCHSIZE   | Sampling area size for cover type (acres)  | 35 acres – assumes impacts to larger patches than expected (0.90)        | FWP (w/ notching) – regime quality improves (TY0=1+0.1; TY5=50+0.6)  |
| ADJLANDUSE  | Land use type adjacent to area   | Pasturelands (0.80)  | FWP (w/ notching) – woody cover increases over time  |
| NEIGHBOR  | Distance to nearest similar cover type (m)   | 200 m based on aerial imagery (0.90)                                     | All conditions assumed 35 acres (0.90)   |

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| Emergent Wetland/Marsh Mitigation  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|
| <ul style="list-style-type: none"> <li>Utilized 2005 EIS total project existing aquatic habitat AAHUs (3,780) and average HSI of mitigation habitat (0.75) to determine the maximum aquatic habitat area that could be affected (4,974 acres)</li> <li>Took that 4,974 acres and applied the dike fill rates provided in the 2005 EIS at TY25 and TY50 for no notching to calculate available habitat decrease over time and applied 0.75 HSI to get the FWP with no mitigation AAHUs (-1,365 AAHUs)</li> </ul>  |  |  |  |  |  |  |
| Mitigation Modeling:   |  |  |  |  |  |  |
| <ul style="list-style-type: none"> <li>FWOP at ideal mitigation site (non-notched dike field): assumed that acreage would decrease by the determined fill rates; HSI would decrease over time in response; existing dike fields would still provide some habitat over the 50-year period</li> <li>FWP with mitigation: assumed that HSI metrics (i.e. emergency vegetation diversity and cover, water depth and regime, adjacent habitat) would decrease slightly from TY0 to TY5 but reach the target 0.76 HSI by TY25; habitat area available would decrease by fill rates established</li> <li>By setting up our model with the above criteria, we were able to determine the acreage needed to fit the appropriate criteria while producing the needed 1,365 AAHUs of marsh habitat (2,225 acres)</li> </ul> |  |  |  |  |  |  |

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# Emergent Wetland/Marsh

## Habitat Modeling

| Future-Without Project Conditions |       |      |          |           |       |
|-----------------------------------|-------|------|----------|-----------|-------|
| Target Year                       | Acres | HSI  | H2S      | CH2S      | AAHUs |
| 0                                 | 4,974 | 0.76 | 3,780.24 | 0         | 0     |
| 1                                 | 4,974 | 0.76 | 3,780.24 | 3,780.24  | 0     |
| 5                                 | 4,974 | 0.76 | 3,780.24 | 15,120.96 | 0     |
| 25                                | 4,974 | 0.76 | 3,780.24 | 75,604.80 | 0     |
| 50                                | 4,974 | 0.76 | 3,780.24 | 84,506.00 | 3,780 |

## Future-With Project Conditions: Aquatic Disposal/New River Training Structures with No New Dike Notches

| Target Year | Acres | HSI  | H2S      | CH2S      | AAHUs |
|-------------|-------|------|----------|-----------|-------|
| 0           | 4,974 | 0.76 | 3,780.24 | 3,780.24  | 0     |
| 1           | 4,974 | 0.76 | 3,780.24 | 3,780.24  | 0     |
| 5           | 4,974 | 0.76 | 3,780.24 | 15,120.96 | 0     |
| 25          | 3,084 | 0.76 | 2,343.75 | 61,239.89 | 0     |
| 50          | 1,194 | 0.76 | 907.26   | 40,637.58 | 2,416 |

Utilized AAHUs and HSI defined in 2005 EIS to back calculate maximum potential project impact.

Utilized dike fill rates from 2005 EIS at TY25 and TY50 with and without notches to determine acreage over time for the FWP and mitigation calculations.

## Mitigation

### Future-Without Project Conditions at Dike Field: Low Quality/Non-Wetland Habitat

| Target Year | Acres | HSI  | H2S      | CH2S      | AAHUs |
|-------------|-------|------|----------|-----------|-------|
| 0           | 5,854 | 0.76 | 4,449.04 | 0         | 0     |
| 1           | 5,854 | 0.87 | 3,922.18 | 4,185.61  | 0     |
| 5           | 5,854 | 0.84 | 3,748.56 | 15,337.48 | 0     |
| 25          | 3,629 | 0.90 | 1,814.74 | 54,574.89 | 0     |
| 50          | 1,405 | 0.47 | 660.33   | 30,603.33 | 2,998 |

### Future-With Project Conditions: Dike Notching

| Target Year | Acres | HSI  | H2S      | CH2S      | AAHUs |
|-------------|-------|------|----------|-----------|-------|
| 0           | 5,854 | 0.76 | 4,449.04 | 0         | 0     |
| 1           | 5,854 | 0.87 | 3,922.18 | 4,185.61  | 0     |
| 5           | 5,854 | 0.84 | 3,748.56 | 15,337.48 | 0     |
| 25          | 4,742 | 0.76 | 3,603.72 | 73,947.73 | 0     |
| 50          | 3,629 | 0.76 | 2,758.40 | 70,526.59 | 3,460 |

### Dike Fill Rates (2005 EIS)

|   | Maintain 9-ft Channel | Dredge 12-ft Channel |
|---|-----------------------|----------------------|
| % full at 50 years                        | 43%                   | 76%                  |
| % full at 50 years (notched dikes/levees) | 21.5%                 | 38%                  |
| % full at 25 years                        | 21.5%                 | 38%                  |
| % full at 25 years (notched dikes/levees) | 10.75%                | 19%                  |

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### Gravel Bar Modeling

Paddlefish HEP Model used in place of the 1:1 ratio used in 2005 to comply with new regulations

$$\text{Paddlefish Reproduction LRSI} = (V1 * V2 * V3 * V4 * V5 * V6)^{\frac{1}{6}}$$

| Variable/Description   | FWOP and FWP with Dike Notching Assumptions   |
|--|---|
| <b>V1</b> – Yearly frequency of at least 21 days of rising water temps of 10°C to 17°C   | Frequency of 0.45 of at least a 21-day period of rising water temps of 10°C to 17°C. Because paddlefish utilize the Arkansas River, it's assumed water temp fluctuations are suitable for habitat and reproduction, therefore max value selected.               |
| <b>V2</b> – Yearly frequency of spring access to upstream spawning river (>40m wide and 1m deep)   | Frequency of 0.45 for spring access to upstream spawning river as Arkansas River has spawning river (>40m wide and 1m deep)   |
| <b>V3</b> – Accessible area of gravel/cobble substrate in spawning river within 200 km of winter habitat (hectares)                          | 66 hectares of accessible gravel cobble substrate in spawning river within 200 km of winter habitat (derived from 165 acres from 2005 surveys)  |
| <b>V4</b> – Avg magnitude of spring water rise over average midwinter flow for a period exceeding 10 days while water temps are 10°C to 17°C | Avg magnitude of 3 m of spring water rise during average midwinter flow exceeding duration of 10 days within temp parameters assumed. Because seasonal water level variability is expected to be suitable for paddlefish, this metric was set to maximum value. |
| <b>V5</b> – Average current velocity (0.3 m above substrate over potential spawning substrate) during spring water rise (m/sec)              | Avg current velocity of 0.4 m/sec during spring water rise. Maximum velocity selected as Arkansas River is a large system and experiences heavy rains and strong flows, but these do not inhibit substrate availability.  |
| <b>V6</b> – Minimum DO in potential spawning areas while water temps are 10°C to 17°C (mg/l)   | Min DO of 6 mg/l assumed in potential spawning areas within temp range. Arkansas River water quality is generally acceptable and no known areas with limited DO, so should not inhibit gravel bars.   |

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### Gravel Bar Mitigation

- Utilized existing gravel bar acreage/locations (165 acres) identified in 2005, but impacts are expected to decrease as dredge quantities have decreased by roughly 50%
- FWOP condition assumed metrics such that existing gravel bars exhibit an HSI of 1.0 that would remain through TY50
- FWP condition assumed metrics such that if gravel bars are removed, HSI is 0.0 through TY50
- Up to 165 AAHUs/165 acres needed to mitigate impacts from dredging

| Future-Without Project Conditions |       |      |        |          |       | Future-With Project Conditions: Replacing Gravel Bars |       |      |        |          |       |
|-----------------------------------|-------|------|--------|----------|-------|---|-------|------|--------|----------|-------|
| Target Year                       | Acres | HSI  | HUs    | CHUs     | AAHUs | Target Year   | Acres | HSI  | HUs    | CHUs     | AAHUs |
| 0                                 | 165   | 1.00 | 165.00 |          |       | 0   | 165   | 1.00 | 165.00 |          |       |
| 1                                 | 165   | 1.00 | 165.00 | 165.00   |       | 1   | 165   | 1.00 | 165.00 | 165.00   |       |
| 2                                 | 165   | 1.00 | 165.00 | 165.00   |       | 2   | 165   | 1.00 | 165.00 | 165.00   |       |
| 5                                 | 165   | 1.00 | 165.00 | 495.00   |       | 5   | 165   | 1.00 | 165.00 | 495.00   |       |
| 50                                | 165   | 1.00 | 165.00 | 7,425.00 | 165   | 50  | 165   | 1.00 | 165.00 | 7,425.00 | 165   |

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### 2005 vs. 2024 Mitigation Efforts Summary

|  | 2005 Mitigation Measure | 2024 |
|--|-------------------------|------|
| <b>Mussel Relocation</b>   |                         |      |
| • No federally listed mussel species expected to adversely affected expected to be impacted by project actions |                         |      |
| • No mussel relocation activities anticipated  |                         |      |
| <b>Reconnecting Oxbow</b>  |                         |      |
| • Hydrologic and flood risk challenges   |                         |      |

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### Site Selection and Monitoring

- Site Selection:**
  - BLHF: up to 135 acres within the two sites selected in 2005 adjacent to ODWC-managed lands are still the priority for restoration
    - Specific areas subject to future coordination
  - Wetland: existing dike fields that have lost backwater habitat due to sedimentation will be selected for notching and reopening mitigation measures
    - Will utilize list of proposed sites in 2005 mitigation plan
  - Gravel Bars: relocation adjacent to current location or placed elsewhere within MKARNS
- Monitoring:**
  - Expecting 5 years of monitoring for wetland/marsh habitat, 10 years for BLHF
  - 80% success rate of vegetation, 75% plant species taxa richness, and less than 25% average cover of non-native invasive species by TY05
  - Gravel beds should have similar (within 10%) availability as reference site gravel beds and should maintain at least 80% availability by TY05
  - Water regime/dike notching monitoring needs further agency coordination to identify this specific metric
    - 4 ft wide x 1 ft deep at normal pool appears to be standard for fish notches

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### Project Delivery

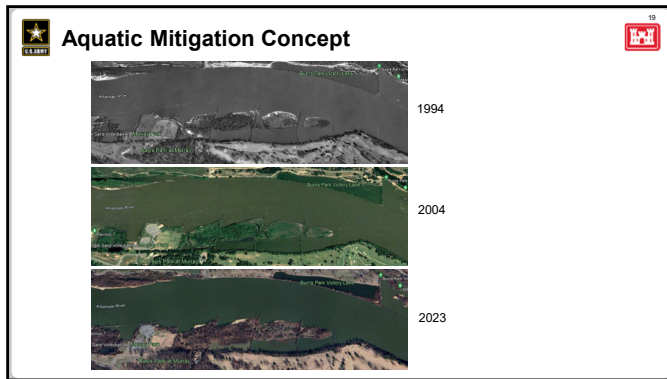
|  |  |
|--|--|
| <b>Pre-Construction Engineering &amp; Design (PED) (we are here)</b> | <ul style="list-style-type: none"> <li>Updating NEPA compliance to reflect design changes since 2005</li> <li>Design plans/locations/quantities refined</li> <li>Develop site specific mitigation plans with resource agencies</li> <li>Evaluate the effectiveness of dike notches constructed since 2005 to inform emergent wetland/marsh mitigation efforts</li> <li>Create database to track mitigation commensurate with construction</li> </ul> |
| <b>Construction</b>  | <ul style="list-style-type: none"> <li>Construction will be completed in phases, with Phase I beginning at the end of 2024 or early 2025 at the earliest</li> <li>Construct mitigation measures prior to or concurrent with construction</li> </ul>  |
| <b>Post-Construction</b>   | <ul style="list-style-type: none"> <li>Monitoring and adaptive management</li> </ul>   |

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### Next Steps and Phase I Efforts

- Next Steps:**
  - Complete NEPA compliance
  - Further refine mitigation plan
    - Create database for mitigation tracking
    - Evaluate the effectiveness of dike notches constructed since 2005 to inform emergent wetland/marsh mitigation efforts
  - Will be working closely with agencies to develop, construct, and monitor future mitigation efforts
- Construction to begin at the end of 2024 to beginning of 2025 at the earliest**
  - [MKARNS 12-Foot Channel Interactive Web Map](#)
  - OK Phase I: upland disposal sites (Alt4, 11, 21, 27, 28, and 34)
  - AR Phase I: river training structures in Pools 5, 8, and 10

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**Web Map Instructions**

[MKARNS 12-Foot Channel Interactive Web Map](#)

- OK Phase I: upland disposal sites (Alt4, 11, 21, 27, 28, and 34)
- AR Phase I: river training structures in Pools 5, 8, and 10
- Two folders (for AR and OK data), under which you can add data to the web map and open the attribute table
  - OK: "SWT Dredging,..." heading → turn "Locations" layer on → click 3 dots and open attribute table. Make sure you're zoomed out on the map so all polygons populate in the table. Using the "Name" column, you can look for specific upland disposal site locations, including those under Phase I.
  - AR: "SWL Layers" heading → turn "SWL Proposed Structures 20220701" layer on → click 3 dots and open attribute table. You can sort the "Pool" column or zoom into the three different pools to see what is proposed under Phase I.

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## **Attachment H: Agency Comments Received**

**Chris Racey**  
Chief of Staff

**Ben Batten**  
Deputy Director



**Brad Carner**  
Deputy Director

**Spencer Griffith**  
Deputy Director

## Arkansas Game and Fish Commission

**Austin Booth**  
Director

March 10, 2024

Col. Damon Knarr  
U.S. Army Corps of Engineers  
P.O. Box 867  
Little Rock, AR 72203-0867

Re: McClellan-Kerr Arkansas River Navigation System 12-foot Channel Deepening Project - Draft  
Supplemental Environmental Assessment - Public Comment Period

Col. Knarr,

The Arkansas Game and Fish Commission (AGFC) has reviewed the McClellan-Kerr Arkansas River Navigation System (MKARNS) 12-foot Channel Deepening Project Draft Supplemental Environmental Assessment (SEA). This comment letter has been prepared in accordance with the Fish and Wildlife Coordination Act (FWCA) (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.). FWCA requires that efforts to protect fish and wildlife resources be given equal consideration with other project features. On June 13, 2023 AGFC signed on to this project as a cooperating agency and regularly attends coordination meetings and is assisting in efforts to formulate and evaluate alternatives.

AGFC offers the following comments and questions on the MKARNS 12-foot Channel Deepening Project Draft SEA:

### **General Comments:**

- Section 10.1.3 Fish and Wildlife Coordination Act of the Draft SEA makes no mention of coordination with the state wildlife agencies affected by the MKARNS 12-foot Channel Deepening Project. The language of the FWCA Sec. 2. [16 U.S.C. 662] (a) states, "... whenever the waters of any stream or other body of water are proposed or authorized to be impounded, diverted, the channel deepened, or the stream or other body of water otherwise controlled or modified for any purpose whatever, including navigation and drainage, by any department or agency of the United States, or by any public or private agency under Federal permit or license, such department or agency first shall consult with the United States Fish and Wildlife Service, Department of the Interior, and with the head of the agency exercising administration over the wildlife resources of the particular State wherein the impoundment, diversion, or other control facility is to be constructed, with a view to the conservation of wildlife resources by preventing loss of and damage to such resources as well as providing for the development and improvement thereof in connection with such water-resource development." The FWCA coordination that has occurred between the U.S. Army Corps of Engineers and the U.S. Fish & Wildlife Service for

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*The Arkansas Game and Fish Commission's mission is to conserve and enhance Arkansas's fish and wildlife and their habitats while promoting sustainable use, public understanding and support.*

the MKARNS 12-foot Channel Deepening Project should also be extended to the Arkansas Game and Fish Commission and the Oklahoma Department of Wildlife Conservation.

- While we understand that the Mississippi River is authorized to be maintained at 12-feet we know, even though conformation as recently as the March 2024 public meetings associated with the Lower Mississippi River Comprehensive Study by the New Orleans, Vicksburg, and Memphis Districts, that the lower Mississippi River is only maintained to 9-feet. How will this difference in depth work with the MKARNS if it is maintained at 12-feet?
- AGFC would like to know why the “Marsh Model” was chosen over other certified models as we are unfamiliar with the methodologies used in the “Marsh Model” to calculate mitigation. We are unsure if this model will adequately describe the impacts this project will have on riverine habitat degradation that may be likely over the life of the project.
- While we understand that specific details of MKARNS 12-foot Channel construction are not currently available, we would like to see more detail on proposed mitigation plans included in the SEA for agency and public comment.
- AGFC would like to see more continuity between the proposed mitigation from the 2005 MKARNS 12-foot Channel Environmental Impact Statement and what is proposed in the 2024 SEA.
- Currently most all dike fields are labeled as potential aquatic disposal sites. AGFC would like to discuss the use of these areas as disposal sites to identify where disposal could be placed to cause the least amount of impact to aquatic resources.
- AGFC is concerned that the continuous placement of dredge material on the inside of river bends could eventually restrict both angler and aquatic life access. AGFC would like to discuss the possibility of dike notching, or other methods, to maintain openings to these secondary channels that serve as important habitats for the life stages of many aquatic organisms.
- Many of the proposed training structures and sandbars already exist. Is the intent to make these structures larger?
- Nearly all of the Arkansas post-canal is proposed for dredging. However, per conversations with USACE, it seems that the majority of the channel is already at a 12-foot or greater depth. AGFC would like specific locations for where the channel is not at 12-foot or greater depth and where dredging impacts will be the most substantial.
- AGFC would like to see site-specific locations for mitigation efforts prior to construction and/or modification. If possible, we would like to be heavily involved in the decision making of this process where appropriate in Arkansas. There are opportunities for creative thinking to bolster the ecological benefits received through mitigation.
- AGFC would like to see updated gravel mapping rather than locations provided in the 2005 EIS. The SEA states gravel will be mapped prior to dredging and construction.
- Most dike fields along the MKARNS in Arkansas are designated as dredge disposal sites. However, many of these areas, particularly where there are notched revetments providing protection and access from the main channel, serve as important recreational fisheries for anglers. These can be thought of as pseudo-backwater areas. While they do not provide the same ecological benefits as a functional backwater, they do provide access to slack water often with fairly sufficient depth, moderate habitat diversity, and structure for targeting game and non-game fishes. AGFC would like to refine dredge disposal locations along the MKARNS in Arkansas.
- AGFC does not agree that aquatic resources along the MKARNS have not significantly changed since the finalization of the 2005 MKARNS (SEA page 29). According to Rhodes et al. 2019 and Spurgeon et al. 2021, the MKARNS has lost 2.1% of permanent water and 12.1% of seasonal water. There is a general trend of loss of off-channel habitat (i.e., backwaters), that are being converted to terrestrial

habitats. With the rate of backwater filling and channel restriction preventing the creation of new backwaters, the AGFC Fisheries Division would like to prioritize restoration and reconnection of secondary channels and backwater improvements over the creation of numerous islands, as the existing dike fields are already serving some of that purpose. These habitat types are not being regenerated while islands and terrestrial habitat conversion are happening naturally due to the extensive system modifications the MKARNS has experienced.

- What are the changes that need to be made to existing locks and dams along the MKARNS to support deeper tows (SEA page 67)? Is the current infrastructure going to be sufficient immediately? If not, will the MKARNS truly be able to support these deeper drafting vessels? Is there funding available to bring these navigation structures up to their needed specifications to support a 12' channel depth?
- AGFC would like to reiterate the need for an updated mussel survey, particularly in areas where dredge impacts are expected to be the highest. We do not feel that information from 2005 is sufficient or solely valid for informing sensitive species populations, particularly for animals that are sensitive to major environmental changes. The MKARNS has seen extensive flooding and change since the 2005 report. Although concerns of encountering threatened or endangered mussel species are relatively low within the project footprint, ignoring common species is how they become threatened or endangered.
- AGFC does support 1:1 mitigation of 165 acres of gravel bar habitat. However, although the benefit is practically "immediate," after implementation, it is extremely important to monitor these areas for success. We do agree that gravel should be placed in-water close to the impact location as long as it is likely to function similarly to what was damaged. It is important to have sensitive success criteria for this critical and relatively rare habitat type. Additionally, if possible, AGFC would like to see an updated gravel report with the most recent survey data.
- AGFC would like to retain all rock or similar hard structures, such as those located at RM 151 and 140, be retained in-water rather than removed from the system entirely.

### **Site Specific Comments:**

- AGFC would like to discuss the possibility of avoiding sandbar placement at RM 279 - 279.3 RD, RM 275.2 - 275.4 RD, 227.5 - 227.7 RD
- AGFC would support maintaining or moving the notch at 275.3 LD
- A dredge disposal area is indicated at RM 256 LD. There is currently power plant effluent infrastructure in this area.
- AGFC requests avoiding disposal in the Sixmile Creek Diversion Channel to maintain ingress and egress opening at RM248.8 RD
- AGFC would like to discuss the possibility of avoiding disposal at RM 247.8 - 248 RD, RM 245.9 - 246.8 LD, 238.4 - 238.7 LD, 238.4 - 238.7 LD, 193.7 -193.9 LD, 186.9 - 187.2 RD, and 185.9 - 186.4 LD
- AGFC does not support disposal at RM 242 - 242.7. This is the mouth of Hartman Lake (aka Blackpoint) because there is an existing boat ramp in the lake.
- AGFC would like to see the recreation of a fish passage notch of 10-feet at RM 242.4. This notch was mistakenly filled in during January of 2023.
- Upon review of the Draft SEA, the dike at RM 222.7 - 222.9 is missing from the map
- AGFC would support a new dike notch of 85-feet at RM 223.7 LD. This would allow access to the Cabin Creek Recreation Area maintained by the city of Knoxville.
- AGFC would like to see the consideration of notching the dike at mile 249-250L

- The consideration of notching new dikes at 241.8 to 242.2R, especially the longest dike would be appreciated. Notching these dikes are a high priority for AGFC.
- AGFC requests considering notching the long dike at ~240.5L
- AGFC is concerned about the spoil site that is on the north side of the river between river mile markers 124 and 125. It has the potential to fill in some very deep water behind two dikes. During an AGFC conducted creel survey anglers were observed regularly utilizing this area. Spoil in this area has the potential to adversely impact the fishery.
- At the river mile 150 proposed sandbars, scouring caused by the training structures here create some of the only decent angling habitat in the area. Disposing between these training structures might halt this natural scouring and restrict access to these areas. This area also has some secondary channel habitats that could be impacted by additional disposal material.
- River mile 143 proposed training structures: these structures already exist, is the plan to lengthen them? This is an important secondary channel in this area of the river. The notches that exist and height of the existing structures throughout this complex produce and maintain a diversity of habitats. AGFC would not want to see a change in the training structures result in the degradation of this habitat.
- Avoid using existing dredge disposal area at AR292.3L in the dikes adjacent to the hydroelectric plant
- Please consider notching dikes anchored to the bank at RM 275.2 - 275.4 RD
- A tern island may be desirable at ~ mile 272.7-272.9L west of the two existing islands if it will not cause the side channel to fill with sediment
- AGFC would like to propose the consideration of AR238.5L-D (~238.6-240L) as a potential tern island if this disposal area is planned for use
- AR RM 19 LD – AGFC would support moving the proposed aquatic disposal site just downstream of RM 19. This disposal site has the potential to deposit sediment in the entrance to a backwater habitat just downstream of the proposed disposal site during high water events.
- AR RM 23.5 RD – Move proposed disposal site away from the mouth of the canal that leads to Coal Pile Lake. This canal has a history of filling in with sediment during high water events and we do not need a sediment disposal site right at its mouth to exacerbate the problem.
- AR RM 24 to 25 LD – This depiction of the dike field does not appear to accurately represent the dike field that is actually present. If the depiction is mislabeled and should be proposed as new dikes, notch dike at AR RM 25.0 LD and inside dike at RM 24.6 LD to allow access to backwater at AR RM 24.7 LD.
- AR RM 32.5 LD through 32.8 LD – this proposed aquatic disposal site would block the channel leading to the backwater at AR RM 33.0 LD.
- AR RM 37 through RM 48 – Consider utilizing more upland disposal sites in this reach rather than the proposed aquatic disposal sites and islands within and between dike fields.
- AR RM 96 through 96.3 LD – Move this proposed aquatic disposal site because it is right at the mouth of a dike notch that leads to the large backwater that is present from RM 96.2 through RM 98.3 LD.
- AGFC does not recommend an aquatic disposal site below RM 298 in Arkansas. This is a productive Paddlefish area.
- AGFC recommends removing the in-water disposal site between RM 237 and 235. Further sediment deposition in this area is likely to negatively impact recreational access for anglers, especially if the dikes are filled to capacity and a flood event occurs, washing sediments into the tributaries downstream. Access and depth in this part of the river is already problematic and it is the heaviest used angling part of the river within the state.
- RM 230.5 to 230. Consider removing the creation of sandbar islands here. If a major flood washes these out, it will negatively impact access to Spadra. Right now, some of this area is still accessible by boaters.



- As far as the new structure on bank right (looking downstream), AGFC would like to maintain access through that cutoff. This area tends to hold an abundance of fish of many species and is still currently accessible/passable at sufficient water levels.
- AGFC recommends implementation of a boat-notch in the proposed new training structure between RM 224 and 223. It is important to maintain passage for recreational craft and anglers in this location.
- AGFC strongly recommends protecting the known gravel bed at RM 205. There are not many locations of gravel in this pool so this is a critical habitat area and disturbance should be avoided.
- AGFC recommends removing in-water disposal sites between RM 205 and 204. With the gravel present on the opposite bank, access to these dikes are likely going to be important aquatic features given the extensive modification of this system. These dikes can serve as refuge areas for many aquatic species.
- RM 187 – must the entire gravel bar be a proposed dredge location when there are so few gravel bars in this system? Is this area mislabeled and instead one of the mitigation areas discussed in the mitigation plan (map 28 of 47)?
- RM 165 – AGFC does not support inhibiting access to what is known by most as the Plumerville cutoff. This is an important area along the Arkansas River for Alligator Gar. Boating access into this area should be maintained and dredge material should not be placed so that it blocks ingress or egress to this area. This would be a beneficial area to improve access.
- Removal of gravel or damage to gravel beds at RM 151 to 150 should be avoided. If avoidance is not possible impacts should be mitigated.
- AGFC suggests restoring the secondary channel from RM 155 to 149 as mitigation, rather than as a dredge disposal site on the lower end between RM 153 and 149.
- AGFC would support opening the secondary channel from below RM 144 to 139 with dike notches. If possible, notches should be proposed for new and existing structures.
- Outside of Murray Park, there is an approved dike notch location that is overlaid with a dredge placement area, near RM 123. AGFC would recommend leaving the notch open rather than using it for in-water dredge placement.
- AGFC recommends determining exact locations for in-water dredge disposal area, especially immediately behind lower revetments, near RM 97 and 96 if dredge quantities are expected to be high. These notched revetments provide slackwater habitat which support many game and non-game species. In this section of the river, these areas provide habitat for black bass species and one of the few off-main-channel access points for anglers and recreational boaters. Additionally, there are several existing dike notches in this area making angling access difficult. This location would be a great candidate for restoration; it could be a highly productive area in a section of the river that lacks critical habitat mosaics.
- Consider still allowing boating access through proposed revetment near RM 92. Although shallow, this area is still accessible at certain water levels.
- There is a discrepancy between MKARNS 12ft Channel Web App mapper and Appendix B at RM 80 and 79. There are no proposed training structures on the printed version, nor is there a dredge disposal site.
- There is a discrepancy between MKARNS 12ft Channel Web App mapper and Appendix B at RM 65. The printed Appendix has 3 proposed new or modified training structures and the mapper only shows an in-water dredge disposal site. We assume these are modifications because it appears there are already training structures in place at that location.

- There is a discrepancy between MKARNS 12ft Channel Web App mapper and Appendix B at RM 62. The online mapper has 5 proposed new or modified training structures and the printed version only shows an in-water dredge disposal site. We assume these are modifications because it appears there are already training structures in place at that location.
- RM 28 - refine dredge disposal area to not impede access to secondary channel. This area is still accessible at certain water levels.

The MKARNS is a valuable river for inland navigation, and Congress has authorized the U.S. Army Corps of Engineers (USACE) to deepen the navigation channel from 9 to 12-foot depth. The Arkansas River also provides one of the largest and most economically and culturally important freshwater fisheries in the State of Arkansas. The Arkansas River provides important habitats for fishing, especially backwater habitats and dike field habitats with adequate depth of > 3-foot at normal pool. These fishable backwaters are declining over time (Schramm et al. 2008; Rhodes et al. 2019). For example, Lake Dardanelle has lost 22% of its off-channel habitat from 1984 to 2015 (Rhodes et al. 2019). AGFC and the USACE worked cooperatively on dike notching projects to mitigate for aquatic habitat losses from the 9-foot channel prior to 2003. The USACE also worked intensively with agency partners to develop the 2005 Environmental Impact Statement (EIS), but the coordination of the 2023 draft SEA (Supplemental Environment Assessment) has been relatively minimal thus far. The draft SEA appears to be a coarse-grained projection of impacts and possible mitigation instead of the exact site, specific accounting of impacts and mitigation presented in the 2005 EIS. Thus, a detailed site-specific mitigation plan is not provided in the SEA for aquatic habitat impacts that ensures public accountability for project impacts. We recommend a mitigation plan with specific sites should be completed and the public should be able to comment on the mitigation plan before any construction begins.

We would like to continue to work with the USACE to develop site-specific plans for dike notching and dredge disposal islands for Least Terns. Numerous disposal islands were successfully created in Pool 9 near the base of Petit Jean Mountain, and these habitats are reminders that we can accomplish great things for fish and wildlife when we work together in a cooperative fashion. During construction, please avoid addition of dredge materials to existing tern islands during the nesting season.

Significant impacts are expected to occur to aquatic habitats from the proposed project, although a positive project change is that fewer dikes and less dredging volume is expected. The SEA indicates that 18 new dikes will be constructed and 84 dikes will be modified (i.e., raised), and each of these dikes is expected to lead to reduce aquatic habitat volume in backwater areas. The 2005 EIS includes 28 proposed dredge sites and the 2023 SEA includes 51 sites, so approximately double the sites. However, dredge volume is expected to decline from 10,840,245 yards to 5,791,099 yards in the 2023 SEA. The SEA indicates more dredging is expected to occur from Lake Dardanelle to Fort Smith than was projected in 2005. We are skeptical of the conclusion in the SEA on page 76 that “Long-term, minor adverse, not significant impacts” will occur to Aquatic Resources with the 12-foot Channel. We find it highly unlikely that cumulative impacts of dike modification and dredging will not have significant impacts to aquatic habitat since the USACE is proposing to use in-water dredge disposal. Appendix F (mitigation plan) indicates, “unavoidable adverse impacts are direct and indirect to bottomland forests and aquatic resources.” Appendix F, page 5 describes aquatic habitat loss as major and adverse.

Many new extensive dredge locations are located in the White River section of the Arkansas River navigation system, and this is one of the major changes in the SEA. We request the risk of head cutting from this dredging be assessed, including the projects potential impacts on the White River National Wildlife Refuge as RAMSAR Wetlands of International Importance. Any new head cut has the possibility to drain important oxbow lakes and wetlands and damage the mussel beds of the lower White River. Head cutting has already been an issue in the

lower White River in the past 25 years (e.g., Cooks Lake situation). The draft SEA Appendix K indicates that the lower White River will have 343,015 CY of sediment removed, whereas the 2005 EIS indicated no extra dredging in this area. The navigation depth in the White River section of the MKARKNS will increase to 12-feet, but the depth authorized for the White River upstream of the MKARNS is much lower at 5-feet thereby increasing the channel depth difference among river sections (i.e., gradient of the river). Riverbed gradient changes are a known factor that may influence head cutting.

Considering the substantial amount of dredging in the lower White River, we believe that winter surveys for endangered Pallid Sturgeon and the petitioned Lake Sturgeon are warranted. We request these surveys due to the adjacent proximity of the lower White River to known Pallid Sturgeon habitat in the Mississippi River, and the recently documented tendency for Pallid Sturgeon to swim up tributaries in the winter (i.e., the Arkansas River). The similarity of appearance of Pallid Sturgeon and Shovelnose Sturgeon confounds our understanding of past sturgeon catches in this reach, and previous USACE surveys in this lower 10-mile stretch of river were not performed during winter when Pallid Sturgeon appear most likely to possibly occur. Any sturgeon captured from surveys needs genetic testing for positive identification. The petitioned Lake Sturgeon is known to occur or swim through the White River section of the MKARNS. Also, the National Oceanic and Atmospheric Administration petitioned Alabama Shad (*Alosa alabamae*) appears to swim through this area, as juveniles have been captured up river near Newport, AR.

The Little Rock District staff has indicated that dredging in the Post Canal possibly less than indicated in the SEA. However, the mussel survey for the post canal is 25 years old, and Fat Pocketbook have been collected nearby at mile 11-12.4 in the White River (BA; page 26). It seems prudent that mussel surveys be performed before any dredging in the lower White River and the post canal to ensure endangered mussels are not impacted. It is illegal to purposely kill mussels (AGFC Code 31), and all appropriate precautions should be made to avoid killing mussels. Just as it is illegal to kill hundreds of deer, it is illegal to purposefully kill hundreds of mussels. Mussels should be translocated to prevent killing them, and any accidental killing of mussels should be mitigated for at American Fisheries Society (AFS) fish kill monetary values per individual killed.

AGFC noted that valuable gravel substrate has not re-mapped since the 2005 EIS but the SEA on page 70 notes that gravel quantity and locations should be mapped prior to any dredging operation. AGFC supports that all 165 acres of impacts to gravel substrate be mitigated.

The SEA mitigation plan indicates dike notching that impacts 2,225 acres to offset the loss of 1,365 AAHU in dike fields (page 19). Notching of 2,225 acres for aquatic mitigation (Appendix F; page 38) appears to greatly underestimate likely aquatic habitat impact if we only look at impacts of dredging alone (i.e., without dikes). Please consider that the 5.7 million cubic yards of dredging is about 3,533 acre-feet, so the notching acreage is drastically lower than the dredging acreage filled 1-ft deep. Also, additional maintenance dredging is expected to be 2.45 million cubic yards annually (table 2-4; page 12), and this is likely 1,518 acre-feet per year which over 50 years is 75,900 acre-feet. These figures lead us to believe that that the MARSH model appreciably underestimates aquatic habitat impacts for economically important and recreationally popular fishing areas. We believe the full 2005 mitigation plan will be needed to offset habitat losses caused by dredging and dike notching.

The draft SEA uses a MARSH model to model average impacts to aquatic habitat over the entire river (i.e., not site specific), and this model seems to provide low values for aquatic habitat mitigation. This MARSH model application is unconventional and subsequently has confusing terminology and interpretation. Note that the MARSH model was approved to model marsh or wetland mitigation needs (page 17), but it does not specify



aquatic habitat as an approved use. The MARSH model does not appear to be designed to model aquatic habitat loss for fisheries, as terms in the model include emergent vegetation, emergent canopy cover, depth of water, and timing and duration of water, percent woody vegetation, patch size, adjacent land use and nearest marsh in 200 yards. Use of marsh-oriented model appears to underestimate mitigation needs for aquatic habitat because shallow aquatic habitats have high value. If the USACE is using “wetland/marsh” as a substitute word for “aquatic habitat” that word usage is not desirable as it is confusing. On page 18, the document reads, “Due to loss of marsh habitat within dike fields.” This does not make sense as important fisheries habitat in dike fields is generally aquatic and it is not correct to call it a marsh. We recognize that the issue maybe that the USACE does not recognize the high priority need for aquatic habitat mitigation as does for wetlands. AGFC would support USACE consider reviewing certified models used the Mississippi River Loosahatchie-Hatchie Conservation reach.

Success criteria of dike notching appears to be based on survival of plants (Appendix F; page 38). However, an improved performance metric would be (1) acreages of aquatic habitat converted to terrestrial habitat, and (2) acreage of backwater aquatic habitat greater than 3.5-feet in depth, which is important for maintaining fisheries. The Mitigation Plan also indicates that notches may “provide too much river flow” but that is rarely to almost never an issue. On page 41 of Appendix F, the monitoring plan indicates that a general inventory of wildlife species will be done in the project area. AGFC would support important aquatic species monitoring as approved in the 2005 EIS.

Mitigation for aquatic habitat impacts should be done in the pool where the impacts occur and if mitigation is done at a different pool than the impact the mitigation performed should be at a higher ratio (e.g., 3 acres of mitigation for 1 acre of impact).

AGFC does not agree with the statement on page 37 of the SEA that American Alligator are “Not likely to occur in the project area,” as the species is known to frequent Pool 2 and Merrisach Lake area (see Roberts 2019).

Appendix K notes that blasting maybe used to help excavate the river in several locations. Blasting is likely to kill fish and all fish killed should be mitigated for at AFS fish kill monetary values. Several blasting sites are known areas (e.g., Plummerville Cutoff area; Fouché La Fave River mouth) for Alligator Gar, which is a species that requires high adult survival and is very difficult to mitigate for loss.

The draft SEA indicates on page 69 that the project has the potential to adversely impact Alligator Snapping Turtles (AST). We suggest that mitigation in the form of site-specific surveys before work is implemented may reduce impacts to ASTs.

If prior projects completed by the Corps be proposed as mitigation for future construction of the 12-foot channel project AGFC would only support those decisions if made after coordination and consensus with the U.S. Fish & Wildlife Service, the Arkansas Game and Fish Commission on the Arkansas portion of the river, and the Oklahoma Department of Wildlife Conservation on the Oklahoma portion of the river. Page 19 of Appendix F reads, “Future efforts include inspecting any previously constructed mitigation features to assess their current outputs. If viable, their outputs would count towards mitigation needed.” AGFC would not support any “double dipping” by counting mitigation twice. We find it positive the USACE apparently will have an online tool to increase transparency of accounting for mitigation. Appendix F, page 36 indicates that the district engineer may reduce or waive the monitoring requirements upon determination that performance standards are met, but this is arbitrary and appears to suggest that all monitoring could possibly be waived which AGFC would not support.

Access to fisheries is an important consideration for a mitigation plan as access to important habitats is often reduced by navigation improvements. AGFC hopes that USACE will continue to fund recreation areas along the MKARNS.

The USACE has suggested in recent meetings that fish notches that are 4-feet wide x 1-foot deep. It is important for the USACE to recognize these are “micro-notches” for fish passage only and not the notches used for mitigation to prevent aquatic habitat losses.

AGFC appreciates the extension of the comment period from March 1, 2024 to March 10, 2024. The opportunity to review this project and to serve as a cooperating agency is appreciated. If you have any questions please contact me at 501-680-0319 or [Jennifer.sheehan@agfc.ar.gov](mailto:Jennifer.sheehan@agfc.ar.gov).

Sincerely,



Jennifer Elise Sheehan  
Chief, Environmental Coordination Division

## References

Rhodes, M., J. Spurgeon, W. Neal, and K. Evans. 2019. Habitat change along the modified longitudinal gradient of the Arkansas River from 1984 to 2015. Arkansas Game and Fish Commission report AGFC-FD-2019-95-MGMT.

Roberts, K. G., 2019. Arkansas Herpetological Atlas 2019. Distributions of Amphibians and Reptiles. Available at: <http://HerpsOfArkansas.com/Herp/Atlas>.

Schramm, H. L., R. B. Minnis, A. Spencer, and R. T. Theel. 2008. Aquatic habitat change in Arkansas River after development of a lock-and-dam commercial navigation system. River Research and Applications 24:237-248.



**Sarah Huckabee Sanders**  
Governor  
**Shea Lewis**  
Secretary

February 21, 2024

Mr. Brandon Wadlington  
Chief, NEPA and Natural Resources Section  
USACE, Little Rock District  
P.O. Box 867  
Little Rock, Arkansas

RE: Multiple Counties: General  
Public Notice: COE  
Proposed Undertaking: McClellan-Kerr Arkansas River Navigation System 12-Foot Channel  
Deepening, Arkansas and Oklahoma  
AHPP Tracking Number: 69417.07

Dear Mr. Wadlington:

The staff of the Arkansas Historic Preservation Program (AHPP) reviewed the Public Notice for the above-mentioned project in multiple counties in the State of Arkansas. The proposed project entails deepening the navigation channel through the MKARNS from nine feet to 12 feet and updating the existing MKARNS dredge material disposal plan.

The AHPP looks forward to continuing consultation regarding the proposed project as it progresses. There are numerous previously recorded archeological sites and historic properties along the Arkansas River. The AHPP requests to be updated on the project as the effects to these historic properties are assessed and anticipates further discussions on regarding mitigation.

We appreciate the opportunity to review this undertaking. Please refer to the AHPP Tracking Number listed above in all correspondence. If you have any questions, call Kathryn Bryles at 501-324-9784 or email [kathryn.bryles@arkansas.gov](mailto:kathryn.bryles@arkansas.gov).

Sincerely,

for  
Scott Kaufman  
AHPP Director and State Historic Preservation Officer

cc: Dr. Melissa Zabecki, Arkansas Archeological Survey



## REGION 6

DALLAS, TX 75270

March 5, 2024

VIA Electronic Mail

Brandon Wadlington, Chief  
Natural Resources Section  
Regional Planning and Environmental Center  
Department of the Army, Little Rock District  
Corps of Engineers  
P.O. Box 867  
Little Rock, Arkansas 72203-0867  
[ceswl-nav-mkarns12footchannel@usace.army.mil](mailto:ceswl-nav-mkarns12footchannel@usace.army.mil)

**Subject:** Draft Supplemental Environmental Assessment (SEA) and Draft Finding of No Significant Impact (FONSI) for the McClellan-Kerr Arkansas River Navigation System (MKARNS) 12-Foot Channel Deepening Project

Dear Mr. Wadlington:

The U.S. Environmental Protection Agency (EPA), Region 6, has reviewed the McClellan-Kerr Arkansas River Navigation System (MKARNS) 12-Foot Channel Deepening Project Draft SEA and FONSI. The Draft SEA was reviewed pursuant to the National Environmental Policy Act (NEPA), the Council on Environmental Quality (CEQ) regulations (40 CFR Parts 1500 – 1508), and EPA's authority under Section 309 of the Clean Air Act.

The U.S. Army Corps of Engineers (USACE), Tulsa and Little Rock Districts, prepared this Supplemental Environmental Assessment (SEA) to supplement the River Navigation Study (ARNS) Final Feasibility Report and Environmental Impact Statement (2005 ARNS FR/EIS). The 2005 ARNS FR/EIS, incorporated herein by reference, was completed in 2005, and the Record of Decision was signed on the 27th of September 2005. The 2005 ARNS FR/EIS evaluated various alternatives to provide navigation improvements to reduce navigation losses due to high flows, enhance channel maintenance and dredged material management, and deepen the channel in the study area. The recommended plan, known as the MKARNS 12-Foot Channel, is the National Economic Development.

This Draft SEA serves to: 1) provide a concise summary of the history and status of the originally-authorized ARNS project; 2) document the changes and refinements made to the MKARNS 12-Foot Channel design during the Pre-Construction Engineering and Design (PED) and Construction phases, including mitigation; and, 3) evaluate the potential environmental effects of the updated construction and design plans that may have changed since the Final EIS was completed.

The Draft SEA considers all applicable laws, executive orders, regulations, and local government plans in evaluation of alternatives. Based on this report, the reviews by other Federal, State and local agencies, Tribes, input of the public, and the USACE NEPA staff, it is the USACE recommendation and proposed finding that the recommended plan would not cause significant adverse effects on the quality of the human environment and thus preparation of an EIS is not required. With this finding, EPA has no further comments to offer.

EPA appreciates the opportunity to review the Draft SEA. We look forward to the receipt of the Final SEA and FONSI for our files. If you have any questions regarding our comments, please contact Michael Jansky, the lead reviewer, at [jansky.michael@epa.gov](mailto:jansky.michael@epa.gov) or 214-665-7451.

Sincerely,

Robert Houston  
Staff Director  
Office of Communities, Tribes and  
Environmental Assessment



**Department of Energy**  
Southwestern Power Administration  
One West Third Street, Suite 1500  
Tulsa, Oklahoma 74103

March 7, 2024

Mr. Craig Hilburn  
Regional Planning and Environmental Center  
Little Rock District, U.S. Army Corps of Engineers  
700 West Capitol Avenue  
Little Rock, AR 72203

Mr. Hillburn,

This letter is in response to the notice dated January 30, 2024, regarding the draft Supplemental Environmental Assessment (SEA) and draft Finding of No Significant Impact (FONSI) for the McClellan-Kerr Arkansas River Navigation System (MKARNS) 12-ft Channel Deepening Project (Project). Southwestern is pleased to offer comments on the draft SEA and draft FONSI, and appreciates the opportunity to attend the agency workshop on February 15, 2024, regarding the Project. Southwestern is a Federal agency, within the U.S. Department of Energy, with statutory responsibility for marketing the hydroelectric power and energy from 24 U.S. Army Corps of Engineers (Corps) multipurpose projects in the region, including the Webbers Falls, R.S. Kerr, Ozark, and Dardanelle projects on the MKARNS.

As stated in the agency workshop, the Project is not anticipated to negatively affect Congressionally-authorized purposes, water surface elevations, or operations of the MKARNS projects with hydropower, and should have a net-zero impact to power pool storage. However, Southwestern is concerned that the deepening of the channel will result in a need for more maintenance dredging which could negatively impact hydropower operations. Since 2015, both Tulsa and Little Rock Districts have dealt with shoaling issues from flooding that have resulted in channel depths of less than 9-ft below the authorized bottom of power pools at the hydropower lakes on the MKARNS. Deviations from the water control plans and authorized power pool elevations have been utilized to hold the pool elevations higher to minimize impacts to navigation until the channel depth is restored. Such deviations limit the flexibility Southwestern can use in determining when to generate at hydropower projects on the MKARNS, resulting in increases to both off-peak generation and spill. The need to dredge to a 12-ft channel depth could increase the duration of such deviations and thus increase the negative impact to Southwestern. Southwestern hopes that recent improvements in dredging operations within the Tulsa District can be sustained regardless of the channel depth. Southwestern also emphasizes that dredging contracts issued after the completion of the Project must maintain a 12-ft channel depth below the bottom of the power pool elevations at hydropower lakes on the MKARNS as required by Congressional authorizations.

Additionally, the Project should include funding to address the backlog of maintenance on the MKARNS structures. The Project will have limited benefit if the navigation maintenance backlog is not addressed, as equipment failures at the locks and dams not only result in the closure of navigation but can impact hydropower operations as well.

Finally, the Project should use some portion of the volume of dredge spoils to create additional Interior Least Tern (ILT) islands on the MKARNS. Although the ILT was removed from the Endangered Species List in 2021, the Corps and Southwestern are required to continue supporting the recovery of the ILT. The existing islands on the MKARNS are historically the most productive nesting islands for ILT due to the limited fluctuation of water levels. The nesting of ILT on the MKARNS also results in a lesser negative impact to hydropower and flood risk management operations at multipurpose projects upstream of the MKARNS due to these islands improving overall nesting success in the region.

Southwestern's specific comments on the draft SEA are enclosed. Thank you for the opportunity to and to provide comments on the Project. If you have any questions regarding our comments, please contact Gary Slim at (918) 595-6685 or [Gary.slim@swpa.gov](mailto:Gary.slim@swpa.gov).

Sincerely,

Ashley Corker  
Director  
Division of Resources and Rates

Enclosure

**Southwestern Power Administration  
Specific Comments on the Draft Supplemental Environmental Assessment  
Arkansas River Navigation Study, Arkansas and Oklahoma**

1. Page 12, 2.2.2.2 Disposal of Dredged Materials. Please ensure that the placement of dredged materials in in-water disposal sites has a net-zero impact to the storage volume within the power pool elevations at hydropower projects on the MKARNS, particularly, Webbers Falls, R.S. Kerr, Ozark, and Dardanelle.
2. Pages 18 and 19, 3.1 Resources Analyzed and Resources Excluded from Detailed Analysis. Please ensure that hydropower is included in the detailed analysis for Climate Change and Greenhouse Gases (see comment 6).
3. Pages 33 and 34, 3.8.2.2 Birds. The interior least tern (ILT) is a species recently removed from the list of threatened and endangered species which nests on sandbars and islands located in the MKARNS channel, but it is not discussed in this section. Please add a short description of the ILT.
4. Page 38, Table 3-7, Federally Listed Species, Habitat Preference, and Likelihood of Occurrence. The ILT nest on sandbars and islands within the MKARNS. This nesting is known to occur annually in the late spring and early summer, and the ILTs remain present for several months. Please correct the Habitat Description and Likely Occurrence in the Study Area accordingly.
5. Page 58, 4.1.2.2 Operational Air Emissions. Any negative impacts to the power pool due to the Project (for example, reduced operational flexibility due to pool deviations to support dredging operations or a smaller storage volume due to placement of dredged materials) will increase the purchase of replacement power. Such replacement power is likely to come from a thermal resource and therefore increase regional emissions. Suggest adding this to the discussion.
6. Page 59, 4.2 Climate Change and Greenhouse Gases, paragraphs 3 and 4. Hydropower is an emission-free electrical generation source which is important for reducing regional emissions in the Project area. Please add a sentence differentiating hydropower and other carbon-free generation sources from the electricity sources which are contributing to the increase in greenhouse gas emissions in the region.





IN REPLY REFER TO:

# United States Department of the Interior

FISH AND WILDLIFE SERVICE  
110 S. Amity Road, Suite 300  
Conway, Arkansas 72032  
Tel.: 501/513-4470 Fax: 501/513-4480



March 7, 2024

Colonel Damon Knarr  
District Engineer  
Little Rock District U.S. Army Corps of Engineers  
P.O. Box 867  
Little Rock, AR 72203-0867

Dear Colonel Knarr:

The U.S. Fish and Wildlife Service's (Service) Arkansas Ecological Services Field Office reviewed the Draft Supplemental Environmental Assessment (SEA) and Draft Finding of No Significant Impact (FONSI) for the Little Rock District of the U.S. Army Corps of Engineers' (Corps) Arkansas River Navigation Study, Arkansas and Oklahoma. The Corps also recently submitted a Draft Biological Assessment (BA) to the Service in accordance with Section 7 of the Endangered Species Act (ESA; 87 Stat. 884, as amended: 16 U.S.C. 1531 et seq.). The Service's Oklahoma Ecological Services Field Office has the lead for the ESA consultation and will work with our office to complete consultation regarding federally listed and proposed listed species. This letter was prepared in accordance with the Fish and Wildlife Coordination Act (FWCA) (48 Stat. 401, as amended; 16 U.S.C. 661-667e.).

On June 13, 2023, we submitted a letter agreeing to sign on as a cooperating agency and regularly attend coordination meetings and assist in efforts to formulate and evaluate alternatives. Since that time, we have participated in several coordination meetings and calls. We plan continue participating in meetings and calls as planning for this effort progresses. The Corps also recently completed a draft Fish and Wildlife Coordination Act Report. This report was not included in the draft SEA but will be included in the final report to Congress following review, editing, and approval by the Service and States.

The information in the SEA draws largely from the existing Environmental Impact Statement (EIS) developed in 2005. Many of the proposed actions, mitigation calculation methodologies, and mitigation features identified in that document carried forward into the current SEA. The possible mitigation features identified in the EIS were formulated with significant effort from the Corps, Service, and State agencies. The Corps anticipates that the impacts associated with project features and volume of materials dredged to be significantly reduced from those described in the EIS. They also plan to implement proposed features in phases to be coordinated closely with the Service and States to plan for important resource avoidance where possible and plan detailed mitigation features. Because of this phased approach, it is difficult to provide comprehensive detailed recommendations at this point in the planning process. A list of general recommendations in no order of priority follows.

- Early coordination with the Service and States should occur prior to the selection of specific dredging, dredge disposal, or dike construction alternatives. This is important to aid in avoidance of significant aquatic or terrestrial resources and development of adequate compensatory mitigation features when avoidance is not possible. The States have a long history of managing the sport fishery within the Arkansas River. There is great public interest in insuring actions proposed in this study do not result in an overall reduction in the quality of this fishery. Coordination will also facilitate the development of beneficial uses of spoil where possible, specifically for the development of Interior Least Tern nesting islands.
- Recent coordination indicated general agreement with the models used to calculate terrestrial mitigation requirements. However, there are some questions as to whether the “marsh model” proposed to calculate mitigation for “aquatic resources” is the best tool for achieving in-kind compensation for backwater fishery losses. Continued coordination with the Service, and especially with State fisheries managers, is needed to investigate modification of the “marsh model” or possible use of an alternative certified model such as those used for the Memphis District of the Corps’ Mississippi River Hatchie-Loosahatchie ecosystem restoration study.
- A major change from the 2005 EIS to the current SEA is an increase in dredging volume in river miles 0.6 to 10.3. This represents the portion of the McClellan-Kerr Arkansas River Navigation System (MKARNS) that uses the lower White River to connect the Mississippi River with the Post Canal and Arkansas River. This area is adjacent to the Dale Bumpers White River National Wildlife Refuge and the Trusten Holder Wildlife Management Area. It may be used seasonally by endangered Pallid Sturgeon and Lake Sturgeon and Alabama Shad, petitioned for listing under the ESA. This portion of the lower White River has experienced head cutting in the past that resulted in the loss of upstream terrestrial and wetland habitats including oxbow lakes on public lands. Studies should take place to ensure that dredging in this reach does not reinitiate head cutting or exacerbate existing head cutting that could increase modification or loss of aquatic and terrestrial habitats. The Montgomery Point Lock and Dam at the mouth of this reach was constructed with the anticipation of reduced dredging. We recommend investigating operational changes of this structure or other measures as opposed to an increase of dredging in this sensitive reach. The efficacy of increased dredging in this reach, or perhaps the entire study area, should also be considered in the context of existing conditions on the Mississippi River. Recent coordination with the New Orleans, Vicksburg, and Memphis Districts of the Corps regarding the Lower Mississippi River Comprehensive Study revealed that while the Mississippi River downstream of the White River mouth is authorized for a 12-foot channel, it is currently only maintained to a 9-foot depth.
- The Corps indicated recently that they do not have a mechanism in place to mitigate for the loss of significant non-federally regulated fish and wildlife or habitat resources. The freshwater mussel surveys conducted prior to the 2005 EIS indicated that dense mussel beds were present within the Post Canal section of the MKARNS. Although no federally listed species were documented, the EIS indicated that mitigation would take place for

Col. Damon Knarr

negative effects to these beds. The Arkansas Game and Fish Commission places high value on this resource. Specific coordination with the State should take place to ensure that State laws would not be violated due to proposed actions and to avoid and minimize negative effects to high-value State regulated resources.

- Mitigation features identified in the 2005 EIS and already constructed using non-Corps funds should not count as mitigation for impacts associated with any future selected project features. Features identified in the 2005 EIS or other suitable features proactively completed using Corps funding may be considered mitigation for future selected project features assuming that they are properly functioning.

If you have any questions about these comments, please contact Jason Phillips at (870) 503-1101 or [jason\\_phillips@fws.gov](mailto:jason_phillips@fws.gov).

Sincerely,

Chris Davidson  
Acting Field Supervisor

cc: Kevin Stubbs, USFWS Oklahoma Field Office, Tulsa, OK  
Patrick Fitzmorris, USFWS, Dale Bumpers White River NWR, St. Charles, AR  
Jennifer Sheehan, Arkansas Game and Fish Commission, Little Rock, AR  
Cindy Osborne, Arkansas Natural Heritage Commission, Little Rock, AR

## **Knapp, Elizabeth J CIV USARMY CESWF (USA)**

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**From:** Stubbs, Kevin <kevin\_stubbs@fws.gov>  
**Sent:** Thursday, March 7, 2024 3:29 PM  
**To:** Hilburn, David C CIV USARMY CESWF (USA); Knapp, Elizabeth J CIV USARMY CESWF (USA)  
**Cc:** Fenner, Daniel; Phillips, Jason; Brett Thompson; Sheehan, Jennifer; Taylor, Damon; curtis.tackett@odwc.ok.gov  
**Subject:** [Non-DoD Source] Oklahoma Ecological Services Field Office comments on the Draft 12 Foot Channel Supplemental Environmental Assessment (SEA)

**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

ATTN: Craig Hilburn (RPEC)  
U.S. Army Corps of Engineers  
700 West Capitol Avenue, Room 7500,  
Little Rock, AR 72203

Reference: McClellan-Kerr Arkansas River Navigation System project (MKARNS) 12 Foot Channel Supplemental Environmental Assessment (SEA)

Thank you for inviting us to comment on the SEA and related documents provided by the U. S. Army Corps of Engineers, (Corps), to supplement the 2005 Final Environmental Impact Statement (FEIS) for the Arkansas River Navigation Study, Arkansas and Oklahoma (ARNS). We appreciated the extension for comments to March 10<sup>th</sup> but this is still a very short timeline to review such a large project and multiple documents. The agency meeting to present and discuss this project didn't occur until February 15<sup>th</sup> and we have had limited time to coordinate with other U.S. Fish and Wildlife Service (Service) offices and state partners in preparing these comments. Any comments provided at this time should be considered preliminary and additional comments will be provided through time as this project develops. The implementation of this project is contingent on funding and could be several years out, so the ability to provide comments should be flexible.

The 2005 FEIS included mitigation for upland habitat impacts, but the proposed action does not. This is a major change and the Service (and state partners) invested considerable time and effort in evaluating upland habitat impacts and mitigation for the FEIS through a Fish and Wildlife Coordination Act Report (CAR) and programmatic biological opinion. A draft CAR was developed by the Corps for the proposed project and is being reviewed by the Service. Over 1,700 acres of upland habitat are anticipated to have temporary impacts and over 800 acres would have permanent impacts. Most of these acres are on Sequoyah National Wildlife Refuge (SNWR) and Oklahoma Department of Wildlife Conservation managed Wildlife Management Areas and support a variety of wildlife. Approximately 200 acres of forested habitat would be permanently impacted, and that habitat is likely to support federally-listed bats. Nearly all habitat types support migratory birds and even cropland has value as a food source for local wildlife and migrating waterfowl. Appropriate mitigation should be provided for these impacts to upland habitat.

Aquatic habitat would also be impacted by proposed training structures and dredging. Proposed training structures at SNWR and other locations could adversely affect large areas of backwater habitat and boating access. In portions of the project, important fish spawning habitat and mussel beds would be impacted by dredging in gravel bars. Proposed gravel bar mitigation would involve relocating existing gravel substrate in identified gravel bars to nearby suitable locations or providing new substrate of the appropriate composition to create gravel bar acreage and value in a different, suitable location. No details are described in the SEA for how the Corps would accomplish the replacement of gravel bars. It is unlikely that gravel can be moved to locations

that do not currently have gravel substrate without changing how water flows through that area. Deposition of silt and clay substrate on top of the gravel would be likely unless the hydrology is changed to keep it clean. The data used for mitigating this impact is nearly 20 years old and there may currently be more gravel bars than in 2005 due to several high flow events since that evaluation. Higher flows can move larger material and can create or expand gravel bars. The proposed dredging is unlikely to begin for several years and the area of gravel could change. Gravel bars should be reassessed prior to dredging and commensurate mitigation implemented. The success of efforts to move gravel is questionable and unless restored gravel bars are monitored and maintained, the goal of no net loss is not likely to be achieved. A higher ratio of mitigation would be more appropriate to address questionable success in moving dredged gravel bars and monitoring should be implemented for assessing both the area and quality of gravel bar habitat.

For compliance with the ESA, we have reviewed the draft BA and consulted with species leads for listed, proposed and candidate species that may occur or be affected by the proposed project. We concur with most of the determinations, but have concerns or need additional information for some species. We appreciate the efforts to minimize and avoid adverse effects to several listed species, but need additional information and modifications before we can initiate formal consultation. We are working with Corps staff to develop a final Biological Assessment for a formal consultation on the proposed project. With the long-term timing and uncertainty in funding appropriations, it is likely that the status of species may change and the consultation will need to address those changes. Several species that are now proposed or candidates may be listed and new species proposed before the project is initiated or completed.

Thank you for providing the draft documents and requesting our comments. We look forward to working with the Corps on minimizing impacts and developing mitigation options for this project. If you have any questions about these comments, please don't hesitate to call or email me.

Kevin Stubbs,

USFWS, Fish and Wildlife Biologist

918-695-6769



J. KEVIN STITT, GOVERNOR  
WADE FREE, INTERIM DIRECTOR

Wildlife Conservation Commission

Leigh Gaddis  
Chairwoman  
James V. Barwick  
Vice Chairman  
Rick Holder  
Secretary

Tim Diehl  
D. Chad Dillingham  
Jess Kane  
Mark H. Mabrey  
John P. Zelbst

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May 15, 2024

Col. Damon Knarr  
U.S. Army Corps of Engineers  
P.O. Box 867  
Little Rock, AR 72203-0867

Re: McClellan-Kerr Arkansas River Navigation System 12-foot Channel Deepening Project - Draft Supplemental Environmental Assessment

Dear Col. Knarr:

The Oklahoma Department of Wildlife (ODWC) has reviewed the McClellan-Kerr Arkansas River Navigation System (MKARNS) 12-foot Channel Deepening Project Draft Supplemental Environmental Assessment (SEA). This comment letter has been prepared in accordance with the Fish and Wildlife Coordination Act (FWCA) (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.). FWCA requires that efforts to protect fish and wildlife resources be given equal consideration with other project features.

ODWC offers the following comments and questions on the MKARNS 12-foot Channel Deepening Project Draft SEA:

**General Comments:**

- Section 10.1.3 Fish and Wildlife Coordination Act of the Draft SEA makes no mention of coordination with the state wildlife agencies affected by the MKARNS 12-foot Channel Deepening Project. The language of the FWCA Sec. 2. [16 U.S.C. 662] (a) states, "... whenever the waters of any stream or other body of water are proposed or authorized to be impounded, diverted, the channel deepened, or the stream or other body of water otherwise controlled or modified for any purpose whatever, including navigation and drainage, by any department or agency of the United States, or by any public or private agency under Federal permit or license, such department or agency first shall consult with the United States Fish and Wildlife Service, Department of the Interior, and with the head of the agency exercising administration over the wildlife resources of the particular State wherein the impoundment, diversion, or other control facility is to be constructed, with a view to the conservation of wildlife resources by preventing loss of and damage to such

We manage and protect fish and wildlife, along with their habitats, while also growing our community of hunters and anglers, partnering with those who love the outdoors, and fostering stewardship with those who care for the land.



resources as well as providing for the development and improvement thereof in connection with such water-resource development.” The FWCA coordination that has occurred between the U.S. Army Corps of

- Engineers (USACE) and the U.S. Fish & Wildlife Service (USFWS) for the MKARNS 12-foot Channel Deepening Project should also be extended to the Arkansas Game and Fish Commission and the Oklahoma Department of Wildlife Conservation.
- ODWC would like to see the mussel surveys updated from the 2005 FEIS since there has been extreme flooding in the interim.
- ODWC would like to see updated gravel bar mapping. Significant flood events have occurred since 2005 and the gravel bar locations and footprint have likely been altered.
- ODWC is concerned about the potential amount of take related to mussels associated with the clam shell dredging of gravel bar areas and would like to see rescue or mitigating efforts to address this issue. A list of potential mussel species affected in the MKARNS can be found in Appendix I of this document.
- In 2019 the MKARNS sustained a largescale mussel kill as a result of a water level draw down in Webbers Falls reservoir. The ODWC and USFWS conducted a mussel kill investigation using protocols outlined in the American Fisheries Society Special Publication #30. The results of the investigation estimated a die off of over half a million mussels in the impact area. Because of this recent catastrophic impact to the freshwater mussel community in the MKARNS, we stress the need for rescue, relocation, and/or mitigation of potential take of mussels.
- ODWC is concerned with the amount of take related to both open water, and benthic species of fish with the multiple types of dredging that is proposed. A list of potential fish species affected in the Verdigris portion of the MKARNS can be found in Appendix II of this document.
- The newly proposed training structure located at RM 351&352 could adversely affect backwater connectivity and habitat and also inhibit boating access into the Sequoyah NWR.
- ODWC would like assurance that dredge material will not be placed in or negatively affect fish (all aquatic organisms) and anglers from accessing secondary channels (backwaters). Maintaining connectivity to the main channel in these secondary channels is imperative due to the habitats they possess which are vital for the life stages of many aquatic organisms.

Even though our comments from ODWC are after the close of the official public comment period, we hope that the USACE will still take these concerns into consideration when proceeding with this project. Unfortunately, we were not aware of the dredging project until mid-February of this year (2024) and only recently have been able to coordinate with our resource professionals to compose the comments in this letter. We hope to establish a better working relationship with the USACE so that we at ODWC have a better understanding of this and future projects and the potential impacts on fish and wildlife resources in Oklahoma.

Sincerely,



Kenneth Cunningham  
Fisheries Division Chief

**Appendix I. Mussels that occur in the Verdigris drainage (2019 Webbers Falls mussel kill investigation ODWC).**

| <b>Scientific Name</b>        | <b>Common Name</b>  |
|-------------------------------|---------------------|
| <i>Quadrula quadrula</i>      | Mapleleaf           |
| <i>Pyganodon grandis</i>      | Giant Floater       |
| <i>Anodonta suborbiculata</i> | Flat Floater        |
| <i>Toxolasma parvum</i>       | Lilliput            |
| <i>Amblema plicata</i>        | Threeridge          |
| <i>Quadrula pustulosa</i>     | Pimpleback          |
| <i>Leptodea fragilis</i>      | Fragile Papershell  |
| <i>Potamilus ohioensis</i>    | Pink Papershell     |
| <i>Obliquaria reflexa</i>     | Threehorn Wartyback |
| <i>Tritogonia verucosa</i>    | Pistolgrip          |
| <i>Lasmigona complanata</i>   | White Heelsplitter  |
| <i>Truncilla donaciformis</i> | Fawnsfoot           |
| <i>Fusconaia flava</i>        | Wabash Pigtoe       |
| <i>Potamilus purpuratus</i>   | Bleufer             |
| <i>Unio merus tetralasmus</i> | Pondhorn            |



**Appendix II. Fishes recently sampled in the Verdigris drainage by ODWC.**

| Scientific Name                | Common Name            | Scientific Name                | Common Name        |
|--------------------------------|------------------------|--------------------------------|--------------------|
| <i>Ameiurus natalis</i>        | Yellow Bullhead        | <i>Menidia beryllina</i>       | Inland Silverside  |
| <i>Ameiurus melas</i>          | Black Bullhead         | <i>Micropterus punctulatus</i> | Spotted Bass       |
| <i>Aplodinotus grunniens</i>   | Freshwater Drum        | <i>Micropterus salmoides</i>   | Largemouth Bass    |
| <i>Campostoma anomalum</i>     | Central Stoneroller    | <i>Minytrema melanops</i>      | Spotted Sucker     |
| <i>Carpoides carpio</i>        | River Carpsucker       | <i>Morone americana</i>        | White Perch        |
| <i>Ctenopharyngodon idella</i> | Grass Carp             | <i>Morone chrysops</i>         | White Bass         |
| <i>Cyprinella camura</i>       | Bluntnose Shiner       | <i>Moxostoma duquesnei</i>     | Black Redhorse     |
| <i>Cyprinus carpio</i>         | Common Carp            | <i>Moxostoma erythrurum</i>    | Golden Redhorse    |
| <i>Cyprinella lutrensis</i>    | Red Shiner             | <i>Moxostoma pisolabrum</i>    | Pealip Redhorse    |
| <i>Cyprinella venusta</i>      | Blacktail Shiner       | <i>Notropis atherinoides</i>   | Emerald Shiner     |
| <i>Dorosoma cepedianum</i>     | Gizzard Shad           | <i>Notropis boops</i>          | Bigeye Shiner      |
| <i>Dorosoma petenense</i>      | Threadfin Shad         | <i>Notropis buechanani</i>     | Ghost Shiner       |
| <i>Etheostoma gracile</i>      | Slough Darter          | <i>Notemigonus crysoleucas</i> | Golden Shiner      |
| <i>Etheostoma spectabile</i>   | Orangethroat Darter    | <i>Noturus flavus</i>          | Stonecat           |
| <i>Etheostoma whipplei</i>     | Redfin Darter          | <i>Noturus nocturnus</i>       | Freckled Madtom    |
| <i>Fundulus notatus</i>        | Blackstripe Topminnow  | <i>Notropis perpallidus</i>    | Peppered Shiner    |
| <i>Gambusia affinis</i>        | Western Mosquitofish   | <i>Notropis stramineus</i>     | Sand Shiner        |
| <i>Ictiobus bubalus</i>        | Smallmouth Buffalo     | <i>Notropis volucellus</i>     | Mimic Shiner       |
| <i>Ictiobus cyprinellus</i>    | Bigmouth Buffalo       | <i>Percina copelandi</i>       | Channel Darter     |
| <i>Ictalurus furcatus</i>      | Blue Catfish           | <i>Percina fulvitaenia</i>     | Ozark Logperch     |
| <i>Ictalurus punctatus</i>     | Channel Catfish        | <i>Percina phoxocephala</i>    | Slenderhead Darter |
| <i>Labidesthes sicculus</i>    | Brook Silverside       | <i>Phenacobius mirabilis</i>   | Suckermouth Minnow |
| <i>Lepomis cyanellus</i>       | Green Sunfish          | <i>Pimephales notatus</i>      | Bluntnose Minnow   |
| <i>Lepomis gulosus</i>         | Warmouth               | <i>Pimephales tenellus</i>     | Slim Minnow        |
| <i>Lepomis humilis</i>         | Orange Spotted Sunfish | <i>Pimephales vigilax</i>      | Bullhead Minnow    |
| <i>Lepomis macrochirus</i>     | Bluegill               | <i>Pomoxis annularis</i>       | White Crappie      |
| <i>Lepomis megalotis</i>       | Longear Sunfish        | <i>Pomoxis nigromaculatus</i>  | Black Crappie      |
| <i>Lepomis microlophus</i>     | Redear Sunfish         | <i>Pylodictis olivaris</i>     | Flathead Catfish   |
| <i>Lepisosteus oculatus</i>    | Spotted Gar            |                                |                    |
| <i>Lepisosteus osseus</i>      | Longnose Gar           |                                |                    |
| <i>Lepisosteus platostomus</i> | Shortnose Gar          |                                |                    |
| <i>Lythrurus umbratilis</i>    | Redfin Shiner          |                                |                    |