DRAFT

ENVIRONMENTAL ASSESSMENT

Bendway Weir Construction – Mississippi River
At Fair Landing (River Mile 634R AHP)
Phillips County, Arkansas

U.S. Army Corps of Engineers
Mississippi Valley Division
Regional Planning and Environmental Division South

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1.0 INTRODUCTION

The U.S. Army Corps of Engineers (USACE), Mississippi River Valley Regional Planning and Environmental Division South, Environmental Compliance Branch, has prepared this draft environmental assessment (EA) to evaluate impacts associated with the proposed construction of six bendway weirs along the right descending bank of the Mississippi River near Fair Landing at River Mile 634R above head of passes (AHP) in Phillips County, Arkansas (Figure 1). The project site is located along a sharp outside bend of the Mississippi River. Point bar accretion across from this outside bend is narrowing the navigation channel and directing swift currents along the riverbank. The swift currents and high water velocities pull towboats toward the banks making it extremely difficult and hazardous for the towboats to safely navigate the river bend from either direction. Bendway weirs are low, totally submerged stone structures extending riverward from the outside bank of the river bend into the channel. The structures are constructed in deep water and at low elevations (i.e. remain 30 feet or more underwater even at low river stages) allowing for safe passage of navigation traffic. A series of weirs are installed in a bendway to form a functional system. These underwater bendway weirs direct the river currents away from their respective bank, remove the outer edge of the encroaching sandbar, and extend the navigation channel away from the riverbank. Towboats then have a wider channel and a smoother river bend to navigate. If left unchecked, encroaching point bars would further narrow the navigation channel allowing for swifter currents along the outside bends, increasing risks of a towboat accident.

This draft EA provides sufficient information on the potential adverse and beneficial environmental effects to allow the District Commander, U.S. Army Corps of Engineers, Memphis District, to make an informed decision on the appropriateness of an environmental impact statement (EIS) or a Finding of No Significant Impact (FONSI) for the proposed installation of bendway weirs in the Mississippi River near River Mile 634R AHP. This document has been prepared in accordance with the National Environmental Policy Act of 1969 and the Council on Environmental Quality's Regulations (40 CFR 1500-1508), as reflected in the USACE Engineering Regulation ER 200-2-2.

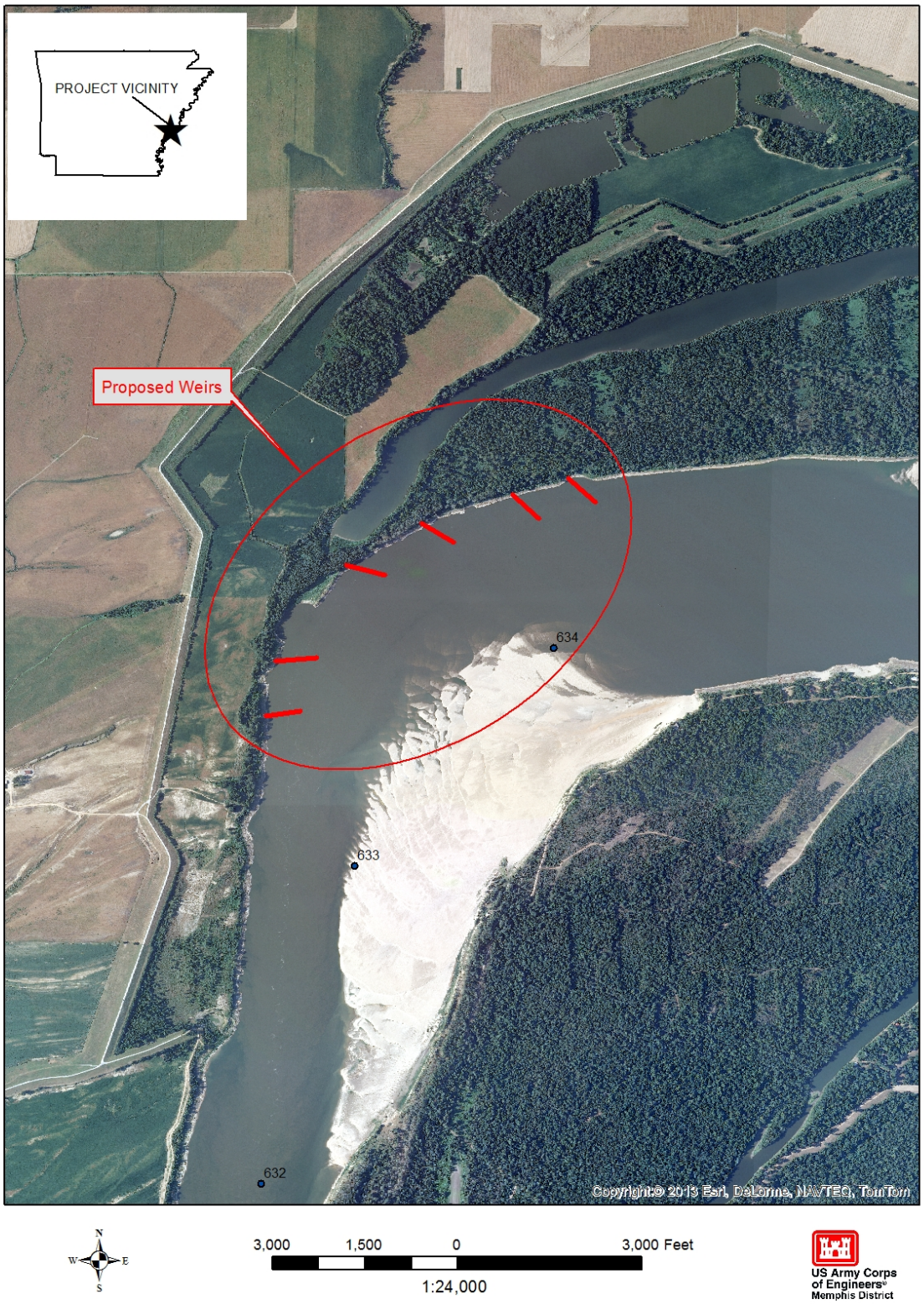

Figure 1. Project map of the six proposed bendway weirs located along the right descending bank of the Mississippi River near River Mile 634 above head of passes (AHP) in Phillips County, Arkansas.

1.1 Proposed Action . The proposed work includes placement of approximately 360,000 tons of Graded Stone A in six bendway weirs in Phillips County, Arkansas. Crown widths of the bendway weirs will be approximately 14 feet, and the weirs will extend riverward from the right descending bank for a distance of approximately 400-500 feet. Rock paving consisting of Graded Stone C will extend approximately 200 feet upstream and 200 feet downstream of the centerline weir number two for stability. Revetment currently exists along the bank within the work reach; thus, no additional bank paving will be required. The tops of all weirs would be constructed to an elevation of 30 feet below the Low Water Reference Plane (i.e. -30 LWRP). The LWRP is a computed water surface elevation profile based on low discharge statistics for a long period of daily gage records (*i.e.* the 97 percent exceedance discharge over a 20-year period of record). In other words, there would be at least 30 feet or more of water over the tops of the weirs even at low river stages to ensure safe navigation. Plan sheets are shown in the appendix.

1.2 Purpose And Need For The Proposed Action. The purpose of this project is to create a safer navigation channel for towboats in the Mississippi River by reducing the strong drafting currents that presently exist at this location. Continued towboat navigation through this hazardous Mississippi River bend increases the risk of an accident. Barges could break loose and block safe navigation of the river. If hazardous or toxic materials are involved, serious concerns for public safety, including adverse environmental impacts could arise.

1.3 Authority. This project is authorized by the Flood Control Act of 15 May 1928, Public Law No. 391-70, as amended and supplemented by subsequent Acts of Congress. This Act authorized the Mississippi River and Tributaries (MR&T) Project, which included channel improvement and stabilization works for stabilizing the channel to provide an efficient navigation alignment and protection of flood control features in the Lower Mississippi River (LMR).

1.4 Prior Reports. Subsequent legislation has resulted in many modifications to the 1928 Flood Control Act resulting in several studies and appurtenant documents. Of particular significance is the 1976 Environmental Impact Statement for the Mississippi River and Tributaries, Mississippi River Levees and Channel Improvement Project (USACE 1976). The EIS addressed the mainstem flood risk management and navigation features of the MR&T Project located in the Lower Mississippi River Valley, between Cairo, Illinois, and Venice, Louisiana. The project, as disclosed in the EIS, is designed to make the Mississippi River more navigable and manage risks associated with flooding by utilizing channel training devices, levees, and maintenance and construction of the mainstem levees and key harbors. Alternatives included no action, alternative maintenance measures, maintenance of existing project efficiency, storage of excess floodwaters in reservoirs, dredging to increase the hydraulic capacity of the Mississippi River, additional cutoffs to increase the hydraulic capacity of the river, diverting flood flows, widening existing floodways, and alternative construction and maintenance methods.

1.5 Public Concerns. The navigation industry has expressed a need to widen the navigation channel at the project area in order to safely navigate the narrow navigation channel and swift currents along this outside bend.

2.0 ALTERNATIVES TO THE PROPOSED ACTION

For the purposes of NEPA, the no-action alternative serves as the baseline against which impacts and benefits of the action alternatives are evaluated. A description of each alternative is included below.

2.1 No Action. The no-action alternative is defined as termination of the project. The encroaching point bar would further narrow the navigation channel allowing for swifter currents along the outside bends. The unsafe navigation conditions through this river bend would continue to worsen increasing the risk of a towboat accident.

2.2 Increase Dredging In This River Reaches. Increasing dredging along this river reach to maintain safe navigation would be costly. The current estimate for dredging at the project location is approximately $90,000 per day. Navigation traffic would also be temporarily disrupted during dredge activities due to work within the narrow navigation channel. The amount of sand that would be required to be removed from the encroaching sandbar could not be done in sufficient time to stabilize the channel prior to the next high river stage. The sandbar would be expected to redevelop soon after dredging ceases thus negating the dredging efforts and expenses. Annual dredging would likely be needed at the project location.

2.3 Install High Dikes Along the Outside Banks. High dikes would rise above the water surface at low and intermediate river stages and extend out into the navigation channel in these narrow bends. The dikes would efficiently direct the river currents away from the outside banks; however, at low and intermediate river stages, the dikes would create an even narrower navigation channel and would be hazardous to navigation. Some minor grading would also be required to tie the dikes into the banks. Temporary disruption of navigation traffic would occur due to construction activities occurring within the narrow navigation channel during low water events.

2.4 Install Underwater Bendway Weirs. Bendway weirs would redirect the swift currents away from the riverbanks. This would make for safer towboat transit of this outside river bend. The weirs would remain 30 feet or more underneath the towboats so there would be no navigation hazards, upon completion. Any disruption of navigation traffic would be temporary during active construction. The weirs would eventually remove small portions of the sandbar encroaching from across the river. This would widen the channel and reduce the swift currents along the toe of the revetted river bank. Both navigation channel and river currents would be modified sufficiently such that dredging needs would be reduced or eliminated. No grading or excavation would be required for this work. Installing underwater weirs would be less costly than building high dikes or increased dredging operations in this river reach.

The no action alternative was determined to be unacceptable because of the increasing risks of accidents at the proposed project location. Alternative 2.2 would require work on a near-annual basis and likely disrupt navigation traffic respectively. Alternative 2.3 would result in temporary disruption of navigation traffic during construction and would result in a narrower channel

during low and intermediate river stages when the dikes were exposed. Alternative 2.4 would result in a temporary disruption of navigation traffic during active construction; however, it would allow navigation traffic to safely pass over the structures at all river stages upon completion. Alternative 2.4 offered the best compromise of environmental impacts and project costs, and thus was selected as the proposed action.

3.0 AFFECTED ENVIRONMENT

3.0.1 Environmental Setting. The proposed project area is located along the right descending bank of the Mississippi River near River Mile 634 AHP in Phillips County, Arkansas (Figure 1). This reach of the Mississippi River consists of a sharp river bend. The mainline Mississippi River Levee traverses south throughout this reach varying from approximately 1,200 feet to 4,000 feet landside of top bank. The lands surrounding the proposed project area are predominantly agricultural and forested lands.

3.0.2 Description of Watershed. The proposed project area is located in the Lower Mississippi-Helena Watershed, Hydrologic Unit Code (HUC) 08020100, which drains approximately 566 square miles. The average ground elevation within this watershed is approximately 168 feet with little relief. Within the Arkansas portion of the watershed, land use is dominated by forest (43%), crops (26%), and water (18%) (NLCD 2006).

3.0.3 Climate. The climate of the proposed project area is characterized by long, warm summers, comparatively short, mild winters, and abundant rainfall. Snow is rare and most winter precipitation falls as rain, but occasional cold fronts can bring temperatures near or below freezing. The total annual precipitation averages approximately 50 inches. Average annual maximum and minimum temperatures are approximately 73 degrees and 53 degrees Fahrenheit, respectively.

3.0.4 Geology. The proposed project area is located within the Mississippi Alluvial Valley, which formed by glacial melt waters carrying large amounts of water, silt, sand, and gravel from the country's interior down to the Gulf Coast. The alluvial valley is bordered on the east by bluffs and on the west by merging valleys of the principal tributaries and ranges in width from approximately 30 to 90 miles (Saucier 1994). Quaternary deposits within the alluvial valley consist of various abandoned channels and point bar deposits of historic Mississippi River meander belts. The fluvial-geomorphic history determines the individual soil types at specific locations. The majority of the soils immediately adjacent to the project area are frequently flooded Tunica, Crevasse, and Robinsonville soils (SSURGO 2014).

3.1 RELEVANT RESOURCES

This section contains a description of those resources that could be impacted by the proposed project. The important resources described in this section (Table 1) are those recognized by laws, executive orders, regulations, and other standards of national, state, or regional agencies and organizations; technical or scientific agencies, groups, or individuals; and the general public.

The following resources have been considered and found to not be affected by the alternatives under consideration: recreation resources, prime and unique farmlands, terrestrial resources, essential fish habitat, estuarine water bodies, beaches, gulf water bottoms, and aesthetics.

Table 1: Relevant Resources

Resource	Institutionally Important	Technically Important	Publicly Important
Wildlife	Fish and Wildlife Coordination Act of 1958, as amended; the Migratory Bird Treaty Act of 1918; and Bald and Golden Eagle Protection Act of 1940, as amended	They are a critical element of many valuable aquatic and terrestrial habitats; they are an indicator of the health of various aquatic and terrestrial habitats; and many species are important commercial resources.	The high priority that the public places on their aesthetic, recreational, and commercial value.
Wetlands	Clean Water Act of 1977, as amended; Executive Order 11990 of 1977, Protection of Wetlands; EO 11988, and Fish and Wildlife Coordination Act.	They provide necessary habitat for various species of plants, fish, and wildlife; they serve as ground water recharge areas; they provide storage areas for storm and flood waters; they serve as natural water filtration areas; they provide protection from wave action, erosion, and storm damage; and they provide various consumptive and non-consumptive recreational opportunities.	The public places a high value on the functions and values that wetlands provide. Environmental organizations and the public support the preservation of marshes and other wetlands.
Threatened and Endangered Species	The Endangered Species Act of 1973, as amended.	Federal and state wildlife agencies cooperate to protect these species. The status of such species provides an indication of the overall health of an ecosystem.	The public supports the preservation of rare or declining species and their habitats.
Cultural Resources	National Historic Preservation Act of 1966, as amended; the Native American Graves Protection and Repatriation Act of 1990; and the Archeological Resources Protection Act of 1979	State and Federal agencies document and protect important sites because of their association or linkage to past events, to historically important persons, to design and construction values, and for their ability to yield important information about prehistory and history.	Preservation groups and private individuals support protection and enhancement of historical resources.
Socio-Economic Resources	River and Harbor Act and Flood Control Act of 1970 (PL 91-611)	N/A	Social concerns and items affecting area economy are of significant interest to community.

Table 1: Relevant Resources			
Resource	**Institutionally Important**	**Technically Important**	**Publicly Important**
Environmental Justice	Executive Order 12898 and the Department of Defense's Strategy on Environmental Justice of 1995.	The social and economic welfare of minority and low-income populations may be positively or disproportionately impacted by the tentatively selected plans.	Public concerns about the fair and equitable treatment (fair treatment and meaningful involvement) of all people with respect to environmental and human health consequences of federal laws, regulations, policies, and actions.
Air Quality	Clean Air Act of 1963	State and Federal agencies recognize the status of ambient air quality in relation to the National Ambient Air Quality Standards (NAAQS).	Virtually all citizens express a desire for clean air.
Water Quality and Hydrology	Clean Water Act of 1977, Fish and Wildlife Coordination Act	Federal and state water quality agencies recognize value of fisheries and good water quality. National and state standards are established to assess water quality.	Environmental organizations and the public support the preservation of water quality and fishery resources and the desire for clean drinking water.
Aquatic Resources/ Fisheries	Fish and Wildlife Coordination Act of 1958, as amended	They are a critical element of many valuable freshwater and marine habitats; they are an indicator of the health of the various freshwater and marine habitats; and many species are important commercial resources.	The public places a high priority on their aesthetic, recreational, and commercial value.

3.1.1 WILDLIFE

Existing Conditions: The project area is located entirely within the Mississippi River channel. The project vicinity consists of a mosaic of forested lands, old river channels, borrow pits, and agricultural land. Wildlife expected to utilize the shorelines and adjacent lands include raccoon, opossum, mink, bobcat, coyotes, deer, wild turkey, muskrat, river otter, beaver, turtles, snakes, frogs, toads, hawks, vultures, Mississippi kite, bald eagle, kingfishers, and various songbirds and woodpeckers. Herons, egrets, pelicans, cormorants, killdeer, gulls, terns, bald eagle, osprey, and various shorebirds would be bird species commonly observed utilizing the Mississippi River channel near the project area.

3.1.2 WETLANDS

Existing Conditions: The proposed project footprint is within the river channel (deepwater habitat); thus, wetlands are not currently present within the proposed work limits. A records search of the National Wetlands Inventory showed nearly all of the forested lands near the proposed project area as wetlands and nearly all the cleared/agricultural lands as non-wetlands (USFWS 2014).

3.1.3 THREATENED AND ENDANGERED SPECIES

Existing Conditions: Three federally listed species may occur in the vicinity of the proposed project areas: the interior least tern (*Sterna antillarum athalassos*), pallid sturgeon (*Scaphirhynchus albus*), and fat pocketbook mussel (*Potamilus capax*).

Interior Least Terns
The federally endangered interior least tern is the smallest North America tern. In the LMR, interior least terns typically nest on large isolated sandbars from late May to August, depending on specific yearly river stages. A small number of least terns (between 18-39 individuals) have been documented nesting on the attached sand point bar downstream and across the river from the project area in five of the 27 years surveyed (USACE 1986-2012).

Pallid sturgeon
The federally endangered pallid sturgeon are part of an ancient group of fishes that inhabit benthic habitats of large, turbid rivers of the central United States, such as the Mississippi and Missouri Rivers and several of their major tributaries (and distributaries). Captures of pallid sturgeon in the Mississippi River have been associated with a variety of habitats including: the main channel, islands, channel borders, sandbars, gravel bars, dikes, and secondary channels. Recent data has shown that pallid sturgeon positively selected island tips, natural banks, and to a lesser degree, revetted banks, over other habitat features in the LMR (Herrala et al. 2014). Extensive sampling in the Mississippi River is currently underway so that a better understanding of population size, population density, habitat preference, extent of range, and impacts on the population can be quantified. The closest pallid sturgeon detections to the proposed project area are approximately two miles downstream near River Mile 632 AHP (P. Hartfield, USFWS, pers. communication 2014) and approximately two miles upstream near River Mile 636 AHP (J. Killgore, USACE, pers. communication 2009).

Fat pocketbook mussel
The federally endangered fat pocketbook mussel is a relatively large species of freshwater mussel reaching approximately 5 inches in length and native to the Ohio River system and Mississippi River drainage. Fat pocketbook mussels typically inhabit sand and silt depositional areas of slow moving rivers. The largest population is currently found within the St. Francis River Basin in Arkansas, a tributary upstream of the project area. Low densities of fat pocketbook mussels may be found sporadically in the LMR typically within relatively stable secondary channels and side channels (USFWS 2012). The closest fat pocketbook mussel observed near the proposed project area was approximately 25 miles downstream near River Mile 609 AHP (W.T. Slack, USACE, pers. communication 2011).

3.1.4 CULTURAL RESOURCES

Existing Conditions: The project area is located within the river channel. There are no National Register of Historic Places properties or recorded shipwrecks within a close proximity to the proposed project location.

3.1.5 SOCIO-ECONOMIC RESOURCES

Existing Conditions: Commercial navigation supports a wide array of economic activity on the LMR. Approximately 474 million short tons of cargo were shipped on the LMR in 2011, and the top ranked commodities by tonnage were petroleum and petroleum products (~30 percent of all shipped goods), food and farm products (~28 percent of all shipped goods), and coal (~14 percent of all shipped goods) (IEC 2014). A total of $4.2 billion in revenues and 18,764 people were employed by the commercial navigation sector in the LMR corridor in 2011(IEC 2014). The proposed project area is located in Phillips County, Arkansas. The population of Phillips County in 2013 was estimated at 20,399 with an estimated 6.2 percent decrease from 2010. The median household income of Phillips County was $27,219 from 2008-2012. The largest industries in Phillips County are health care and social assistance, retail trade, wholesale trade, and manufacturing, accounting for approximately 65% of paid employees and 68% of the annual payroll.

3.1.6 ENVIRONMENTAL JUSTICE

Existing Conditions: The Department of Defense's Strategy on Environmental Justice of 1995, directs Federal agencies to identify and address any disproportionately high adverse human health or environmental effects of Federal actions to minority and/or low-income populations. Minority populations are those persons who identify themselves as Black, Hispanic, Asian American, American Indian/Alaskan Native, and Pacific Islander. A minority population exists where the percentage of minorities in an affected area either exceeds 50 percent or is meaningfully greater than in the general population. The minority population of Phillips County is approximately 65% percent. No residential, commercial, or industrial areas exist within or adjacent to the proposed project area. The entire project limits are located within the existing river channel.

3.1.7 AIR QUALITY

Existing Conditions: Phillips County, Arkansas is presently classified as "in attainment" with the state's air quality requirements. There are no areas where air pollution levels persistently exceed the national ambient air quality standards within the vicinity of the project area.

3.1.8 WATER QUALITY AND HYDROLOGY

Existing Conditions: The proposed work reach of the Mississippi River is not identified on the 303d list of impaired waters for the states of Arkansas or Mississippi (across the river channel) nor are there any approved Total Maximum Daily Loads (TMDLs) within the proposed river reach (MDEQ 2012, ADEQ 2012, 2014).

The LMR flows through a wide alluvial plain averaging between approximately 30 and 90 miles in width and with an average downvalley slope of approximately 0.6 feet per mile (Saucier 1994). River discharge fluctuates seasonally within the LMR with mean discharges approximately 3 times higher in the high-water months compared to low-water months. The mean discharge for the LMR at Helena, Arkansas is approximately 506,982 cubic feet per second (cfs).

3.1.9 AQUATIC RESOURCES AND FISHERIES

Existing Conditions: The proposed work reach is along an outside bend of the LMR. Swift currents flowing along the outside bends provide habitat conditions that are utilized by a diverse community of fishes ranging from open water species, such as shads, white and striped bass, skipjack herring, and goldeye, to large benthic fishes such as shovelnose sturgeon, blue sucker, carpsuckers, buffalofishes, catfishes, common carp, and freshwater drum (Baker et al. 1991). The revetted banks are most likely colonized by high densities of hydropsychid caddisflies. The macroinvertebrate community inhabiting the sandy river bottom typically consists of low densities of chironomids, oligochaetes, amphipods, and nematodes.

4.0 ENVIRONMENTAL CONSEQUENCES

4. 1 WILDLIFE

Future Conditions with No Action: There are no reasonably foreseeable changes to the wildlife community expected in the project area compared to existing conditions due to no action.

Future Conditions with the Proposed Action: There could be a temporary displacement of wildlife along the riverbank in the immediate vicinity of the bendway weirs during the placement of rock. Any potential wading birds or other wildlife present would likely move upstream or downstream of the immediate vicinity of the construction operations. Currently, there are no known active rookeries in the immediate vicinity of the proposed project area.

4.2 WETLANDS

Future Conditions with No Action: With the no action alternative, the condition of wetlands near the project area is not likely to significantly change from current conditions. The vast majority of wetlands near the project area are forested wetlands between the levee and topbank of the river. No land use changes or detrimental impacts to these wetlands are expected in the reasonably foreseeable future.

Future Conditions with the Proposed Action: The proposed construction operations would take place entirely within the unvegetated Mississippi River channel (deep water habitat). The

bendway weirs would be placed in navigable waters of the U.S. Thus, a Section 404(b)(1) Evaluation was prepared for the proposed action and included in the appendix.

4.3 THREATENED AND ENDANGERED SPECIES

Future Conditions with No Action: With no action, there would likely be no significant changes to threatened and endangered species and their habitats compared to current conditions. Periodic use of the sandbar downstream and across the river from the project area by interior least terns would continue. Pallid sturgeon are still expected to utilize the variety of channel habitats within the LMR. Fat pocketbook mussels are not expected to occur within the immediate vicinity of the project area due to the high velocities around the outside bend of the proposed work reach but may be found in other areas of suitable habitat. Protection of federally and threatened species would continue through formal and informal consultations under the Endangered Species Act. Most recently, a conservation plan for the interior least tern, pallid sturgeon, and fat pocketbook mussel has been developed for the conservation and recovery of these species in the LMR (USACE 2013). Effects of future USACE channel improvement activities in the LMR on endangered species are addressed in the Biological Opinion for the Channel Improvement Program, Mississippi River and Tributaries Project, Lower Mississippi River (USFWS 2013).

Future Conditions with the Proposed Action:

There are no sandbars or interior least tern nesting colonies along the outside bend where the underwater weirs would be installed. A small number of least terns (between 18 and 39 individuals) have been documented nesting on the sand point bar downstream and across the river channel from the proposed project area (USACE 1992, 1999, 2000, 2007, 2012). These colony locations are greater than 1,500 feet from the proposed project area. This distance exceeds most recommendations for buffers between waterbirds and human activities (USFWS 2013, Valente and Fischer 2011). All work would be done from floating barges; thus, there would be minimal impact to any terns that may decide to feed along the revetted bank, if work extended into the nesting season. Currents from the Mississippi River scour and move sandbars around each year. This is a natural occurrence to which the least tern is adapted. The small portion of the point bar that will eventually erode once the weirs are installed is expected to be less than 15 percent of the entire area of this large sandbar. The sandbar would still contain ample least tern nesting area following project construction. Overall, any adverse effects of the proposed bendway weir construction would be localized and any redistribution of sediments downstream would result in little loss of overall habitat quantity (USFWS 2013).

Although no pallid sturgeon have been collected in the immediate vicinity of the project area, they could utilize the revetted bank, main channel, and channel border in the vicinity of the project area. The channel border along the edge of the sandbar across from the project area would shift towards the opposite river bank after installation of the bendway weirs. Spawning sites have not yet been documented on the LMR, but spawning is suspected to occur on gravel bars. No gravel bars will be impacted by the proposed work. No significant adverse impacts to pallid sturgeon are expected due to the proposed actions. As noted in the 2013 U.S. Fish and

Wildlife Service (USFWS) Biological Opinion, bendway weir construction may have some local benefits to pallid sturgeon by providing current velocity shelters behind each weir and increased fish forage potential (USFWS 2013).

The swift river currents and shifting substrate along outside bends of the Mississippi River are not conducive habitat for the fat pocketbook pearly mussel. Furthermore, it is highly unlikely that any mussels would be found at the weir sites. The proposed project is not likely to adversely impact the species (USFWS 2013).

The proposed project is part of the Channel Improvement Program for the Mississippi River and Tributaries Project. The potential for adverse effects on the interior least tern, pallid sturgeon, and fat pocketbook mussel resulting from this program, including bendway weir construction, are addressed in the 2013 formal consultation with the U.S. Fish and Wildlife Service (USFWS), pursuant to Section 7 of the Endangered Species Act, as amended (USACE 2013, USFWS 2013).

4.4 CULTURAL RESOURCES

Future Conditions with No Action: With no action, there would be no anticipated direct, indirect, or cumulative impacts to cultural resources.

Future Conditions with the Proposed Action: Since all work will be conducted from the river, no known sunken vessels are in the project locations, and no grading will be conducted on the bank, there is not a possibility of affecting a significant cultural resource. The Arkansas State Historic Preservation Officer (SHPO) concurred that the proposed actions would not affect listed or eligible historic properties. A copy of this concurrence, dated 16 February 2014, is included in the appendix. However, if cultural remains are encountered during construction, all work would stop in the affected area and consultation will take place.

4.5 SOCIO-ECONOMIC RESOURCES

Future Conditions with No Action: The socio-economic resources in the immediate vicinity of the proposed project area are not expected to change from current conditions without implementation of the proposed action. However, there would be an increased risk of towboat accidents and associated impacts to waterborne commerce on the LMR during low water events as the sand point bar encroaches and narrows the navigation channel along this outside bend.

Future Conditions with the Proposed Action: Temporary disruption of waterborne commerce is likely during active construction occurring within the current navigation channel. Navigation traffic would likely be disrupted during hours of active construction; however, navigation traffic would be allowed to pass daily when construction ceased. Upon completion, the proposed action would result in a more efficient navigation channel and lower the risk of accidents and disruption of waterborne commerce at low river stages throughout this reach of the river. The proposed

bendway weirs would be constructed at an elevation of -30 LWRP or lower allowing for safe navigation over the weirs at all river stages.

4.6 ENVIRONMENTAL JUSTICE

Future Conditions with No Action: The No Action Alternative would have no direct disproportionately high or adverse human health or environmental effects on any minority and/or low-income populations as per Executive Order (E.O.) 12898.

Future Conditions with the Proposed Action: The minority population of Phillips County exceeds 50 percent; however, no residential, commercial, or industrial areas exist within or adjacent to the proposed project area. Under the preferred alternative, construction activities would take place entirely within an outside bend of the existing river channel. Swift currents along outside bends are not conducive to recreation, fishing, or significant use by the public. The Preferred Alternative would have no direct disproportionately high or adverse human health or environmental effects on any minority and/or low-income populations as per E.O. 12898.

4.7 AIR QUALITY

Future Conditions with No Action: Without implementation of the proposed action, air quality in the area would not change.

Future Conditions with the Proposed Action: Any impacts to ambient air quality due to emissions from equipment used for construction operations would be short-term and minor. The equipment used for the proposed action are classified as mobile sources. No permits are required for air emissions from mobile sources within attainment areas. The status of attainment in Phillips County would not be altered.

4.8 WATER QUALITY AND HYDROLOGY

Future Conditions with No Action: Without implementation of the proposed action, no significant changes to water quality or hydrology would likely occur due to current regulatory mechanisms and the existing management of the river.

Future Conditions with the Proposed Action: Some sediments (mostly sands) would be stirred up when the rocks comprising the bendway weirs are deposited onto the riverbed. This increased sediment load would be local and minor compared to the natural sediment load of the river, especially during high river stages. There would be no significant impacts to hypoxia (i.e. oxygen depletion) in the Gulf of Mexico. Overall, water quality impacts would be minimal during construction, and would quickly return to preconstruction levels after construction. A Section 404(b)(1) evaluation has been prepared for the placement of these bendway weirs into

the Mississippi River and is included in the appendix. Section 401 water quality certification has been requested from the State of Arkansas.

4.9 AQUATIC RESOURCES AND FISHERIES

Future Conditions with No Action: With no action, the aquatic resources and fisheries of the proposed project area would not change from current conditions.

Future Conditions with the Proposed Action: The revetted banks are most likely colonized by high densities of hydropsychid caddisflies. Low densities of chironomids, oligochaetes, amphipods, and nematodes most likely inhabit the sandy substrate along the river bottom. Once the bendway weirs are constructed, there would be an increase in eddy currents near the tips of the structures along the river bottom. High densities of hydropsychid caddisflies would be expected to quickly colonize the large limestone rocks comprising the bendway weirs. During construction, fish are expected to temporarily migrate upstream or downstream and many of the macroinvertebrates would most likely drift downstream. Minimal adverse impacts to aquatic resources are expected with construction, and the expected increase in densities of hydropsychid caddisflies may result in greater utilization of the project locations by benthic fishes. Construction would take place in swift water and thus should not have an effect on bighead or silver carp or other invasive species in the Mississippi River.

4.10 NAVIGATION

Future Conditions with No Action: Without implementation of the proposed action, the sand point bar along the left descending bank across from the proposed project location would continue to encroach into the navigation channel. Navigation hazards at this narrow, sharp bend would increase during low water events increasing the risk for an accident. Construction and maintenance activities associated with the channel improvement program of the MR&T project would continue in other reaches of the LMR with a purpose of providing an efficient navigation alignment.

Future Conditions with the Proposed Action: The purpose of the proposed project is to maintain navigation safety in the Mississippi River. Installing the bendway weirs would involve several barges and small towboats working along an outside river bend containing a narrow and swift navigation channel. The equipment required for bendway weir construction would extend into the narrow navigation channel at the project area causing a temporary disruption of navigation during hours of active construction. The contractor will have a contact pilot on the job at all times to manage towboat traffic and conduct communication with industry. The Coast Guard would be coordinated with during all phases of construction to ensure continued river navigation safety. After project completion, a wider and safer navigation channel is expected in this hazardous river reach. Additionally, bathymetric data would be collected after the installation of the bendway weirs to monitor their performance and associated effects to the main channel. The performance of the weirs would also be discussed with the Towing Industry at annual meetings.

The project location would also be further studied with acoustic Doppler current profiler data, if warranted.

4.11 HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE (HTRW)

A search of EPA databases on superfund sites (CERCLIS), toxic release inventory (TRI), Resource Conservation and Recovery Act (RCRA), and water discharge permits (PCS) revealed that no releases or spills occurred within the proposed work limits. No additional HTRW investigations are recommended unless new information is revealed or HTRW is discovered during construction.

4.12 CUMULATIVE IMPACTS

The Council on Environmental Quality's regulations (40 CFR 1500-1508) implementing the procedural provisions of the National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S.C. 4321 et seq.) define cumulative effects as "the impact on the environment which results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions (40 CFR 1508.7)." Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.

Federal efforts to improve navigation on the Mississippi River began as early as 1820 (USACE 1976). Surveys, maps, and charts were developed for the river, and USACE began the removal of stumps, snags, and other hazards to navigation in 1824. By the middle of the nineteenth century, growing river commerce and increased destruction from flooding created the need for more Federal participation in improvements for navigation and flood control. In 1879, the Mississippi River Commission (MRC) was created by an Act of Congress to prepare a plan to permanently locate and deepen the navigation channel, stabilize the banks, prevent destructive floods, and promote commerce along the river. Following the disastrous flood of 1927, the Flood Control Act of 1928 was passed committing the Federal Government to a definite program of flood control, channel stabilization, and river regulation, known as the Mississippi River and Tributaries (MR&T) Project. The MR&T project has four major features: 1) levees and floodwalls for flood protection, 2) floodways to divert excess flows past critical reaches, 3) channel improvement and stabilization for both navigation and flood control, and 4) tributary basin improvements for flood protection and drainage.

The MR&T project is responsible for many of the physical, hydraulic, and ecological features that presently exist in the LMR (Baker et al. 1991). Dikes, revetment, and bendway weirs found throughout the LMR have resulted in a mosaic of artificial and natural habitats utilized by aquatic organisms and wildlife, including at least 91 species of freshwater fishes (Baker et al. 1991). Bendway cutoffs constructed between 1929 and 1960 shortened the river by approximately 150 miles (Winkley 1977). Levee construction has greatly reduced the amount of seasonally inundated floodplain throughout the region. Keeping the channel from naturally

meandering has reduced the formation of new slackwater habitats in the floodplain. Since1960, channel engineering has resulted in a loss in the number of secondary channels and associated habitats (Williams and Clouse 2003). The primary environmental effects of the MR&T project and channel improvement activities include the physical loss of channel habitat quantity, a growing disconnect with the relict floodplain during low to moderate river stages, and a general loss of riverine habitat complexity (USACE 2013). Efforts to maintain, restore, and improve habitat values in the LMR have increased in recent years. In 2012 and 2013, ten thousand acres of batture, an area of active floodplain riverward of the levees, were placed under easement and reforested to increase the contiguous forested wetlands along the LMR (IEC 2014). Over 873,000 acres of wetlands have been restored as part of the Wetland Reserve Program in the LMR corridor encompassing lands both within and outside of the levee system (IEC 2014). A programmatic conservation plan was developed in 2013 detailing the actions and mechanisms by which the Channel Improvement Program of the MR&T project implements conservation measures to maintain and improve habitat values within the LMR (USACE 2013). The number and condition of secondary channels are monitored on the LMR and opportunities to maintain and restore connectivity are discussed and implemented annually (USACE 2013, USFWS 2013).

Maintenance dredging and construction and maintenance of channel improvement structures on the LMR, as part of the MR&T program, are conducted annually. Ongoing construction in the vicinity of the project area includes the placement of articulated concrete mattress on top of the existing damaged revetment for a length of approximately 6,800 feet along the bank in and adjacent to the project area. The proposed bendway weirs at the project location would result in the addition of permanently inundated rock substrates at this outside bend adding to the mosaic of artificial and natural habitats of the LMR. The extent of the encroaching sand point bar located across the channel from the proposed project location would be slightly reduced after construction resulting in a wider navigation channel. The preferred alternative would result in some minor alterations to the environment; however, no significant adverse cumulative impacts are expected due to the proposed action. Maintaining the navigation channel is part of an overall comprehensive plan for the MR&T Project. The direct, indirect, and cumulative impacts for other portions of the MR&T and associated project were previously addressed in the Prior Reports Section, above. The discussions of potential cumulative impacts contained in the cited documents are incorporated herein by reference. Overall, the project, in comparison to past, present, and reasonably foreseeable future projects, will not incrementally contribute adversely to the general project area.

5.0 COORDINATION

Comments are being solicited from the public; federal, state and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the impacts of the proposed activity. Any comments received will be considered by USACE to determine whether to modify or condition the project. The following agencies, as well as other interested parties, will receive copies of this draft EA and the draft FONSI:

U.S. Department of the Interior, Fish and Wildlife Service

U.S. Environmental Protection Agency, Region VI
U.S. Natural Resources Conservation Service, State Conservationist
Arkansas Game and Fish Commission
Arkansas Department of Environmental Quality
Arkansas State Historic Preservation Officer

6.0 MITIGATION

The Council on Environmental Quality's regulations (40 CFR 1508.20) implementing the procedural provisions of the National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S.C. 4321 et seq.) define "mitigation" as including a) avoiding the impact altogether by not taking a certain action or parts of an action; b) minimizing impacts by limiting the degree or magnitude of the action and its implementation; c) rectifying the impact by repairing, rehabilitating, or restoring the affected environment; d) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and e) compensating for the impact by replacing or providing substitute resources or environments.

No adverse impacts have been identified that would require compensatory mitigation.

7.0 COMPLIANCE WITH ENVIRONMENTAL LAWS AND REGULATIONS

Environmental compliance for the proposed action would be achieved upon: coordination of this EA and draft Finding of No Significant Impact (FONSI) with appropriate agencies, organizations, and individuals for their review and comments; USFWS confirmation that the proposed action would not be likely to adversely affect any endangered or threatened species; receipt of a Water Quality Certificate from the State of Arkansas; public review of the Section 404(b)(1) Public Notice; signature of the Section 404(b)(1) Evaluation; receipt of the State Historic Preservation Officer Determination of No Affect on cultural resources; receipt and acceptance or resolution of all USFWS Fish and Wildlife Coordination Act recommendations; and receipt and acceptance or resolution of all Arkansas Department of Environmental Quality comments on the air quality impact analysis documented in the EA. The FONSI will not be signed until the proposed action achieves environmental compliance with applicable laws and regulations, as described above.

8.0 CONCLUSION

This office has assessed the environmental impacts of various project alternatives. No significant impacts to wildlife, wetlands, threatened and endangered species, cultural resources, socio-economic resources, environmental justice, air quality, water quality and hydrology, aquatic resources and fisheries, and HTRW are expected. There are no foreseen cumulative impacts that would have a significant negative impact on human health or the environment. Therefore, an environmental impact statement is not warranted. Pending the results of the public

review of this document, a finding of no significant impact (FONSI) would be prepared, if warranted.

9.0 PREPARED BY

This draft EA and the associated draft FONSI were prepared by Mike Thron, biologist, with cultural resources input provided by Jim McNeil, archaeologist. The address of the preparer is: U.S. Army Corps of Engineers, Memphis District, Environmental Compliance Branch, Regional Planning and Environmental Division South, Attn: Mike Thron, 167 North Main St., B202, Memphis, TN 38103-1894.

10.0 REFERENCES

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APPENDIX

Plan Sheets

Section 404(b)(1) Evaluation

Correspondence with the Deputy State Historic Preservation Officer, dated February 6, 2014.

US Army Corps
of Engineers®
Memphis District

MISSISSIPPI RIVER CHANNEL IMPROVEMENT

FAIR LANDING BENDWAY WEIR CONSTRUCTION

PHILLIPS COUNTY, ARKANSAS

RIVER MILE 634R AHP

Solicitation: W912EQ-14-B-0015

Contract: W912EQ-14-C-XXXX

APRIL 2014

FINAL SET

THIS PROJECT WAS DESIGNED BY THE MEMPHIS DISTRICT CORPS OF ENGINEERS. THE INITIALS OR SIGNATURES AND REGISTRATIONS SHOWN ON THESE DRAWINGS AND TECHNICAL DOCUMENTS APPEAR ON THE ORIGINAL PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY ER 1110-1-8152. SIGNATURES INDICATE OFFICIAL RECOMMENDATION OF ALL DRAWINGS IN THIS SET.

APPROVED BY:

CHIEF ENGR & CONST DIVISION

US Army Corps of Engineers®
MEMPHIS DISTRICT

MARK	DESCRIPTION	DATE	APPR.

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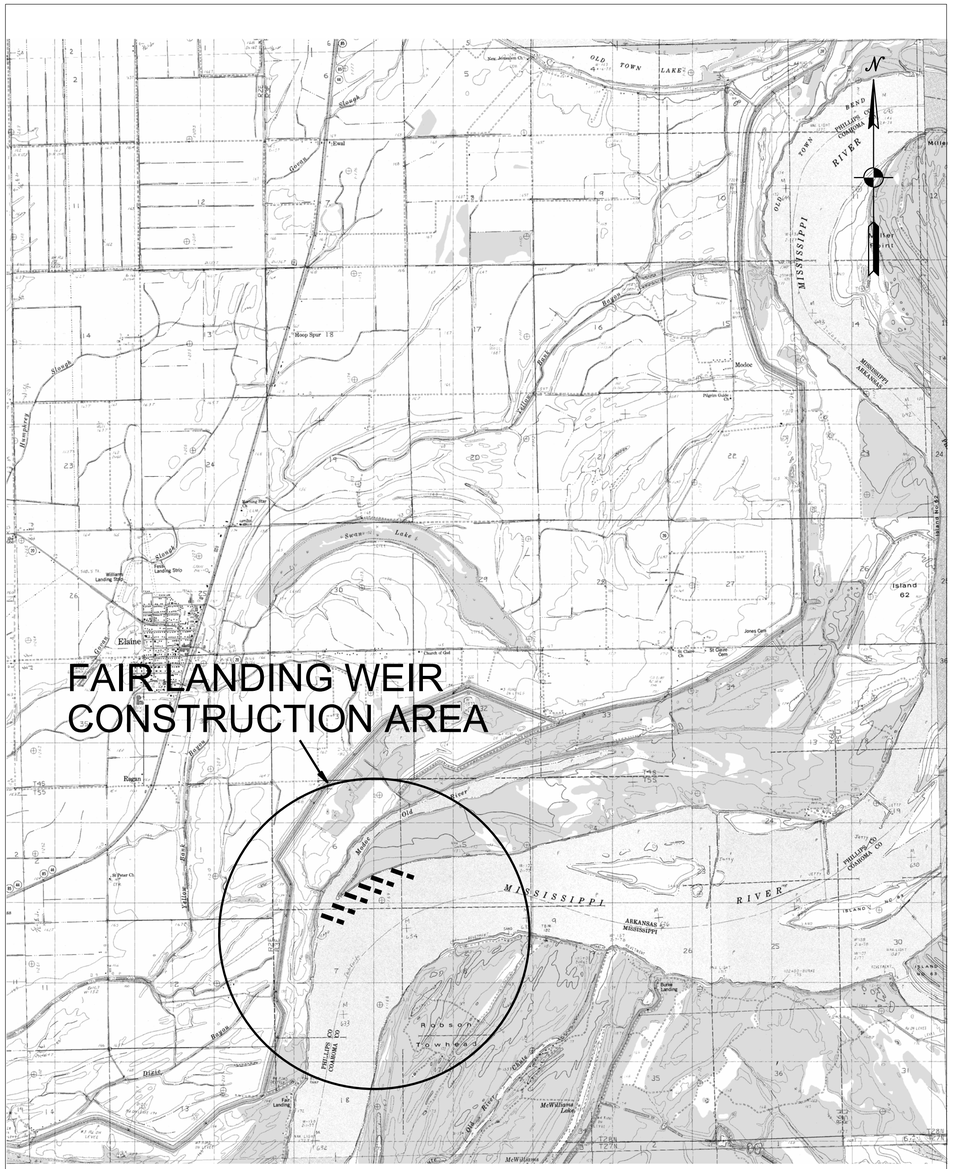
MEMPHIS DISTRICT
MEMPHIS, TENNESSEE

DESIGNED BY: WAS	DATE: APRIL 2014
DWN BY: WAS	CKD BY: DSC
SUBMITTED BY: DARIAN S. CHASTEEN, P.E.	SOLICITATION NO.: W912EQ-14-B-0015
PLOT SCALE: SCALE AS SHOWN	PLOT DATE:
SIZE: ANSI D	FILE NAME:
	CONTRACT NO.: W912EQ-14-C-XXXX
	FILE NUMBER:

MISSISSIPPI RIVER CHANNEL IMPROVEMENT
FAIR LANDING BENDWAY WEIR CONSTRUCTION
FAIR LANDING, AR
PHILLIPS COUNTY, ARKANSAS
RIVER MILE 634R AHP
COVER SHEET

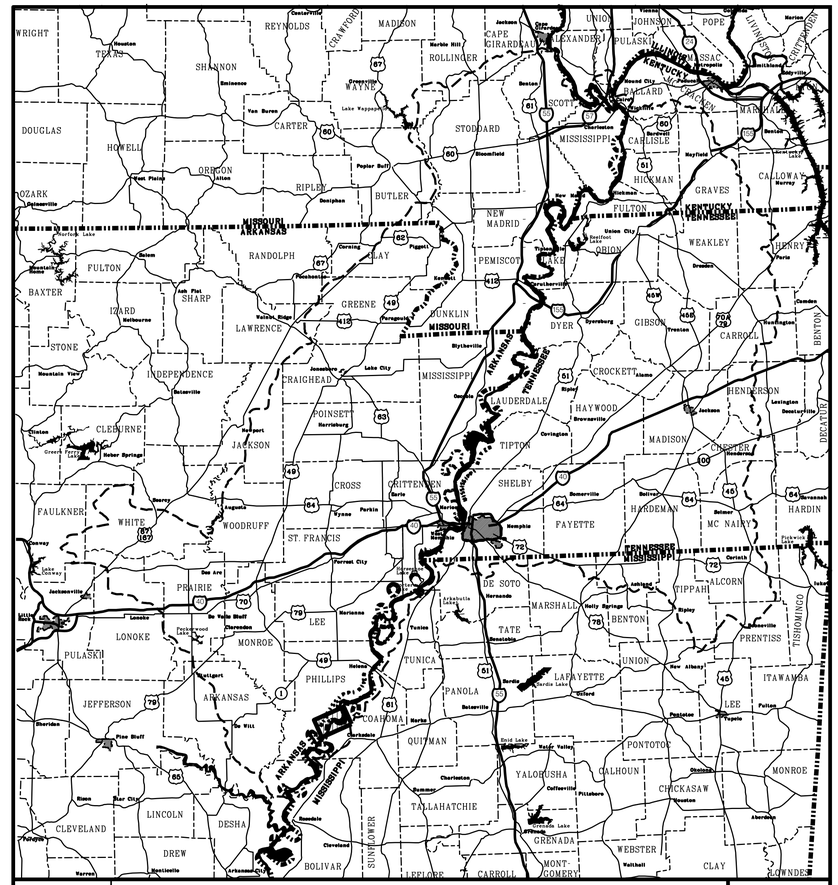
SHEET IDENTIFICATION
G-001
1 OF 9



PROJECT LOCATION MAP

0 1 MILE 2 MILE

1 INCH = 1 MILE



L E G E N D

VICINITY MAP

50 40 30 20 10 0 50 MILES

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	SUBMITTED BY: DARIAN S. CHASTEEN, P.E.	PLOT DATE:	CONTRACT NO.: W912EQ-14-C-XXXX
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MISSISSIPPI RIVER CHANNEL IMPROVEMENT
FAIR LANDING BENDWAY WEIR CONSTRUCTION
FAIR LANDING, AR
PHILLIPS COUNTY, ARKANSAS
RIVER MILE 634R AHP
VICINITY MAP

SHEET IDENTIFICATION
G-002
2 OF 9

NO.	INDEX OF DRAWINGS
G-001	COVER SHEET
G-002	LOCATION AND VICINITY MAP
G-003	INDEX, LEGEND AND ABBREVIATIONS
G-004	GENERAL MAP
C-101	WEIR 1 & 2 PROFILE
C-102	WEIR 3 & 4 PROFILE
C-103	WEIR 5 & 6 PROFILE
C-201	STANDARD DETAILS
X-101	HELENA STAGE HYDROGRAPH

TABULATION OF BENCHMARKS

BENCH MARKS	ELEVATION	DESCRIPTION
SG_633.0R	ELEV.: 165.017 FT	LAT, LONG: 34 15 55.15981, -90 50 13.44048
SG_633.8R	ELEV.: 156.944 FT	LAT, LONG: 34 16 50, -90 49 51
SG_634.4R	ELEV.: 160.797 FT	LAT, LONG: 34 17 05, -90 48 45

GENERAL NOTES:

1. WORKSIDE FOR WEIR PROJECT IS RIGHT BANK AS DEFINED BY LOOKING DOWNSTREAM.

2. DO NOT DISTURB EXISTING CULVERTS OR IRRIGATION PUMPS.

3. HORIZONTAL DATA WAS COMPUTED BY USING NORTH AMERICAN DATUM OF 1983 (NAD83) AND UNIVERSAL TRANSVERSE MERCATOR ZONE 15 IN U.S. SURVEY FEET. VERTICAL DATA WAS COMPUTED USING N.A.V.D. 88 IN U.S. SURVEY FEET.

4. LOCATIONS OF EXISTING ABOVE GROUND AND UNDERGROUND UTILITIES INDICATED ON THE PLANS ARE APPROXIMATE ONLY, AND THOSE INDICATED ARE NOT NECESSARILY ALL WHICH MAY EXIST ON THE PROJECT SITE. THE CONTRACTOR SHALL DETERMINE THE ACTUAL LOCATION OF ALL UTILITIES ON THE PROJECT SITE.

5. DO NOT DISTURB EXISTING UTILITIES. ANY DAMAGE TO THE UTILITIES OR INTERRUPTIONS OF THE SERVICE CAUSED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED AND THE SERVICE RESTORED PROMPTLY AT THE CONTRACTOR'S EXPENSE.

6. SEE THIS SHEET FOR BENCHMARK INFORMATION.

7. FOR FURTHER INFORMATION REGARDING BENCHMARKS, CONTACT THE MEMPHIS DISTRICT'S U.S. ARMY CORPS OF ENGINEERS GEOSPATIAL OFFICE.

UTILITY DISPOSITION LEGEND

- NO WORK ACCESS ONLY
- TO BE RELOCATED
- TO BE REMOVED
- TO BE REPLACED
- DO NOT DISTURB
- PIPELINE PROTECTION TO BE PROVIDED
- BY CONTRACTOR
- (2) - BY OWNER
- (A) - PRIOR TO CONSTRUCTION
- (B) - DURING CONSTRUCTION

GENERAL CROSS-REFERENCING SYMBOLS

DETAIL/SECTION
SUPPLEMENTAL INFORMATION
SCALE: ----------
A
SECTION/DETAIL TITLE ON SAME DRAWING (CENTERED UNDER SECTION/DETAIL)

DETAIL/SECTION
SCALE: _____
2
99/999
SECTION/DETAIL TITLE ON ANOTHER DRAWING (CENTERED UNDER SECTION/DETAIL)

TOP ELEVATION
FRONT SECTION
SIDE
A
VIEW SUBTITLE (CENTERED UNDER EACH VIEW)

2
SECTION CUT W/ VIEW SHOWN ON SAME DRAWING

2
99/999
SECTION CUT W/ VIEW SHOWN ON ANOTHER DRAWING

A
DETAIL SYMBOL W/ VIEW SHOWN ON SAME DRAWING

DETAIL SYMBOL W/ VIEW SHOWN ON ANOTHER DRAWING

ABBREVIATIONS

* UNLESS OTHERWISE NOTED ON EACH SHEET

APPROX	APPROXIMATE	HT	HEIGHT
ALT W/	ALTERNATE WITH	IF	INSIDE FACE
ALUM	ALUMINUM	LG	LONG
BITUM	BITUMINOUS	L/W	LANDWARD
BOT	BOTTOM	MAX	MAXIMUM
CL	CENTER LINE	MIN	MINIMUM
LB	LEVEE BASELINE	MIRR	MIRRORED
LCB	LOCUST CREEK BASELINE	MISC	MISCELLANEOUS
EME	EXCAVATED MATERIAL EMBANKMENT	NF	NEAR FACE
		NO	NUMBER
CONC	CONCRETE	OF	OUTSIDE FACE
		OC	ON CENTER
DIA	DIAMETER	R/W	RIVERWARD
DWG	DRAWING	SAN	SANITARY
CMP	CORRUGATED METAL PIPE	SPEC	SPECIFICATIONS
EJ	EXPANSION JOINT	SST	STAINLESS STEEL
EL	ELEVATION	T&B	TOP AND BOTTOM
EW	EACH WAY	TYP	TYPICAL
EXIST	EXISTING	UNO	UNLESS NOTED OTHERWISE
FF	FAR FACE	UNGD	UNDERGROUND
FES	FLARED END SECTION	W	WIDTH
GALV	GALVANIZED	WM	WATER MAIN

GENERAL LEGEND

- P.I. POINT
- FIRE HYDRANT
- MANHOLE
- CATCHBASIN (CB)
- WATER VALVE
- POWER POLE
- $S\ S_x$ — EXISTING SANITARY SEWER
- $S\ D_x$ — EXISTING STORM SEWER
- W_x — WATERMAIN
- E_x — EXISTING OVERHEAD P0WER
- EXISTING FENCE
- G_x — EXISTING GAS
- C_x — EXISTING COMMUN. LINE (TELEPHONE)
- C T V — EXISTING CABLE (COAXIAL T.V.)
- C P — EXISTING CULVERT PIPE
- 97-41M — BORING LOCATION AND NUMBER
- SHEETPILE
- FILL
- CUT
- LEVEE
- RIGHT OF WAY
- LIMIT OF CONSTRUCTION
- C/E — CONSTRUCTION EASEMENT
- LEVEE BASELINE

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DESIGNED BY: WAS
DRN BY: WAS
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SUBMITTED BY: DARIAN S. CHASTEEN, P.E.
PLOT SCALE:
PLOT DATE:
SIZE: ANSI D
FILE NAME: XXXXXXXX.dgn
DATE: APRIL 2014
SOLICITATION NO.: W912EQ-14-B-XXXX
CONTRACT NO.: W912EQ-14-C-XXXX
FILE NUMBER:

U.S. ARMY CORPS OF ENGINEERS
MEMPHIS DISTRICT
MEMPHIS, TENNESSEE

SCALE AS SHOWN

MISSISSIPPI RIVER
CHANNEL IMPROVEMENT
FAIR LANDING BENDWAY WEIR CONSTRUCTION
FAIR LANDING, AR
PHILLIPS COUNTY, ARKANSAS
RIVER MILE 634R AHP

INDEX, LEGEND, AND ABBREVIATIONS

SHEET IDENTIFICATION
G-003
3 OF 9

ARKANSAS
PHILLIPS COUNTY

N

500 250 0 500 1000Feet

FAIR LANDING REVETMENT

BURKE LANDING REVETMENT

BENDWAY WEIRS
TO BE CONSTRUCTED
TO -30 LWRP

1
2
3
4
5
6

23+00
30+00
33+21
40+00
43+30
50+47 o/s
50+00
66+82
72+40
82+00
91+68
80+55
74+84
88+00
01+70
12+56

32+00
32+00 o/s
22+00
12+00
01+65
38+00
46+00

634
635

FLOW
MISSISSIPPI RIVER

NOV 2013 SWEEP SURVEY
JULY 2013 HYDRO SURVEY

MISSISSIPPI
COAHOMA COUNTY

FALL 2012 PHOTO

LEGEND

WEIR TO BE CONSTRUCTED

EXISTING STONE DIKE

NOTE: CONTOURS ARE ABOVE AND BELOW THE 2007 LOW WATER REFERENCE PLANE (LWRP).

ELEVATIONS ARE REFERENCED TO NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 1988).

HORIZONTAL DATA WAS COMPUTED ON THE NORTH AMERICAN DATUM OF 1983 (NAD83) USING UTM ZONE 15 PLANE COORDINATES IN FEET.

AZIMUTHS ARE REFERENCED TO 0 NORTH.

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SOLICITATION NO.: W912EQ-14-B-XXXX
CONTRACT NO.: W912EQ-14-C-XXXX
PLOT SCALE: 1:416.667
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U.S. ARMY CORPS OF ENGINEERS
MEMPHIS DISTRICT
MEMPHIS, TENNESSEE

SCALE
1 : 5,000

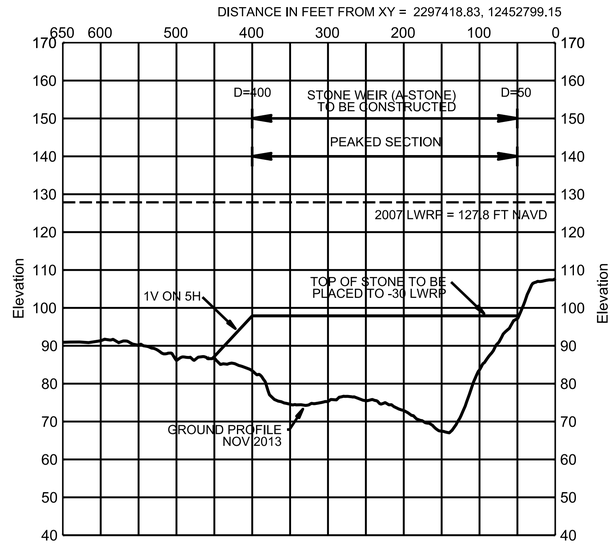
MISSISSIPPI RIVER
CHANNEL IMPROVEMENT

FAIR LANDING BENDWAY WEIR
CONSTRUCTION
FAIR LANDING, AR
PHILLIPS COUNTY, ARKANSAS
RIVER MILE 634R AHP

GENERAL MAP

SHEET IDENTIFICATION
G-004
4 OF 9

WEIR CONTROL POINTS TO BE
ADDED PRIOR TO CONSTRUCTION



PROFILE
WEIR NO. 1
AZ 121°26'32"

WEIR CONTROL POINTS TO BE
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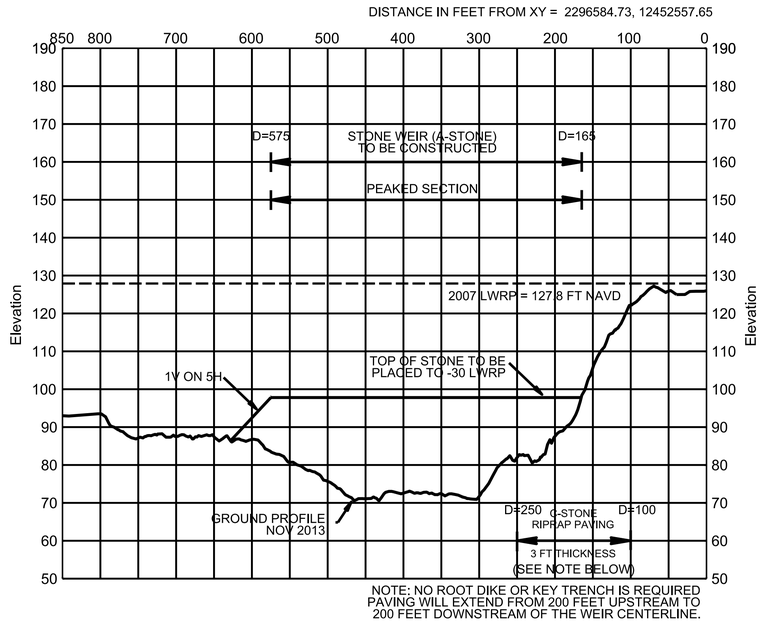

NOTE: NO ROOT DIKE OR KEY TRENCH IS REQUIRED
PAVING WILL EXTEND FROM 200 FEET UPSTREAM TO
200 FEET DOWNSTREAM OF THE WEIR CENTERLINE.

PROFILE
WEIR NO. 2
AZ 119°34'32"

US Army Corps of Engineers

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FILE NAME:

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MEMPHIS DISTRICT
MEMPHIS, TENNESSEE

SCALE AS SHOWN

MISSISSIPPI RIVER CHANNEL IMPROVEMENT
FAIR LANDING BENDWAY WEIR
CONSTRUCTION
FAIR LANDING, AR
PHILLIPS COUNTY, ARKANSAS
RIVER MILE 634R AHP
WEIR PROFILES 1 & 2

SHEET IDENTIFICATION
C-101
5 OF 9

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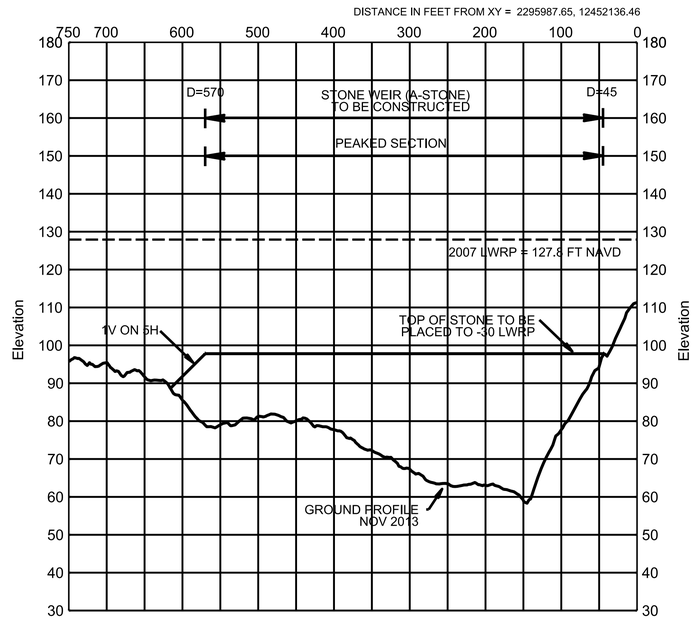
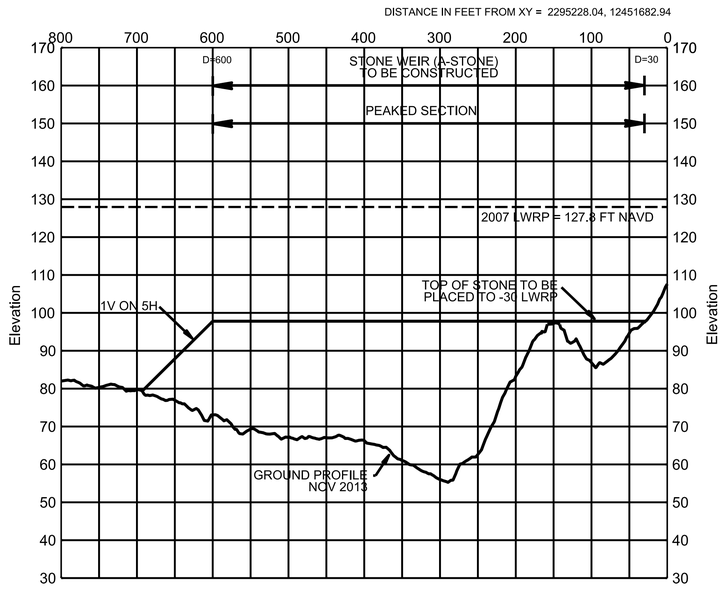


PROFILE
WEIR NO. 3
AZ 108°40'15"

WEIR CONTROL POINTS TO BE
ADDED PRIOR TO CONSTRUCTION



PROFILE
WEIR NO. 4
AZ 102°20'39"

US Army Corps of Engineers

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CKD BY: DSC
SUBMITTED BY: DARIAN S. CHASTEEN, P.E.
PLOT SCALE
PLOT DATE:
SIZE:
DATE: APRIL 2014
SOLICITATION NO.: W912EQ-14-B-XXXX
CONTRACT NO.: W912EQ-14-C-XXXX
FILE NUMBER:
FILE NAME:

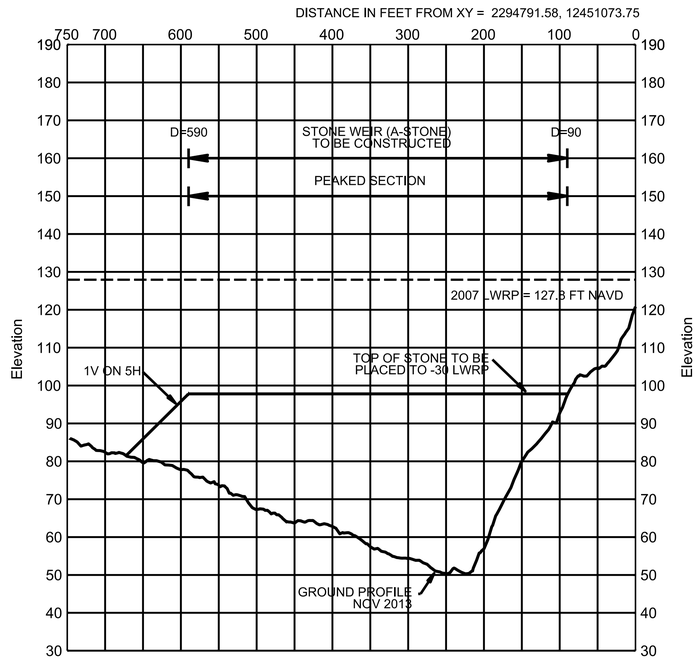
U.S. ARMY CORPS OF ENGINEERS
MEMPHIS DISTRICT
MEMPHIS, TENNESSEE

SCALE AS SHOWN

MISSISSIPPI RIVER CHANNEL IMPROVEMENT
FAIR LANDING BENDWAY WEIR
CONSTRUCTION
FAIR LANDING, AR
PHILLIPS COUNTY, ARKANSAS
RIVER MILE 634R AHP
WEIR PROFILES 3 & 4

SHEET IDENTIFICATION
C-102
6 OF 9

WEIR CONTROL POINTS TO BE ADDED PRIOR TO CONSTRUCTION



PROFILE
WEIR NO. 5
AZ 95°06'46"

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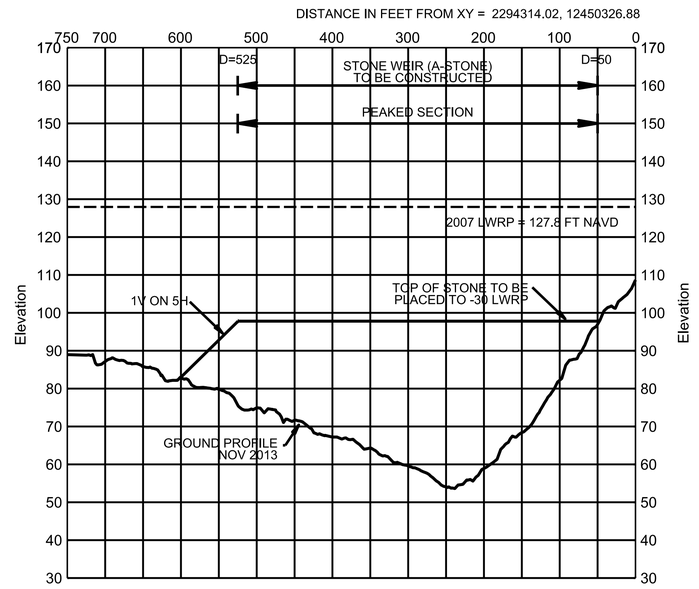


PROFILE
WEIR NO. 6
AZ 83°16'30"

US Army Corps of Engineers

MARK	DESCRIPTION	DATE	APPR.

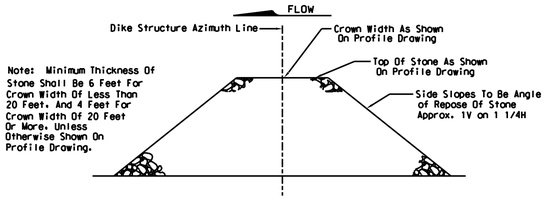
DESIGNED BY: WAS
DWN BY: WAS
CKD BY: DSC
SUBMITTED BY: DARIAN S. CHASTEEN, P.E.
DATE: APRIL 2014
SOLICITATION NO.: W912EQ-14-B-XXXX
CONTRACT NO.: W912EQ-14-C-XXXX
PLOT SCALE
PLOT DATE:
FILE NUMBER:
SIZE:
FILE NAME:

U.S. ARMY CORPS OF ENGINEERS
MEMPHIS DISTRICT
MEMPHIS, TENNESSEE

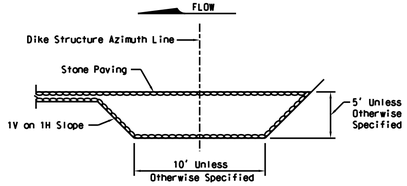
SCALE AS SHOWN

MISSISSIPPI RIVER CHANNEL IMPROVEMENT
FAIR LANDING BENDWAY WEIR CONSTRUCTION
FAIR LANDING, AR
PHILLIPS COUNTY, ARKANSAS
RIVER MILE 634R AHP
WEIR PROFILES 5 & 6

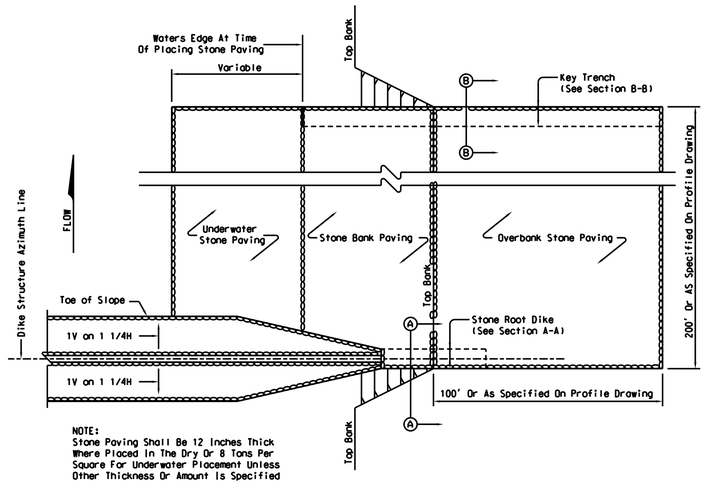
SHEET IDENTIFICATION
C-103
7 OF 9



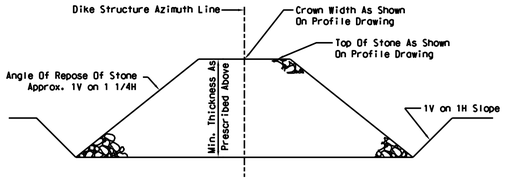
TYPICAL SECTION
STONE DIKE
NO SCALE



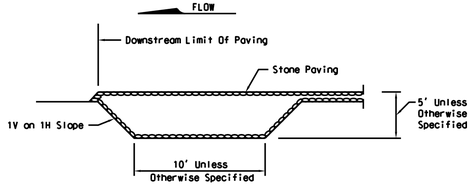
SECTION A-A
STONE ROOT DIKE
NO SCALE



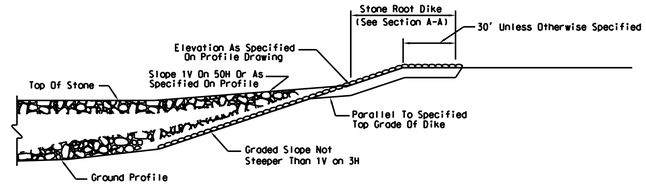
TYPICAL PLAN
STONE DIKE BANKHEAD
NO SCALE



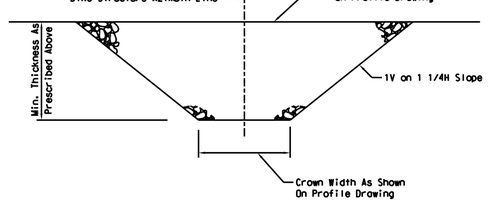
TYPICAL SECTION
STONE DIKE
WHERE EXCAVATION IS REQUIRED
FOR MINIMUM THICKNESS
NO SCALE



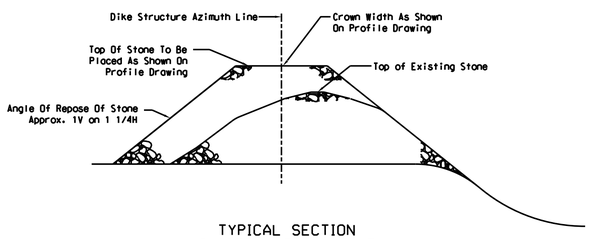
SECTION B-B
STONE PAVING KEY TRENCH
NO SCALE



TYPICAL SECTION
STONE DIKE BANKHEAD
NOT TO SCALE

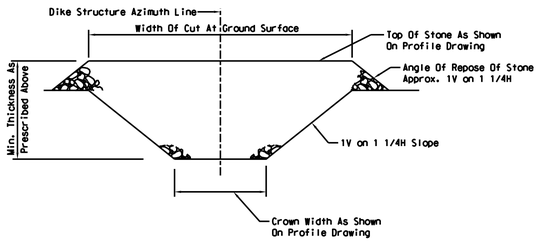


INVERTED DIKE SECTION
TOP OF STONE AT OR BELOW NATURAL GROUND
NO SCALE

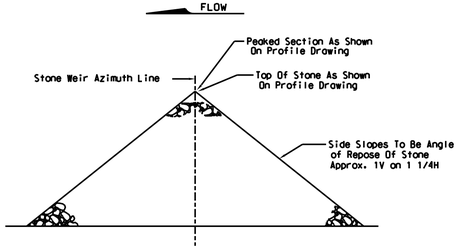


TYPICAL SECTION
RAISED LATERAL DIKE
NO SCALE

NOTE: The centerline of the proposed dike shall be adjusted (as necessary) to take full advantage of the existing dike section



INVERTED DIKE SECTION
TOP OF STONE ABOVE NATURAL GROUND
NO SCALE



TYPICAL SECTION
PEAKED WEIR
NO SCALE

US Army Corps of Engineers
MEMPHIS DISTRICT

MARK	DESCRIPTION	DATE	APPR.

DESIGNED BY: WAS
DWN BY: WAS
CKD BY: DSC
SUBMITTED BY: DARIAN S. CHASTEEN, P.E.
PLOT SCALE:
PLOT DATE:
FILE NAME:
SIZE: ANSI D
DATE: APRIL 2014
SOLICITATION NO.: W912EQ-14-B-XXXX
CONTRACT NO.: W912EQ-14-C-XXXX
FILE NUMBER:

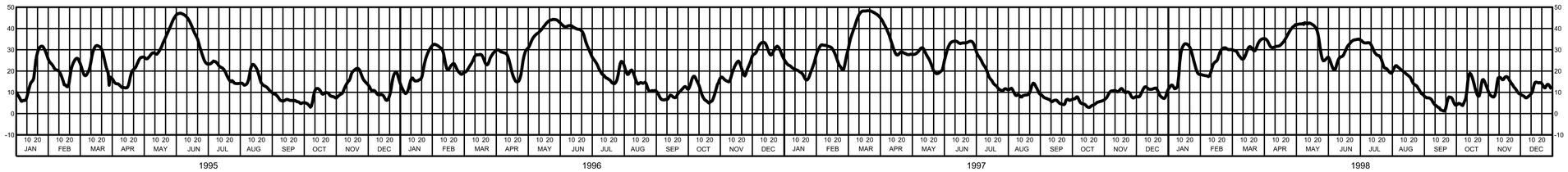
U.S. ARMY CORPS OF ENGINEERS
MEMPHIS DISTRICT
MEMPHIS, TENNESSEE

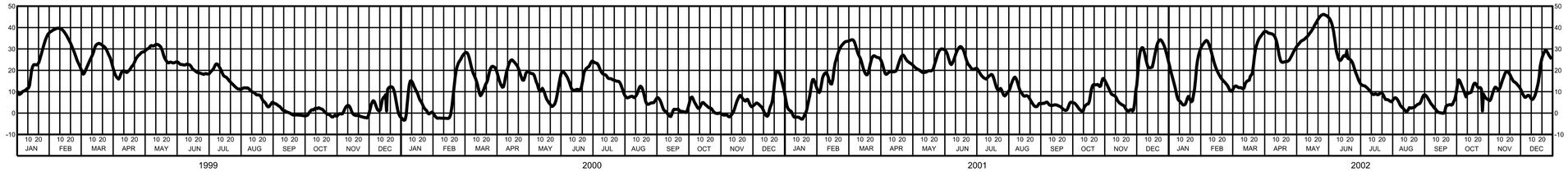
SCALE AS SHOWN

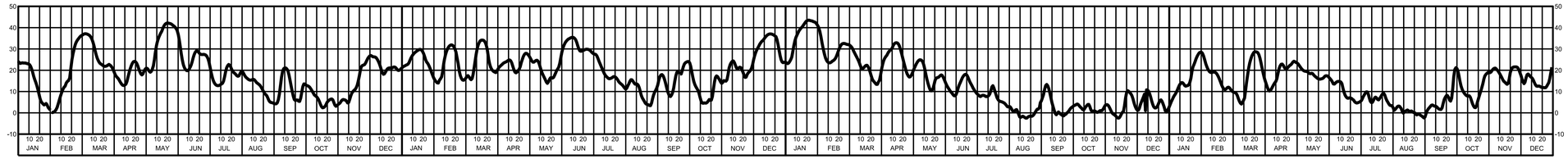
MISSISSIPPI RIVER CHANNEL IMPROVEMENT

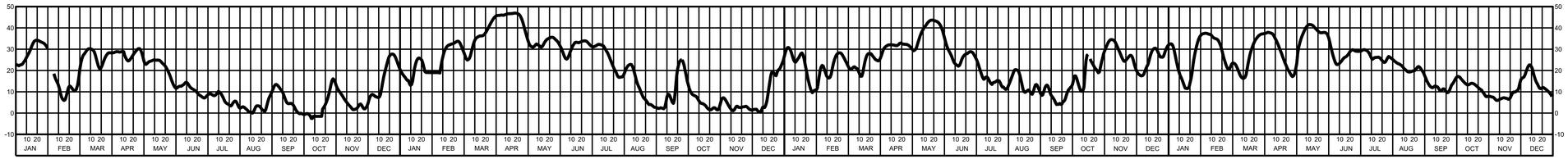
DIKE AND WEIR STANDARD DETAILS

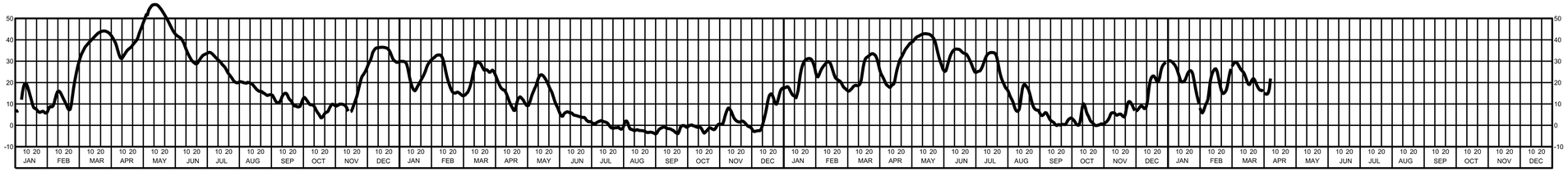
SHEET IDENTIFICATION
C-201
8 OF 9











US Army Corps of Engineers®

MARK	DESCRIPTION	DATE	APPR.

MARK	DESCRIPTION	DATE	APPR.

DATE: $DATE$
SOLICITATION NO.:
CONTRACT NO.:
FILE NUMBER:

DESIGNED BY: KHW
DWN BY: KHW
CKD BY: DSC
SUBMITTED BY: Darian S. Chasteen, P.E.
PLOT DATE: $DATE$
PLOT SCALE: $SCALE$
SIZE:
FILE NAME:

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
MEMPHIS, TENNESSEE

SCALE : AS SHOWN

HELENA, AR

STAGE HYDROGRAPH - HELENA GAGE

RIVER MILE - 663.1

SHEET IDENTIFICATION
X-101
9 OF 9

auto_time

SECTION 404(b)(1) EVALUATION

Bendway Weir Construction – Mississippi River
At Fair Landing (River Mile 634R AHP),
Phillips County, Arkansas

I. PROJECT DESCRIPTION

a. Location. The proposed bendway weir construction at the Fair Landing is located along the right descending bank of the Mississippi River between River Miles 635R above head of passes (AHP) and 633R AHP in Phillips County, Arkansas.

b. General Description. The work at Fair Landing (~ River Mile 634R AHP) will involve placement of approximately 360,000 tons of Graded Stone A in six bendway weirs. The bendway weirs will extend riverward from the right descending bank and vary from 400 to 500 feet in length. Crown widths of the weirs will be approximately 14 feet.

No bank grading or excavation of material will be required to tie the weirs into the riverbank. In order to ensure the integrity of weir number two (the second most upstream dike), rock paving consisting of Graded Stone C for a thickness of 3 feet would extend from approximately 200 feet upstream to approximately 200 feet downstream of the weir centerline. The tops of all weirs would be constructed to an elevation of 30 feet below the Low Water Reference Plane (i.e. -30 LWRP). The LWRP is a computed water surface elevation profile based on low discharge statistics for a long period of daily gage records (i.e. the 97 percent exceedance discharge over a 20-year period of record). In other words, there would be at least 30 feet or more of water over the tops of the weirs even at low river stages to ensure safe navigation.

c. Authority and Purpose. The project is authorized by the Flood Control Act of 15 May 1928, Public Law No. 391-70, as amended and supplemented by subsequent Acts of Congress. This Act authorized the Mississippi River and Tributaries (MR&T) Project, which included channel improvement and stabilization works for stabilizing the channel to provide an efficient navigation alignment and protection of flood control features in the Lower Mississippi River. The purpose of this project is to create a safer navigation channel for towboats in the Mississippi River by reducing the strong drafting currents that presently exist.

d. General Description of Dredged and /or Fill Material.

(1) General Characteristics of Fill Material. Fill material will consist entirely of limestone rock. Graded Stone A will be used for construction of the weirs, and Graded Stone C will be used for bank stability upstream and downstream of weir number 2. Size requirements for Graded Stone A and Graded Stone C are shown below:

GRADED STONE A	
Stone Weight (LBS)	Cumulative % Finer by Weight
5000	100
2500	70-100
500	40-65
100	20-45
5	0-15
1	0-5

GRADED STONE C	
Stone Weight (LBS)	Cumulative % Finer by Weight
400	100
250	70-100
100	50-80
30	32-58
5	15-34
1	0-15

(2) Quantity of Material. The work at Fair Landing will involve placement of approximately 360,000 tons of Graded Stone A in six bendway weirs and placement of a total of approximately 7,000 tons of Graded Stone C for a thickness of 3 feet extending approximately 200 feet upstream and 200 feet downstream of the centerline of weir number two.

(3) Source of Material. The Graded Stone A and Graded Stone C will be obtained from quarries producing stone which meets USACE specifications.

e. Description of Proposed Discharge Sites.

(1) Location. Six bendway weirs will be constructed at Fair Landing extending riverward from the right descending bank of the Mississippi River between River Miles 633R and 635R in Phillips County, Arkansas.

(2) Size. The proposed bendway weirs will vary from approximately 400 to 500 feet in length with crown widths of approximately 14 feet.

(3) Type of Habitat. The bendway weirs will be placed in the swift currents along an outside bend in the lower Mississippi River. The weirs will tie into the existing revetted bank, will extend riverward along the primarily sand river bottom, and will remain at least 30 feet or more underwater even at low river stages.

(4) Timing and Duration of Discharge. The proposed construction would last approximately 90 days. Construction is typically conducted during the low water season extending from September through December.

f. Description of Disposal Method. Barge mounted draglines equipped with rock buckets will pull stone from floating barges into the river at the construction sites.

II. FACTUAL DETERMINATION

a. Physical Substrate Determinations.

(1) Substrate Elevation and Slope. There will be an immediate change in substrate elevation and slope over the areal extent of the structures. The bendway weirs will consist of a rock mound of uniform shape extending from the existing ACM along the outside bend into the

navigation channel. Sediment will be captured between the underwater weirs raising the channel depth along these outside bends; however, the elevation of the bendway weirs and associated trapped sediments will remain at a -30 LWRP allowing for passage of barge traffic even during low river stages. A small portion of the encroaching point bar will be removed as the currents shift away from the revetted bank along this outside bend.

(2) Sediment Type. The project sites are located entirely within the existing channel of the Mississippi River. The lower Mississippi River channel is comprised mainly of gravel, sands, silts, and clays. The stone used for the bendway weir construction will be Graded Stone A and Graded Stone C.

(3) Dredged and Fill Material Movement. No bank grading or excavation is required for the installation of the bendway weirs. Draglines will pull rock from floating barges into the river to construct the weirs. Extreme high flows may cause some potential scour and dike stone to be dislodged from the structures in the future resulting in a need for minor repairs; however, no major failures are likely to occur.

(4) Physical Effects on Benthos. Due to the high velocities and shifting substrate along the outside bend, few or no mussels are likely to inhabit the project locations or be affected by construction. The existing revetted bank are most likely colonized by high densities of hydropsychid caddisflies. Low densities of chironomids, oligochaetes, amphipods, and nematodes most likely inhabit the sandy substrate along the river bottom. During construction, many of the macroinvertebrates in the immediate vicinity of the project are expected to drift downstream. High densities of hydropsychid caddisflies would be expected to quickly colonize the large limestone rocks comprising the bendway weirs after construction. Benthic fish would temporarily shift upstream or downstream during construction. Greater utilization of the project locations by benthic fishes are expected after construction due to the expected increase in densities of macroinvertebrates.

(5) Other Effects. N/A

(6) Action Taken to Minimize Impacts. Construction of the bendway weirs will be carefully planned and executed. Contractors are required to maintain proper alignment of the weir structures. The fill material is clean limestone rock; thus, there will be minimal wash resulting from the placement of the stones. Contractors are also responsible for an approved environmental protection plan for the prevention/control of pollution and habitat disruption that may occur to the environment during construction.

b. Water Circulation, Fluctuation, and Salinity Determination.

(1) Water.

(a) Salinity. N/A

(b) Water Chemistry. No expected change.

(c) Clarity. Some sediments (mostly sands) will be stirred up when the rocks comprising the bendway weirs are deposited onto the riverbed. This increased sediment load will be local and minor compared to the natural sediment load of the river, especially during high river stages.

(d) Color. No expected change.

(e) Odor. No expected change.

(f) Taste. No expected change.

(g) Dissolved Gas Levels. No expected change.

(h) Nutrients. No expected change.

(i) Eutrophication. No expected change.

(j) Others as Appropriate. N/A

(2) Current Patterns and Circulation.

(a) Current Patterns and Circulation. With the installation of the bendway weirs, secondary currents which are currently directed downward thus deepening the channel and depositing sediment onto the encroaching point bar will be redirected. The weirs would eventually remove a small part of the edge of the sand bar that is encroaching from across the river. This would widen the channel and reduce the swift currents along the toe of the revetted riverbank. Sediments will be deposited between the bendway weirs rather than building up on the encroaching point bar.

(b) Velocity. The bendway weirs will redirect the swift currents away from the outside riverbank allowing for a wider and safer navigation channel.

(c) Stratification. No expected change.

(d) Hydrologic Regime. No expected change.

(3) Normal Water Level Fluctuations. The bendway weirs will have no discernible effects on normal water level fluctuations or overall river stages.

(4) Salinity Gradients. N/A

(5) Action Taken to Minimize Impacts. Construction of the bendway weirs will be carefully planned and executed. Contractors are required to maintain proper alignment of the weir structures. The fill material is clean limestone rock; thus, there will be minimal wash resulting from the placement of the stones. Contractors are also responsible for an approved

environmental protection plan for the prevention/control of pollution and habitat disruption that may occur to the environment during construction.

c. Suspended Particulate/Turbidity Determination.

(1) Expected Changes in suspended Particulates and Turbidity Levels in Vicinity of Disposal Sites. Some sediments (mostly sands) will be stirred up when the Graded Stone A and Graded Stone C are first deposited onto the riverbed and existing revetted bank. This increased sediment load will be local and minor compared to the natural sediment load of the river, especially during high river stages.

(2) Effects on Chemical and Physical Properties of the Water Column.

(a) Light Penetration. The temporary increase in turbidity during construction will be minor and not detectable from the surface. The proposed project will have no effect on light penetration.

(b) Dissolved Oxygen. No change is expected.

(c) Toxic Metals and Organics. No change is expected.

(d) Pathogens. N/A

(e) Aesthetics. The bendway weirs will remain underwater at all times. A small portion of the encroaching point bars will be removed resulting in a wider navigation channel during low water stages.

(f) Others as Appropriate. None noted.

(3) Effects on Biota.

(a) Primary Production. The proposed work should have no distinguishable effects on primary productivity in the lower Mississippi River.

(b) Suspension/Filter Feeders. Due to the high velocities and shifting substrate along the outside bends, few or no freshwater mussels are likely to inhabit the project locations or be affected by construction. Some benthic macroinvertebrates inhabiting the river bottom and existing ACM along the outside bends may drift downstream as rock is being deposited. Benthic macroinvertebrates are expected to quickly colonize the stones comprising the bendway weirs after construction, particularly hydropsychid caddisflies.

(c) Sight Feeders. Resident fish are adapted to turbidity increases that occur with high water events. Project-related turbidity increases will be minor compared to these natural events. Since fish and other sight feeders are highly mobile, project impacts to sight-feeding organisms will be insignificant and short term.

(4) Actions Taken to Minimize Impacts. Construction of the bendway weirs will be carefully planned and executed. Contractors are required to maintain proper alignment of the weir structures. The fill material is clean limestone rock; thus, there will be minimal wash resulting from the placement of the stones. Contractors are also responsible for an approved environmental protection plan for the prevention/control of pollution and habitat disruption that may occur to the environment during construction.

d. Contaminant Determinations. It is not expected that any contaminants will be introduced or translocated due to construction.

e. Aquatic Ecosystems and Organism Determination.

(1) Effects on Plankton. Effects, if any, on plankton communities are expected to be insignificant and of short duration.

(2) Effects of Benthos. Due to the high velocities and shifting substrate along the outside bends, few or no mussels are likely to inhabit the project locations or be affected by construction. The existing revetted bank is most likely colonized by high densities of hydropsychid caddisflies. Low densities of chironomids, oligochaetes, amphipods, and nematodes most likely inhabit the sandy substrate along the river bottom. During construction, many of the macroinvertebrates in the immediate vicinity of the project are expected to drift downstream. High densities of hydropsychid caddisflies would be expected to quickly colonize the large limestone rocks comprising the bendway weirs after construction. Benthic fish would temporarily shift upstream or downstream during construction. Greater utilization of the project locations by benthic fishes are expected after construction due to the expected increase in densities of macroinvertebrates.

(3) Effects on Nekton. Nekton will be temporarily displaced during construction, but will return shortly after project completion. Greater utilization of this river reach by benthic fishes may occur after construction due to the expected increase in densities of hydropsychid caddisflies associated with the structures.

(4) Effects on Aquatic Food Web. Temporary reductions in benthic and suspension/filter communities and drift from such a small area should not significantly impact the aquatic food web. These organisms will quickly colonize the area after construction.

(5) Effects on Special Aquatic Sites.

(a) Sanctuaries and Aquatic Sites. N/A

(b) Wetlands. There are no wetlands within the Mississippi River channel in the vicinity of the project. Thus, there would be no impacts to wetlands.

(c) Mud Flats. NA

(d) Vegetated Shallows. N/A

(e) Riffle and Pool Complexes. None exist within the proposed project area.

(6) Threatened and Endangered Species. There are no sandbars or interior least tern nesting colonies along the outside bend where the underwater weirs would be installed. A small number of least terns (between 18 and 39 individuals) have been documented nesting on the sand point bar downstream and across the river channel from the proposed project area. It is extremely unlikely that any work would extend into the least tern nesting season since all work is planned to be conducted in the winter of 2014. Nevertheless, these colony locations are located greater than 1,500 feet from the proposed project area. This distance exceeds most recommendations for buffers between waterbirds and human activities. All work would be done from floating barges; thus, there would be minimal impact to any terns that may decide to feed along the revetted bank, with the small chance that work would need to extend into the nesting season. Currents from the Mississippi River scour and move sandbars around each year. This is a natural occurrence to which the least tern is adapted. The small portion of the point bar that will eventually erode once the weirs are installed is expected to be less than 15 percent of the entire area of this large sandbar. The sandbar would still contain ample least tern nesting area following project construction. Overall, any adverse effects of the proposed bendway weir construction are localized and any redistribution of sediments downstream would result in little loss of overall habitat quantity. Although no pallid sturgeon have been collected in the immediate vicinity of the proposed project area, they could utilize the revetted bank, main channel, and channel border in the vicinity of the proposed project area. The channel border along the edge of the sandbar across from the proposed project area would shift towards the opposite river bank after installation of the bendway weirs. Spawning sites have not yet been documented on the lower Mississippi River, but spawning is suspected to occur on gravel bars. No gravel bars will be impacted by the proposed work. No significant adverse impacts to pallid sturgeon are expected due to the proposed actions. Bendway weir construction may have some local benefits to pallid sturgeon by providing current velocity shelters behind each weir and increased fish forage potential. The swift river currents and shifting substrate along outside bends of the Mississippi River are not conducive habitat for the fat pocketbook pearly mussel. Furthermore, it is highly unlikely that any mussels would be found at the weir sites. The project is not likely to adversely impact the species. The proposed project is part of the Channel Improvement Program for the Mississippi River and Tributaries Project. The potential for adverse effects on the interior least tern, pallid sturgeon, and fat pocketbook mussel resulting from this program, including bendway weir construction, are addressed in the 2013 formal consultation with the U.S. Fish and Wildlife Service (USFWS), pursuant to Section 7 of the Endangered Species Act. Requirements of Section 7 of the Endangered Species Act (ESA) have been fulfilled. However, obligations under Section 7 of the ESA will be reconsidered if new information reveals that the proposed action may affect listed species in a manner or to an extent not previously considered, the proposed action is subsequently modified to include activities which were not considered during this review, or new species are listed or critical habitat designated that might be affected by the proposed action.

(7) Other Wildlife. Since all work would be done from barges floating in the river, there would be no significant adverse impacts to terrestrial wildlife.

(8) Actions Taken to Minimize Impacts. Construction of the bendway weirs will be carefully planned and executed. Contractors are required to maintain proper alignment of the weir structures. The fill material is clean limestone rock; thus, there will be minimal wash resulting from the placement of the stones. Contractors are also responsible for an approved environmental protection plan for the prevention/control of pollution and habitat disruption that may occur to the environment during construction.

f. Proposed Disposal Site Determinations.

(1) Mixing Zone Determination. N/A

(2) Compliance with Applicable Water Quality Standards. Section 401 water quality certification has been requested from the State of Arkansas.

(3) Potential Effects on Human Use Characteristics.

(a) Municipal and Private Water Supply. N/A

(b) Recreational and Commercial Fishing. Fishing should not be affected by the proposed work.

(c) Water Related Recreation. N/A

(d) Aesthetics. The bendway weirs will remain underwater at all times; thus, no changes are expected.

(e) Parks, National Historical Monuments, National Seashore, Wilderness Areas, Research Sites and Similar Preserves. No sites exist within the footprint of the proposed project.

g. Determination of Cumulative Effects on the Aquatic Ecosystem. The Lower Mississippi River has been converted from a naturally meandering river channel of the past to a more controlled channel containing various river training structures and other navigation and flood control features that are present today. Following the disastrous flood of 1927, the Flood Control Act of 1928 was passed committing the Federal Government to a definite program of flood control, channel stabilization, and river regulation, known as the Mississippi River and Tributaries (MR&T) Project. The MR&T project has four major features: 1) levees and floodwalls for flood protection, 2) floodways to divert excess flows past critical reaches, 3) channel improvement and stabilization for both navigation and flood control, and 4) tributary basin improvements for flood protection and drainage. The MR&T project is primarily responsible for the physical, hydraulic, and ecological features that presently exist in the Lower Mississippi River. The primary environmental effects of the MR&T project and channel improvement activities include the physical loss of channel habitat quantity, a growing disconnect with the relict floodplain during low to moderate river stages, and a general loss of riverine habitat complexity. Construction of the existing MR&T project has continued

throughout ensuing years and will continue throughout the near future. Dikes, revetments, and bendway weirs found throughout the Lower Mississippi River have resulted in a mosaic of artificial and natural habitats utilized by aquatic organisms and wildlife. The construction of these bendway weirs will add to this mosaic of habitats. Maintenance dredging and construction and maintenance of channel improvement structures on the lower Mississippi River, as part of the MR&T program, are conducted annually. Ongoing construction in the vicinity of the proposed project area includes the placement of articulated concrete mattress on top of the existing damaged revetment for a length of approximately 6,800 feet along the bank in and adjacent to the proposed project area. The proposed bendway weirs at the project location would result in the addition of permanently inundated rock substrates at this outside bend adding to the mosaic of artificial and natural habitats of the lower Mississippi River. The extent of the encroaching sand point bar located across the channel from the project location would be slightly reduced after construction resulting in a wider navigation channel. The preferred alternative would result in some minor alterations to the environment; however, no significant adverse cumulative impacts are expected due to the proposed action.

h. Determination of Secondary Effects on the Aquatic Ecosystem. N/A

III. FINDING OF COMPLIANCE FOR MISSISSIPPI RIVER BENDWAY WEIR CONSTRUCTION AT FAIR LANDING

a. No significant adaptations of the Section 404(b)(1) guidelines were made relative to this evaluation.

b. The purpose of this project is to create a safer navigation channel for towboats in the Mississippi River by reducing the strong drafting currents that presently exist. Continued towboat navigation through this hazardous Mississippi River bend increases the risk of an accident. Barges could break loose and block safe navigation of the river. Some barges could sink. If hazardous or toxic materials are involved, serious concerns for public safety could arise. Adverse environmental impacts could also incur.

c. Section 401 water quality certification has been requested from the State of Arkansas.

d. The proposed project is part of the Channel Improvement Program for the Mississippi River and Tributaries Project. The potential for adverse effects on the interior least tern, pallid sturgeon, and fat pocketbook mussel resulting from this program, including bendway weir construction, are addressed in the 2013 formal consultation with the USFWS, pursuant to Section 7 of the Endangered Species Act. The proposed activities are not likely to jeopardize the continued existence of the interior least tern, pallid sturgeon, and fat pocketbook mussel. The USFWS has been coordinated with, and requirements of Section 7 of the Endangered Species Act (ESA) have been fulfilled. However, obligations under Section 7 of the ESA will be reconsidered if new information reveals that the proposed action may affect listed species in a manner or to an extent not previously considered, the proposed action is subsequently modified to include activities which were not considered during this review, or new species are listed or critical habitat designated that might be affected by the proposed action.

e. The proposed work will not significantly affect human health and welfare, the municipal water supply, or commercial or sport fishing. No long-term impacts on plankton communities; breeding, spawning, or nursery habitats; or shellfish areas are expected. There are no wetlands present in the un-vegetated Mississippi River channel; however, it is still considered waters of the United States and subject to Clean Water Act regulations. No other special aquatic sites are located in the proposed work areas.

f. No significant adverse impacts to aquatic life or terrestrial wildlife, dependent on aquatic ecosystems, are expected.

g. The proposed work should not cause significant adverse impacts on ecosystem diversity, productivity, or stability.

h. No adverse impacts on recreational, aesthetic, or economic values are anticipated. The proposed work would create a safer navigation channel for towboats in the Mississippi River.

i. Construction of the bendway weirs will be carefully planned and executed. Contractors are required to maintain proper alignment of the weir structures. The fill material is clean limestone rock; thus, there will be minimal wash resulting from the placement of the stones. Contractors are also responsible for an approved environmental protection plan for the prevention/control of pollution and habitat disruption that may occur to the environment during construction.

j. The Memphis District Archaeologist checked records for sunken vessels in the project locations, and no records were revealed at the project location. Since all work will be conducted from the river, no known sunken vessels are in the project locations, and no grading will be conducted on the bank, there is not a possibility of affecting a significant cultural resource. The Arkansas State Historic Preservation Officer (SHPO) concurred that the proposed actions would not affect listed or eligible historic properties. However, if cultural remains are encountered during construction, all work would stop in the affected area and consultation will take place.

Date: 29 July 2014

Prepared by:
U.S. Army Corps of Engineers
Memphis District
Memphis, Tennessee

DEPARTMENT OF THE ARMY
MEMPHIS DISTRICT CORPS OF ENGINEERS
167 NORTH MAIN STREET B-202
MEMPHIS, TENNESSEE 38103-1894

Reply to
Attention of:

88794
COE
NE

23 January 2014

Environmental Compliance Branch

Ms. Frances McSwain
Deputy State Historic Preservation Officer
Arkansas Historic Preservation Program
1500 Tower Building
323 Center Street
Little Rock, Arkansas 72201

AHPP
JAN 28 2014

Dear Ms. McSwain:

The Memphis District, Corps of Engineers, proposes to construct six weirs at Fair Landing and construct one new dike and extend two existing dikes at Island 64, Phillips County, Arkansas. Enclosure 1, the 7.5 minute section of Elaine quadrangle map, shows the proposed project locations.

Neither the dike nor weir construction will require bank grading or excavation. Each will be attached to the bank where stone riprap has been placed. The extending of two dikes will require stone being placed at the river end of the dike and will not require grading. As this area has been ripraped since 1980, it was surveyed for cultural resources at some time, and no cultural resources were discovered.

Pursuant to 36 CFR 800.3(a)(1), the District Archaeologist has determined that this project has no potential to cause effects on historic properties eligible for the National Register of Historic Places. No further section 106 consultation is required.

Should you need further information, contact our District Archeologist, Jimmy McNeil, at 901-544-0710, or by email at Jimmy.D.McNeil@usace.army.mil.

Date 2/6/2014
No known historic properties will be affected by this undertaking. This effect determination could change should new information come to light.
Frances McSwain
Frances McSwain, Deputy State Historic Preservation Officer

Sincerely,

Edward P. Lambert

Edward P. Lambert
Chief, Environmental Compliance Branch
Regional Planning and Environmental
Division South

Enclosure