UNITED STATES ARMY CORPS OF ENGINEERS

Record of Decision for Authorization of Commercial Sand and Gravel Dredging on the Kansas River

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Prepared by
U.S. Army Corps of Engineers
Kansas City District

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SECTION 1

Introduction

1.1 Record of Decision

This document constitutes a Record of Decision (ROD) for permit applications under Section 10 of the Rivers and Harbors Act of 1899 (33 United States Code (U.S.C.) § 403, hereafter the RHA)) for a Final Environmental Impact Statement (FEIS) for proposed commercial dredging in the Kansas River in the state of Kansas. In compliance with the National Environmental Policy Act (NEPA), a Final Environmental Impact Statement for proposed work was completed and a Notice of Availability was published in the Federal Register (82 Fed. Reg. No. 202, Oct. 20, 2017). This ROD addresses the requirements contained in Section 10 of the RHA and NEPA and was prepared in accordance with the procedures described at 33 Code of Federal Regulations (C.F.R.) Part 320-332, including Appendices B and C.

1.2 Permit Decision

I have reviewed and evaluated the permit applications in light of the overall public interest, the environmental, social, engineering and economic considerations, and in accordance with applicable laws, regulations, and policy cited above. It is my decision based on all available information, including the FEIS, that issuance of permits under authority of Section 10 of the RHA to authorize the alternative identified by the U.S. Army Corps of Engineers (USACE) as the Preferred Alternative is not contrary to the public interest. The authorization will contain special conditions and mitigation requirements to avoid, minimize and mitigate project-related impacts. Therefore, permits will be granted to Kaw Valley Companies, Inc.; Holliday Sand & Gravel Company; Masters Dredging; Builders Choice Aggregates and LBB, LLC.

SECTION 2

Project Information

2.1 Proposed Action

The USACE Kansas City District has received permit applications from 5 commercial dredging companies to extract 1,900,000 tons of sand and gravel annually from 8 specifically identified areas along the 170-mile length of the Kansas River from near Junction City, Kansas downstream to the mouth at Kansas City, Kansas. (Figure 1). Four separate segments of the river referred to as "Reaches" were established in 1990 to help identify and evaluate the proposed work, geomorphology and resource impacts unique to different segments of the river. All but two of the applicants, Master's Dredging Company and LBB, LLC, are currently authorized to dredge on the river.

Dredging activities to be conducted under permits issued by the USACE would include dredging of the river and extraction of suitable sand and gravel. Dredge operations consist of pumping a slurry of water, sand and gravel to a land-based facility for processing. There, desirable sand and gravel are separated, sorted, and stockpiled. The waste water would be discharged into a settling basin where some sediments settle out. The outfall from the settlement basin would then be passively discharged back to the river through a pipe or sluiceway.

Dredging for sand and gravel is conducted by using hydraulic suction-head or cutter-head dredges mounted on movable barges. The dredge consists of mechanical equipment mounted on a barge that can be moved into position and anchored during dredging operations. The dredge barge is held in a fixed position during dredging by deploying cables from the forward corners of the barge that are anchored to static anchors on shore located upstream of the dredge. Dredging takes place by manipulating the length of each anchor cable, allowing the dredge to be moved forward, backward, and from side to side during the operation.

All permit applicants use a pipeline dredge that conveys the dredged material as slurry in a pipeline to an onshore processing plant. During dredging, the dredging head (with or without a cutter head) and a suction line are mounted on a boom that is lowered to the river bed. Sediment is removed from the river bottom and the dredge boom is then raised, the dredge position relocated and operations continue generally in an upstream direction.

Figure 1 Summary of Requested Dredging Areas and Quantities

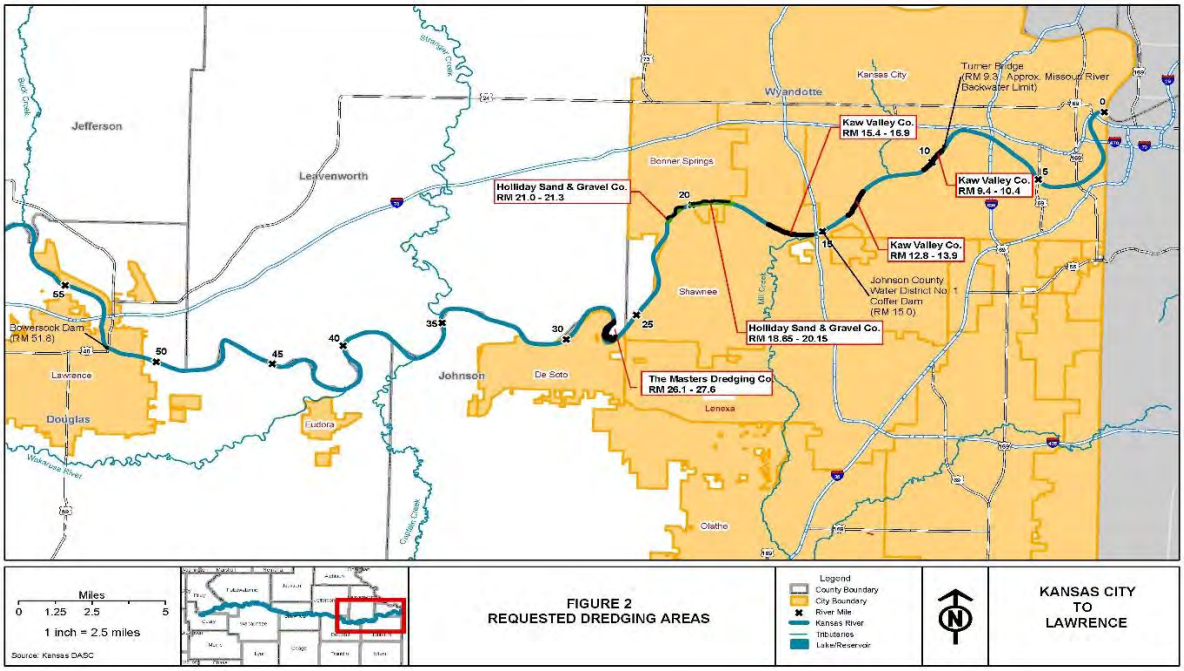
Requested by Dredgers			Current River Conditions and Constraints			
Company	**Requested Dredging Areas (River Miles)**	**Requested Quantities[a] (Tons)**	**Current Status of Requested Dredging Area**	**2015 maximum average bed elevation change (In feet) from 1992 baseline over 5 mile range intersecting the requested dredging area**	**Portion of Requested Dredging Area in a Degraded 5-Mile Reach**	**Regulatory Plan Reach Limit (Tons)**
Kaw Valley Companies, Inc.	9.4 – 10.4	400,000	Open	-0.84	None	Reach 1 1,000,000
	12.8 – 13.9		Open	-0.84	None	
	15.4 – 16.9		Open	0.03	None	
Holliday Sand & Gravel Company *b*	18.65 – 20.15	300,000	Open	-1.58	None	
	20.55 – 21.50	300,000	Open	-1.76	None	
Master's Dredging	26.1 – 27.6	300,000	Closed	-2.05	Partial (Upper 0.4 mi)	Reach 2 750,000 tons in any 15-mile-long section
No dredging requested in Reach 3	None	None	None	None	None	Reach 3 150,000
Builders Choice Aggregates	77.1 – 78.6	300,000	Open	-1.38	None	Reach 4 750,000 tons in any 15-mile-long section
LBB, LLC	89.7 – 91.0	300,000	Closed	-1.27	None	
	TOTAL	1,900,000				

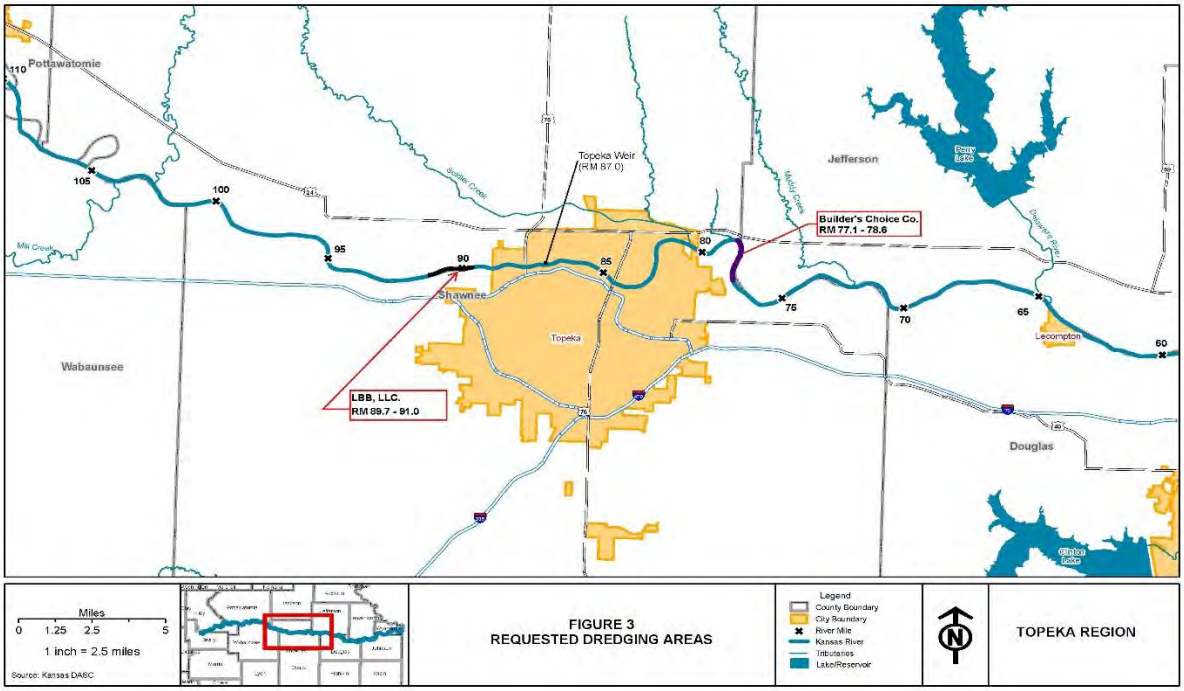
[a] The Regulatory Plan limits any one dredge to no more than 300,000 tons per year.

[b] Holliday has requested to dredge up to RM 21.5 but only up to 21.3 is being considered as an upstream limit due to the proximity and buffer required for a natural bed rock formation.

Sand plant facilities typically have direct access to local, state, and interstate highway systems for product transport. The onshore terminal may also include moorage for dredge barges, transport barges, and towboats. To the extent practicable, vessel maintenance is performed at the onshore facility. Existing and proposed plant facilities are subject to separate permitting and review and are considered in this decision to the extent that secondary and cumulative

impacts of these facilities, resulting from dredging, has been identified. The locations of the proposed dredging operations on the Kansas River are shown in Figures 2 and 3 below:





Dredging typically occurs from March through December. During the coldest periods, when ice formation may hinder operations and demand for aggregate and sand is lowest, the Dredgers typically perform annual maintenance on their equipment. Dredging operations are typically and historically performed only during daylight hours and on weekdays but are capable of operating around the clock.

One temporary change to the areas requested for the proposed dredging work applies to one of three sites operated by Kaw Valley Companies. On July 17, 2017, Kaw Valley requested a temporary change to one dredging location authorized by their existing permit (200301770). In response to this request, an agency notification regarding the proposed temporary modification was sent to federal and state agencies for comment on August 7, 2017 and a permit modification was subsequently processed on September 20, 2017. The modification authorizes the removal of up to 416,000 total cubic yards of accumulated sand and gravel from below the Johnson County WaterOne weir and waste water diffuser structure near rivermile (RM) 15. The dredged materials will be utilized for commercial purposes and processed at an upland facility near rivermile 13.5. The removal of materials and permit modification is authorized through December 31, 2018. The work is subject to all other existing permit conditions and the Regulatory Plan.

2.2 Jurisdiction

The proposed dredging would take place in the Kansas River. Under Section 10 of the RHA, the USACE has authority over dredging activities in navigable waters of the United States. The Kansas River is a navigable water and thus is regulated under Section 10. The USACE also regulates the discharge of dredged or fill material into a water of the United States under Section 404 of the Clean Water Act (CWA) (33 USC 1344).

The USACE has determined that the proposed dredging operation itself at the cutter-head of the dredge does not result in a discharge subject to regulation under Section 404. In addition, the discharge of the dredged return water resulting from the dredging and subsequent on-shore processing plants operated by permittees for commercial use, is specifically not regulated by the USACE under Section 404 of the CWA.

In the Final Rule for the Regulatory Programs of USACE at Title 33 of the Code of Federal Regulations (CFR) Part 323.2 (33 CFR 323.2) the definitions treat “dredged material” and “fill material” separately and distinctly even though the discharge of either type of material into a water of the United States can change the bottom elevation of that water of the United States. The proposed work meets the definition of dredged material as defined in the USACE regulations at 33 CFR 323.2(c). Discharges of pollutants into waters of the United States resulting from the onshore subsequent processing of dredged material that is extracted for any commercial use (other than fill) are expressly excluded from the definition of a discharge of dredged material as defined in 33 CFR 323.2(d)(2). For this reason, the proposed activity is only being regulated under Section 10 of the Rivers and Harbors Act. The Supreme Court Decision in

Coeur Alaska does not address the USACE decision to treat dredged and fill material separately and is therefore inapplicable in this instance.

2.3 Project Purpose and Need

The basic purpose of the Proposed Action is to supply sand and gravel required to support the region's construction and manufacturing needs.

Sand and gravel are essential components of concrete, asphalt, brick mortar, tile grout, landscape materials, and fiberglass production. These materials are used to construct local, regional, and interstate roads; public, commercial, and industrial facilities; and multi-family and residential housing. The dependence on Kansas River sand and gravel as a constituent of construction materials is pervasive in the regional economy which includes the greater Kansas City Metropolitan Area, the Lawrence and Topeka areas, and many other Kansas communities.

2.4 Alternatives Considered

The implementing procedures state that only Reasonable Alternatives need to be considered in detail. The implementing procedures for the NEPA, in the USACE regulatory program guidance (33 CFR 325; Appendix B), defines Reasonable Alternatives as those alternatives that are feasible. It further states that such feasibility must focus on the accomplishment of the underlying purpose and need (of the applicant or the public) that would be satisfied by the proposed federal action (permit issuance). The identification of Reasonable Alternatives for the Proposed Action is based on the guidance provided in the referenced NEPA implementing regulations. Other Alternatives are those alternatives initially considered but not carried forward for detailed study.

The Corps is neither an opponent nor a proponent of the applicant's proposal; therefore, the applicant's final proposal was identified as the applicant's preferred alternative in the FEIS. Decision options available to the District Engineer, which embrace all of the applicant's alternatives, are issue the permit, issue with modifications or conditions, or deny the permit.

2.4.1 Proposed Action (Applicants Preferred Alternative)

Five companies have requested approval of applications for Department of the Army Permits (DA permits) for dredging a total of 1,900,000 tons of sand and gravel per year from 8 different areas of the river. The permits, if issued, would be subject to and would not exceed the restrictions and limitations imposed by the Regulatory Plan established by the USACE in 1990. Extraction limits imposed by the proposed Regulatory Plan would limit the annual quantity of aggregate dredged from the Kansas River to generally no more than 750,000 tons within any 15 mile-long section of the river. One exception to that limit is a portion of the lower Kansas River from mile 0 to 21.2 where a maximum of 1 million tons of extraction by all dredging activities is allowed each year. Three of the five companies are currently authorized to dredge sand and

gravel from the river under authority of permits issued in 2007, one company (Masters Dredging) has previously performed dredging on the river and one company (LLB,llc) is a new proposed producer requesting operation at a previously authorized site.

2.4.2 Reduced Limit Alternative

The Reduced Limit Alternative would establish a maximum cumulative annual dredging limit of 1,670,000 tons of material for all dredged reaches of the Kansas River. This restriction would limit the total annual amount of material dredged from the river to the average annual amount of sand load transported through the river system. The total annual dredging limit of 1,670,000 tons of material for the entire extent of the Kansas River would be further limited by individual river reaches as follows:

- No more than 1,260,000 tons of material could be extracted annually between RM 168.9 at Fort Riley and RM 126.9 at Wamego);
- No more than 1,210,000 tons of material could be extracted annually between RM 126.9 at Wamego and RM 63.8 at Lecompton;
- No more than 1,370,000 tons of material could be extracted annually between RM 63.8 at Lecompton and RM 31.0 at DeSoto; and
- No more than 1,670,000 tons of material could be extracted annually between RM 31.0 at DeSoto and the confluence of the Kansas and Missouri Rivers.
- The cumulative annual dredging limit of 1,670,000 tons of material would be the combined total dredging allowed from the four reaches described above.

The Reduced Limit Alternative is based on the long-term average annual sand load estimates developed at four locations on the river by Simons, Li, and Associates in its 1984 report entitled, “Analysis of Channel Degradation and Bank Erosion in the Lower Kansas River.”

The 1,670,000-ton annual maximum dredging limit for the Kansas River system would be imposed in addition to the current restrictions contained in the USACE’s Regulatory Plan. In that way, the restriction would be somewhat redundant in an attempt to limit dredging operations beyond the natural expected recruitment of sand foreseen by Simons, Li, and Associates in its 1984 report. The methodology and scope of factors necessary to obtain and evaluate and update the 1984 estimates to determine an accurate average annual sand yields based upon, among other factors, flow duration curves and suspended sediment data would require much more elaborate study than the fairly straightforward measurement of river cross-sections currently used to monitor bed elevations for the Regulatory Plan. Furthermore, the 2-foot limit on bed degradation presently stipulated in the Regulatory Plan would remain as the primary mechanism to limit dredging-related impacts to an acceptable level. According to historical records, the proposed 1,670,000-ton total annual dredge limit for the Kansas River system was exceeded by as much as 100 percent (1984), and consistently exceeded by 50

percent until 2001. The 1,670,000-ton proposed limit was exceeded in all years but 1998 during the period of 1984 through 2001. The proposed limit was also exceeded in 2003 and 2006, but has not been exceeded since 2006 according to extraction records through the year 2015. Total extraction over the last 15 years (2001-2015) has averaged 1,405,650 tons, just slightly less than the total limit that would be allowed by this alternative. Even with reduced extraction amounts observed over the past several years, some areas of the river have still experienced more than a two-foot negative average bed elevation change. These changes have occurred both within and outside of dredged areas. Surveys showed six degraded areas in 2007, none in 2009, six in 2011, five in 2013 and a portion (0.4 mile) of one reach in 2015. The actual extraction of materials from the river during this same monitoring period was steadily declining from 1,323,000 tons in 2007 to 509,000 tons in 2015.

2.4.3 No-Action Alternative and Alternate Sources

NEPA requires the detailed evaluation of a No-Action Alternative. The No-Action Alternative identified in the FEIS is defined as not approving any of the pending permit applications for commercial sand and gravel dredging on the Kansas River. Denial of the requested permits and termination of all existing dredging on the Kansas River would impact the sand and gravel Dredgers operating on the river, as well as those business interests (ready mix, glass production, etc.) that depend on sand and gravel produced from the river. After the existing supply of Kansas River sand and gravel are exhausted, aggregate extraction would shift to other sources of sand and gravel in order to meet the market demand. The development of alternative sources of sand and gravel associated with floodplain pit dredging and/or quarry operations within the region, as well as the production and transportation of sand and gravel from regions located outside the Kansas River valley could result in substantive direct and indirect effects.

2.4.3.1 Alternate Sources

Under the No-Action Alternative, the elimination of commercial sand and gravel production from the Kansas River would require material to be obtained from alternate sources. Historically, sand and gravel dredged from the Kansas River and local reaches of the Missouri River have provided the majority of the sand and gravel used in the region's markets (use of Missouri River sand is primarily limited to the Kansas City metropolitan area market). Four distinct types of sand and gravel production have been identified as reasonable and feasible alternative sources of sand and gravel to replace material currently dredged from the Kansas River. Those sources include: Sand and gravel dredged from the Missouri River; Pit mines located in the Kansas and Missouri River floodplains; and Crushed rock manufactured from limestone quarries.

The suitability, availability, and cost of production and transportation for these alternative material sources vary widely.

i. Missouri River

Although sand and gravel dredged from the Missouri River is similar to Kansas River sand and gravel, it is generally viewed as a somewhat lower quality product due to the presence of lignite. Lignite is a form of brown coal that is present in relatively small quantities in sand and gravel dredged from both the Missouri River and its floodplain. The mineral is soluble and friable and is detrimental when present in cement mixes intended for finishing applications, since it can induce voiding and pitting of finished surfaces. Processing of sand and gravel dredged from both the Missouri River and its floodplain includes removal of lignite for some applications; however, such processing does not entirely remove the mineral from the final product.

Although Missouri River sand and gravel are a suitable substitute for Kansas River sand and gravel, Missouri River dredging operations do not have the capacity to replace the loss of sand and gravel from the Kansas River if the No-Action Alternative is selected. In 2011, the USACE evaluated the potential impacts associated with commercial dredging on the Missouri River in the Missouri River Commercial Dredging EIS (USACE, 2011a). The USACE concluded in that EIS that dredging had contributed to significant bed degradation in the Kansas City area. That 2011 EIS also evaluated alternative sources of sand and concluded that other sources, including Kansas River sand (as authorized at that time), could replace part of the Missouri River sand supplied to the Kansas City metropolitan area market. The decisions made by the USACE to reduce the amount of authorized dredging on the Missouri River were based, in part, upon a reliance of the continued availability of sand from Kansas River dredging operations. A further reduction from the Kansas City market area of the proposed 1,900,000 tons of annual sand and aggregate products from the Kansas River in combination with the reduced Missouri River extraction may create supply shortages. The Missouri River Commercial Dredging FEIS resulted in a plan to implement annual dredging limits for commercial dredging operations on the Missouri River in the Kansas City Metropolitan Area (Kansas City Segment – RMs 357 to 391). The authorized dredging tonnage allowed in this segment was reduced 79 percent from the annual average extraction of 2,520,000 tons of material for the years 2004 through 2008, to a final phased in limit of 540,000 tons annually, beginning in 2014. The combined final 2014 phased in limit for all three reaches near the Kansas City metropolitan market area (RMs 250 to 498) resulted in an annual reduction of 1,122,540 tons of finished aggregate available to dredging companies. The combined total average annual quantity of sand and gravel extracted from the three reaches from 2004 through 2008 was 3,662,540 tons; and the final total phased in limit for the three reaches in 2014 was reduced by more than a million tons to 2,540,000 tons annually. Holliday Sand is currently the only company operating within the Kansas City segment of the river. The tonnage currently authorized for extraction by Holliday Sand within this segment of the Missouri River is 540,000 tons, which is 79 percent less than the 2,520,000 tons previously allowed from this same area in 2008. In 2015, 100 percent of the authorized

tonnage was taken by Holliday Sand. During the period of 2011-2015, an average of 92.8 percent of the authorized dredging tonnage within the Kansas City segment of the Missouri River was extracted. These conditions leave little to no excess authorized materials available from the Missouri River to replace material demands from customers now utilizing sand from the Kansas River.

The permits for dredging on the Missouri River were reevaluated in 2015 and renewed for the 2016 - 2020 period with revised amounts for the Waverly and St. Joseph segments. Extraction limits in the Kansas City segment remained constant at 540,000 tons, authorized extraction in the St. Joseph segment was reduced, and extraction in the Waverly segment downstream of the Kansas City area was expanded. Capitol Sand and Holliday Sand have phased-in authorizations to increase extraction within the Waverly segment up to a total of 1,778,000 tons by the year 2020. Conversely, the St. Joseph's segment has a reduced authorized annual tonnage from 860,000 annual tons authorized by the 2011 DA Permit to 330,000 annual tons in the renewed 2016 permit. By the year 2020, the total authorized extraction of materials within the combined reaches of the Missouri River in the Kansas City market area will be 2,648,000 tons. This represents a reduction of 552,000 tons of available material from the Missouri River as compared with 2011 levels within the same defined market area. The Missouri River Dredgers do not currently have the infrastructure in place needed to extract the increased amount allowed in the Waverly segment, but even if they expand their operations, they could not dredge enough sand and gravel from the Missouri River under the current permits to meet the historical demand of the Kansas City Metropolitan Area. The No-Action Alternative would result in the cessation of Kansas River dredging and could increase the demand for Missouri River sand and gravel within the limits of the existing Missouri River commercial dredging permits but does not include or propose the modification or addition of any permits for Missouri River commercial dredging. The No-Action Alternative would result in the cessation of Kansas River dredging and could increase the demand for Missouri River sand and gravel within the limits of the existing Missouri River commercial dredging permits but does not include or propose the modification or addition of any permits for Missouri River commercial dredging. The Missouri River Commercial Dredging EIS (USACE, 2011a) fully evaluated the environmental impacts of the currently authorized Missouri River commercial dredging permits, therefore, Missouri River commercial dredging is not further evaluated.

ii. Floodplain Mining

Floodplain mining, for purposes of this report, is defined as commercial sand and gravel production operations that are located in a floodplain outside of a river channel. Floodplain sand and gravel mining operations can be located in dredge pits flooded with ground water such as those found in both the Kansas and Missouri River floodplains. Active floodplain mines are not normally considered waters of the United States and are generally excluded from regulation by the USACE. However, dredge pit mining activities that result in the placement of fill material in jurisdictional wetlands or other waters of the United States are subject to regulation by the USACE under authority of Section 404 of the CWA.

Pit dredging operations located in the Kansas River floodplain require a license from the Division of Conservation and a plan detailing how the site will be reclaimed after completion of dredging activity. Pit dredging operations are sited in areas with shallow groundwater, which allows use of a hydraulic dredge for the dredging of sand and gravel from a pit flooded with ground water. Pit dredging operations typically consist of a dredge, settling chambers or sorting screens, earth-moving equipment, loaders, conveyor systems, and weight scales. Buildings located on the site may include equipment maintenance structures, fueling stations, and offices.

After a dredge pit's sand and gravel deposits are depleted, the site must be reclaimed in accordance with a project reclamation plan filed with the Division of Conservation. Reclamation includes refilling dredged areas, spreading the stored overburden or equal amount of topsoil over the refilled areas, grading to establish appropriate contours, reestablishing vegetation, and removing all equipment from the site. The dredge pits may remain as open water bodies if approved by the Division of Conservation.

The development of additional new dredge pits in the Kansas River floodplain would depend on the ability of companies to identify and acquire suitable properties and to secure federal, state, county and local approval, where required. The success of such an undertakings (securing approval, and acquiring and developing a site) would be dependent upon resolution of several issues, including:

- Permits and zoning must be granted by federal, state, county and local governments, where necessary. Potential issues include traffic, safety, noise, air quality, water quality, impacts to roads, riparian habitat, loss of farmland, disturbance to rural communities located on truck routes, disturbance to plant site neighbors.

- Properties must contain suitable gradations of sand and gravel in sufficient quantities to sustain production for a minimum of 10 to 12 years, due to the cost and years involved in securing dredge pit sites. The minimum acreage to support the operation with an estimated 12-year production period at an average of 300,000 tons per year would equal 61 acres.

- Material overburden (waste material) on a typical site should not exceed 20 feet in thickness but can vary depending on the depth of marketable materials.

- Properties must be located within a reasonable distance of area markets, and are generally located near improved roads and bridges suitable for heavy truck traffic (or new roads must be built) to link transportation of the product to market areas.

- Properties must be owned by entities willing to sell and must be available at competitive land prices that allow for profitable operations.

iii. Crushed Limestone

Crushed (manufactured) gravel is produced from quarries located along the Kansas River valley, where native limestone rock is excavated and crushed to form coarse sand and gravel. Typically, only small quantities of sand are produced as a byproduct of the crushing process. Quarry operations typically use backhoes and front-end loaders to excavate suitable limestone deposits. After removal of overburden the rock is excavated in layers or benches, which creates a pit that becomes deeper as each layer of rock is removed. This technique creates a large open pit typically bounded by high vertical walls. The excavated stone is placed in mechanical sorting equipment, which segregates the material by size. Oversized material is crushed to create the desired sand and gravel particle sizes needed to meet customer needs.

The use of manufactured sand and gravel for concrete and other similar construction purposes is relatively limited based on the abundance of other better suited materials, such as quartz sand and gravel mined from the Kansas River. Manufactured sand and gravel is more friable than Kansas River sand and gravel and will not meet many concrete paving and other construction specifications due to its relative weakness. In addition, manufactured sand is not generally conducive to finishing applications due to the angular nature of the material. However, coarse manufactured sand and gravel is a highly desirable product for asphalt production due to its angular shape. It is assumed that manufactured sand and gravel could provide some additional resources if dredging were terminated on the Kansas River. However, it is unlikely that manufactured sand and gravel could fully replace sand currently dredged from the Kansas River due to its inability to satisfy specifications of many industries.

2.4.4 Other Alternatives Considered but Not Included in Detailed Analysis

During the scoping process and preparation of the EIS, the applicants, public, agencies, and organizations were provided the opportunity to submit formal and informal ideas and suggestions about alternative means for achieving the Project purpose. A number of comments and ideas about alternatives and alternative methods and strategies were received and considered. Each alternative was considered with regard to the Project purpose and need, current laws and regulations, practicability, and other criteria. These alternatives were not carried forward for further evaluation for the reasons outlined below.

i. Sediment Budget for Each Dredge Reach, (Reaches 1-4)

Section 2.5.1 of the FEIS describes this alternative. The complexity, expense, market uncertainty, and regulating agency burden associated with implementation of a sediment budget, and the necessity to continue the monitoring requirements provided in the Regulatory Plan have resulted in a conclusion that this alternative is not reasonable and would provide little additional protection to the resource. Therefore, this alternative was not carried forward for further consideration.

ii. Dredging in Existing Kansas Reservoirs

Section 2.5.2 of the FEIS describes this alternative. Based on the required scale and costs of dredging, processing, waste material disposal, and the cost of transporting reclaimed sand to markets, the USACE has concluded that dredging accumulated sediment in reservoirs is not currently an economically feasible or reasonable alternative. Therefore, this alternative was not carried forward for further consideration.

iii. Smaller Rivers in Kansas and Missouri and the Arkansas River

Section 2.5.3 of the FEIS describes this alternative. The following potential sources of sand and gravel were considered:

- The Neosho, Cottonwood, Walnut, Republican, and Big Blue Rivers in Kansas;
- The Gasconade, Osage, Grand, Thompson, Platte, and Pomme de Terre Rivers, and Ozark streams in Missouri;
- Dry mining operations located along the Arkansas River floodplain; and
- Other small sand and gravel production operations located outside the Kansas River valley.

The cost of alternative sources of material transported 100 miles to local area distributors was determined to quadruple market area prices in Topeka and areas west of Topeka, and would more than double market area prices in the Kansas City area and west to Lawrence. Even at lesser distances of 50 miles, the cost was found to be more than double than Kansas River sand. This alternative, therefore, was not considered a reasonable alternative based upon cost and was not further evaluated.

SECTION 3

Public Involvement

3.1 Scoping

A Notice of Intent (NOI) to complete an EIS regarding the proposed work was published in the Federal Register on July 15, 2015. Agency scoping for the EIS was accomplished on August 4, 2015, in Kansas City, Missouri, and a public meeting was held that evening in Lawrence, Kansas. The comments received were addressed in the Draft EIS.

3.2 Draft EIS

A Notice of Availability (NOA) of the Draft Environment Impact Statement (DEIS) was published in the Federal Register on October 28, 2016. The public notice was sent to 214 recipients within the State of Kansas using a distribution list maintained by the USACE for all other similar public notice processes. A public meeting regarding the DEIS was held in Lawrence, Kansas, the evening of November 17, 2016. A court reporter was provided at the meeting to allow meeting attendees to submit oral comments. In addition, agencies, organizations, and interested parties could provide written comments at that meeting or by mail or email.

3.3 Public Notice

A Public Notice for the DEIS was issued by the USACE, on October 21, 2016 and also announced on the Kansas City District website from October 21, 2016, and remained open for comments through December 12, 2016. Comments received in response to the Public Notice were combined with comments regarding the potential environmental consequences as described in the DEIS, and were addressed in the FEIS. See Appendix B of the FEIS for a list and content of all the comments received.

3.4 Final EIS

The Notice of Availability for the FEIS was published in the Federal Register on October 20, 2017, which initiated a formal public review period beginning on that date and ending on November 20, 2017. See Appendix B of this ROD for a list and content of any comments received in response to the FEIS. Comments received after publication of the FEIS are addressed in Section 3.8 of this ROD.

3.5 Public Hearing Requests

Several respondents requested a public hearing regarding the proposed work. Those requests have been considered and USACE determined that an additional public hearing would not likely result in the receipt of additional information that is not otherwise available. Therefore, those requesters were notified in writing on May 5, 2017 that no additional public hearing or meeting would be held regarding the proposed work.

3.6 Agency and Public Comments

3.6.1 Scoping Process

Following publication in the Federal Register of the Notice of Intent (NOI) to prepare an EIS, the USACE initiated the public and agency scoping process. Comments provided during the completed scoping period focused the impact analysis and aided in the selection of a reasonable range of alternatives. The opportunity for stakeholder input occurred over a 2-month period. Public scoping was opened on July 17, 2015, and closed on September 15, 2015.

The USACE hosted two meetings to obtain agency and public input into the EIS scoping process. An agency coordination meeting was held at the USACE Kansas City District office in Kansas City, Missouri on August 4, 2015. This meeting was attended by the USACE, third-party EIS contractor staff, and agency personnel from the USEPA, USFWS, US Geological Survey, Kansas Department of Wildlife, Parks and Tourism, and Kansas Geological Survey. Representatives from the Kansas Department of Health and Environment and the Kansas State Historical Society declined to attend the meeting. A scoping meeting for public participation was held at the Lawrence Public Library in Lawrence, Kansas, which is within the Project area. The meeting occurred on August 4, 2015, from 4 p.m. to 7 p.m. and was attended by 38 participants. A summary of written comments received during the scoping period can be found in Table 33 of the FEIS.

3.6.2 Draft EIS Coordination

A Notice of Availability (NOA) of the DEIS was published in the Federal Register on October 28, 2016, and also announced on the Kansas City District website from October 21, 2016 and open for comments through December 12, 2016. The public notice was sent to 214 agency, organization and private recipients. A public meeting regarding the DEIS was held at the Lawrence Public Library, 707 Vermont Street in Lawrence, Kansas, the evening of November 17, 2016, from 4 to 7 p.m. Attendance at the meeting included 24 people who registered at the door. A total of 37 letters from agencies, organizations, and individuals, plus 175 postcards were received during the public comment period. There were 68 additional postcards received after the comment period had closed and all the postcards were identical in content.

In response to public comments gathered during the review of the DEIS, multiple revisions, additions and deletions are reflected in the final version of the document (FEIS). Changes were made in an effort to more clearly define, describe, and identify the proposed work, the limits of regulatory authority under Section 10 of the Rivers and Harbors Act, and the environmental consequences of the work, and each identified alternative. In addition, several of the tables and data contained within them have been updated and contain the most current information available. The revisions also reflect the USACE commitment to fully disclose and identify the potential for environmental impacts of the activity upon the Kansas River and within the

geographic scope of the proposed work. The most noteworthy changes and clarifications made in the FEIS can be found in the sections of the document that relate to the following topics:

- Lack of USACE regulatory authority to regulate the work under Section 404 of the CWA (FEIS Section 1.2).
- The applicant proposed action and requested total tonnage and consideration of impacts which includes the deletion of a reference to a much higher extraction of 3.15 M tons annually (FEIS Section 2.2).
- An updated summary table of the requested dredging areas and river reach limits (FEIS Table 4).
- Updated tables, charts and exhibits to reflect the most currently available information regarding the proposed work and condition of the river.
- Updates and changes made to Appendix A of the FEIS (Regulatory Plan).

3.7 Substantive Issues, Applicant Reply and USACE Resolution

All comments received during the DEIS period were forwarded to the applicants for their review. In addition to the comments received during the public comment period, additional information relevant to the proposed work was requested by USACE in a letter dated February 23, 2017. The USACE letter, substantive DEIS comments and responses from some applicants can be found in Appendix C. Holliday Sand and Gravel, LBB, llc, Masters Dredging and the Kansas Aggregate Producers Association (KAPA) submitted responses to the DEIS comments received and to the USACE requests. The following additional information was requested by USACE:

- Potential impacts to drinking water supply intakes on the Kansas River
- Proposed Regulatory Plan requirement for settlement basin pre-treatment of dredge return water
- Proposed Regulatory Plan change regarding closure/opening of dredge areas
- Noise
- Public safety and recreational vessel passage through dredge operation areas
- Bed elevation monitoring requirements

Of the comments received, 345 were considered substantive and those comments were grouped by topic. Similar concerns or comments were combined and one consolidated USACE response was formulated. A summary of the consolidated DEIS comments received and the USACE responses can be found in Section 7.2 of the FEIS.

The topics that received the greatest number of comments on the DEIS were; Proposed work/alternatives (79), Water quality (49), Monitoring (44), Waterbody-bed and bank integrity (34), Wildlife species/habitat (26) and comments grouped as General (29).

Some comments received during the DEIS included suggestions about other work not directly related to dredging that commenters felt should be regulated by USACE for the pending permit decisions. In some cases, comments are beyond the ability or scope of the USACE to control under the limited authority of Section 10 of the Rivers and Harbors Act. Comments that were written in such a way as to form an opinion about the proposed work or permits but contained no substantive issue to be addressed were noted for the record. The FEIS described the anticipated impacts and consequences of the Proposed Action and reasonable alternatives identified during the public and agency review process.

3.8 Final EIS Coordination

The FEIS was published in the Federal Register on October 20, 2017. A Public Notice was posted on the Kansas City District website and a notice was provided to several different agencies, organizations and individuals on October 23, 2017. Final versions of the document either in paper or electronic format were sent to the Osage Tribe, Department of the Interior, USFWS and USEPA. Paper copies were also provided to the Miller Nichols Library at UMKC and the Anschutz Library at KU.

Following the publication of the FEIS in the Federal Register on October 20, 2017, comments from Region 6 of the USFWS, Region 7 of the USEPA and Masters Dredging were received by USACE. See Appendix B for those comments. The majority of concerns identified below were previously addressed in the Comment-Response Table assembled for the FEIS, (Section 7.2.5).

COMMENT/CONCERN	RESPONSE
USFWS: Concern regarding down-cutting of the streambed in reaches immediately upstream of dredged area.	Localized and temporary changes to bed elevations associated with dredging work can and do occur as evidenced by some studies referenced in the FEIS. Bed degradation and geomorphology of the Kansas River and proposed work is primarily discussed in Sections 3.2 and 4.2 of the FEIS. The Regulatory Plan limits the degree of degradation that can occur for any reason before dredging is suspended.
USFWS: Concern about the erosion of banks, impacting water quality and infrastructure that results in the need for future work further affecting channel integrity and aquatic habitat	The geomorphic features of the river, including the banks and sandbars, are continually being reshaped primarily by flow volumes and duration, regardless of dredging operations. The Regulatory Plan mitigates potential impacts of the work by limiting the number of dredges, the amount of extraction, incorporates buffers of various width away from riverbanks and has a

	requirement for regular survey and monitoring of the riverbed to limit bed degradation. These factors are primarily discussed in Sections 3.2 (Geology and Morphology) and 3.6 (Water Resources) of the FEIS.
USFWS: Impacts to the pallid sturgeon and/or habitat between Bowersock Dam and the confluence of the Kansas and Missouri Rivers.	USACE prepared a biological assessment (BA) for the pallid sturgeon and 2 other endangered species after publication of the FEIS. The BA was submitted to the USFWS when informal consultation for the work was initiated on October 13, 2017. Potential impacts of the work on endangered species, including the pallid sturgeon, are discussed in Section 3.11 of the FEIS.
USEPA: Concerns expressed in USEPA letters December 12, 2016 (NEPA Section and Water/wetland Sections on the DEIS) and January 6, 2017 (404Q) were not adequately addressed.	The comment and response matrix found in Section 7.2.5 of the FEIS addressed all comments received during circulation of the DEIS including those submitted by USEPA. Many of the concerns expressed by USEPA were regarding a lack of adequate information and the need for more detailed analysis prior to completion of the EIS process and issuance of permits. This is contrary to a April 15, 2014 USEPA-USACE joint letter to the applicants prior to the start of EIS process that assured them it would be based upon the best available information and no new studies would be required to complete the process.
USEPA: New information, specifically the Missouri River Bed Degradation Feasibility Study Technical Report has become available since the Draft EIS.	New information was considered and changes were made to the FEIS based upon relevant information obtained during the DEIS comment period. The referenced study was a 7 year, multi-million dollar detailed report conducted under Section 216 of the Flood Control Act of 1970 (Public Law 91-611). The report was completed by USACE in May of 2017 due to implications of bed degradation upon a federal project (Missouri River BSNP). The study is specifically cited and discussed in section 4.2.1 of the FEIS.
USEPA: Suggestion that a level of analysis similar to the Missouri River Bed Degradation Feasibility Study Technical Report should be completed for the Kansas River before issuance of permits.	This is contrary to an April 15, 2014 USEPA-USACE joint letter to the applicants prior to the start of EIS process. Similar bed degradation studies have been conducted for the Kansas River such as the 1984 Simons and Li analysis entitled " *Analysis of Channel Degradation and Bank Erosion in the Lower Kansas River"* and a study by USACE in

	2010 entitled "*Hydrologic and Geomorphic Changes on the Kansas River".* Both are referenced and discussed in the FEIS and both studies concluded that dredging at past levels or lower levels of extraction, in accordance with the Regulatory Plan, should not contribute to bed degradation. Additional study of dredging and bed elevations on the Kansas River to the level of analysis performed for the Missouri River Bed Degradation Feasibility Study Technical Report is not necessary. We have 25 years of bed elevation survey and monitoring data on the Kansas River and the Regulatory Plan mitigates the potential effect of the work on the bed elevation of the river and many other factors.
USEPA: Considerations related to the interaction between bed degradation of the Missouri River and Kansas River and other related factors.	Missouri River bed degradation and dredging operations are discussed within multiple sections of the FEIS including the executive summary (Cumulative Impacts), the introduction (Section 1.4.4), extensive discussion in Section 2.3.1.1 (Missouri River Dredging Operations), Section 3.2.1.5 (River Geomorphology), extensive discussion in Section 4.2 (Past, Present and Reasonably Foreseeable Actions) and Section 4.3 (Cumulative Impacts). Missouri River bed degradation analysis is performed every 5 years prior to issuance of new dredging permits. Kansas River bed elevation monitoring has been performed every 2 years since 1992 and future survey and monitoring will continue to be required on a 2 year interval. Beginning in 2015, 3 additional cross sections at KS River mile 4.4, 5.9 and 7.3 were provided by KS River Dredging companies at the request of USACE to track degradation near the confluence of the Kansas and Missouri Rivers even though no dredging takes place downstream of river mile 9.4.
USEPA: Since the Draft EIS was published, the Kansas River has been chosen to be a part of the Sustainable Rivers Project.	The Sustainable Rivers program is focused on USACE reservoir flow releases, timing and volumes such as a "pulse" flow for overall environmental values including fisheries. The proposed dredging work will not negate existing plans under the program.

	The FEIS discusses reservoirs influence on the river in Section 3.6, page 3.6-6 and Section 4.2.2 discusses past actions including reservoir impacts. Permits are re-evaluated every 5 years, so synergies between the sustainable rivers program and dredging permits can be analyzed and updated as needed for planning and other programs and purposes into the future.
USEPA: There has been substantial public investment in and along the river.	The DEIS and FEIS included discussion regarding direct and indirect effects of the work on public infrastructure and other investments along the river in Chapter 3. Potential impacts were considered for the proposed action and different alternatives considered. Cumulative Impacts, including past, present and reasonably foreseeable actions are also considered in Chapter 4.
USEPA: The City of Topeka has long term plans to make the Kansas River a recreational, residential and commercial center and that the FEIS did not adequately categorize the investment taking place in and along the river or proposed changes to the City's existing water intake weir.	Dredging on the river does not foreclose any of the City plans for infrastructure improvement, park and recreation opportunities, or Corps work on levees. The changes to the weir have not yet taken place and are currently in the planning phase. The existing study by the City began with a Riverfront Plan initially developed in 2000. The City of Topeka, Kansas submitted no comments or objections regarding the proposed work following multiple Public Notices for the scoping process, the DEIS or the FEIS.
USEPA: In October of 2017, USEPA awarded a $300,000 "Brownfields" grant to the City of Topeka.	The grant to the City mentioned in the letter is for 12 Phase I and 6 Phase II preliminary environmental site assessments for the presence of pollutants or contaminants within Topeka, Kansas. Those assessments are part of the initial steps toward redevelopment of several upland properties within the city and not directed or earmarked only for the Riverfront property as we understand it.
USEPA: A significant investment has been made by federal, state and local governments as part of the inclusion of Kansas River in the National Water Trails System.	In 2012, the Kansas River was listed as part of the National Water Trails System. To qualify, a river must meet the following criteria: open for public use, continue to be open for use for 10 years, in compliance with land use plans and supported by landowners where access points are located. This topic was previously addressed in comment/response matrix in Section 7.2.5 of the

	FEIS and was considered in Section 3.7 of the FEIS. Nothing regarding the proposed work would change or affect eligibility criteria.
USEPA: Increased interest in developing the river as a recreational resource and the great economic opportunities that this represents should be taken into consideration before adding new permits upstream of Bowersock Dam.	Recreation as it relates to the proposed work and alternatives was discussed in detail within Section 3.7 of the FEIS. Dredging will not preclude any recreational opportunities at Topeka or elsewhere on the river. The USEPA also commented that 2 new permits were being considered upstream from Bowersock Dam in Lawrence, Kansas. One permit renewal is requested by Builders Choice Aggregates located downstream of Topeka and the re-initiation of dredging at a site upstream of Topeka has been requested by LBB, LLC. Dredging for aggregates within the Kansas River at these two sites in the Topeka area have taken place for many years. No other dredging work upstream of Bowersock Dam is proposed.
USEPA: After modification of the Topeka weir, 118 miles of Kansas River would be free-flowing and open from Lawrence, Kansas to the headwaters.	There are two additional structures restricting recreational passage on the river. There is a low-head dam downstream of Topeka at the Tecumseh Energy Center near river mile 76 and a set of weirs upstream near river mile 120 at Belvue, Kansas for the Jeffrey Energy Center water intake. These are discussed in Sections 3.2 of the FEIS.
USEPA: Safety concerns for recreational users of the river.	Potential hazards on the river are identified and discussed in Section 3.7 of the FEIS. An entirely new section has been added to the Regulatory Plan, (Section X), to promote safe, shared use of the river and its' resources. Compliance with USCG regulations are required, including operations and markings, and more stringent requirements have been developed for notification and marking of dredge operations and work cables. There are no records of past boating accidents associated with the proposed work.
USEPA: Aesthetic considerations for the work taking place near Topeka.	The closest proposed dredging locations are located 2 miles upstream and 8.5 miles downstream of the Topeka, Kansas weir and outside the city limits and proposed development area.

Masters Dredging: Comment regarding the application of the Regulatory Plan to past and future permits with regard to bed degradation.	Appendix A of the FEIS contains the Regulatory Plan for dredging activities on the Kansas River. Section I of the plan contains restrictions of authorized work pertaining to the limits of bed degradation in an authorized reach. A maximum of 2 feet of degradation is allowed in any 5-mile dredged reach. If degradation occurs, permit modification of the authorized dredge quantity or the suspension of dredging in that area is enforced by special condition of the permit. Masters Dredging disagrees with the past and proposed future method used by USACE to determine bed degradation and aggradation. Similar comments were submitted for the DEIS and those plus the USACE responses are found in Section 7 of the FEIS, (Reference comment letter # 11 on pages 7-16,30,31,32,33,34 35,45,82,83 and 84).
Masters Dredging: Calculation of the river bed elevation at a cross-section located at rivermile 26.4 including a spreadsheet comparing the 1992 baseline and 2013/14.	The analysis and calculations provided was performed for one isolated cross-section (RM 26.4). It admittedly did not include the required 5-mile averaging calculation used by USACE in past and proposed methodologies. Due to localized fluctuations that can occur to the elevation of the river bed, 5-mile averaging of several cross-section elevation readings is used for a more comprehensive review of degradation and aggradation conditions in the river system.

This ROD outlines the agency's permit decision based upon Section 10 of the Rivers and Harbors Act, NEPA and the comments gathered through both agency and public participation in the process. An Environmentally Preferred Alternative has been identified by USACE that compares the anticipated impacts resulting from the proposed work and reasonable alternatives to that work on a total of 9 resource categories identified through the EIS process. An Agency Preferred Alternative has also been identified by USACE that considers the need for aggregate in the context of anticipated impacts upon 14 resource categories and a stable and balanced river system providing multiple environmental and public benefits in accordance with the general policies for evaluating DA permit applications at 33 CFR 320.4. The alternatives are discussed in Sections 4 and 5 of this document.

SECTION 4

Alternatives Analysis

4.1 Scope of Analysis

Analysis of the environmental consequences of the Proposed Action and other alternatives is required by the Council on Environmental Quality (CEQ) NEPA regulations (40 C.F.R. 1502.14); Section 106 of the National Historic Preservation Act (NHPA) of 1966 (16 U.S.C. §470); and Section 7 of the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C §1531-1543). The type of alternatives to include, the impacts that should be analyzed, and the scope of analysis is defined differently and can vary somewhat under each authority.

4.1.1 NEPA

The Previous USACE decisions to permit commercial dredging on the Kansas River included either an environmental assessment (EA) of the work, normally completed on a 5-year cycle or an environmental impact statement (EIS), which was last completed in 1990.

The scope of the proposed work includes:

- Project scope – This ROD contains the agency's decision pertaining to activities occurring within the Kansas River that are regulated under the authority of Section 10 of the RHA and those activities that would not occur but for the permitted action. This includes extraction of sand and gravel resources from the river bed using hydraulic dredging equipment. No changes to current operations of vessels or dredges on the river or the location or operations at land-based materials handling and processing plants are proposed. Dredging operations are evaluated in the FEIS to the extent that direct and indirect impacts to the Kansas River may be associated with these activities.

- Proposed Action and alternatives – The FEIS scope included environmental analysis of the Proposed Action, Reduced Limit Alternative and No-Action Alternatives. Within the No-Action alternative, several sources were discussed to replace all or some portion of the supply of Kansas River aggregates from alternate locations. Some of those sources and operations could require other USACE permit actions under Section 10 and/or other authorities. For example, CWA Section 404 permits would be required for fill activities in wetlands, streams or the Kansas River associated with construction or operation of alternative facilities. The No-Action Alternative and Reduced Limit Alternative rely on alternative sources of suitable sand and gravel to either replace or supplement sand and gravel dredged from the Kansas River in order to meet all or a portion of anticipated regional demand for the product.

- Geographic scope – The geographic scope of the FEIS included the 170-mile length of the Kansas River and its' floodplain from near Junction City, Kansas downstream to the mouth at Kansas City, Kansas. (Figures 2 & 3).

- Temporal scope – Dredging activities have occurred on the Kansas River for at least the past 100 years. Previous dredging permits have been authorized for 5-year periods. To the extent that a specific resource analysis considers future trends, trends up to a 20-year time frame were evaluated. For the cumulative analysis, projects and programs reasonably likely to occur within a 20-year time frame were evaluated. Sufficient information on future foreseeable actions was not available to reasonably analyze future trends beyond an approximately 20-year time frame.

4.1.2 National Historic Preservation Act

Projects involving federal land, funds, review, or permitting are subject to compliance with Section 106 of the NHPA. Section 106 requires federal agencies such as the USACE to take into account the effects of their undertakings on historic properties. A "historic property" is any district, archeological site, structure, sacred site, or object that is included on or eligible for inclusion in the National Register of Historic Places (NRHP). As the lead federal agency with jurisdiction over the permitting of commercial dredging on the Kansas River, the USACE is responsible for ensuring compliance with Section 106 of the NHPA and other pertinent cultural resource laws and regulations. Section 106 also requires that the USACE consult with SHPOs, federally recognized Native American tribes, local governments, and other interested parties regarding the proposed undertaking. In addition, the Advisory Council on Historic Preservation (ACHP) would be consulted for projects adversely impacting historic properties.

Part of the USACE's responsibility under the NHPA is to determine scope of analysis, or the Area of Potential Effect (APE) in the NHPA, which should include those areas that may be affected by the undertaking. Project-related activities with the potential to directly affect historic properties include excavation and removal of sand and gravel from the main channel of the river. Potential indirect effects that may result from increased river bed degradation related to dredging include erosion, induced instability, head-cutting, and related channel effects from dredging activities. Areas affected by erosion induced by head-cutting could include banks of the river and localized areas of tributaries. Due to the potential impacts, the APE for this Project was determined to include the main channel of the Kansas River from the confluence with the Missouri River (RM 0) to Junction City, Kansas at RM 170. The APE also includes perennial tributaries joining the river for a distance of 0.25 mile upstream or to the first upstream control point. A "control point" includes any natural streambed feature or human-made structure that provides grade control and controls or impedes the upstream progress of a head-cut. Because degradation of the tributaries is not likely to extend more than 20 feet beyond the current banks of the river or its tributaries, the APE extends 20 feet landward of each bank.

The upland processing plants owned and operated by the dredging permit applicants are not included in the APE as they were previously permitted by the USACE, if authorization was required at all. It is reasonably foreseeable that some alternatives may result in extraction of

sand or gravel from new upland mining sources. These upland mining sources are not included in the APE for this Project because actions related to the upland mining sources would not be subject to any of the USACE permits that would be issued under this action. Construction and operation of proposed upland processing plants and alternate mining sources were considered in the direct, indirect and cumulative effects analysis for each of the alternatives and the proposed action in Chapters 3 and 4 the FEIS.

4.1.3 Endangered Species Act

The ESA is the primary federal law protecting threatened and endangered species. The ESA and its subsequent amendments provide for the protection and conservation of federally listed species and the habitats upon which they depend. Under Section 7 of the ESA, federal agencies (such as the USACE) are required to consult with the USFWS to ensure that any federal undertaking, funding, permitting, or authorizing actions would not likely jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat. "Critical habitat" refers to a specific geographic area(s) that contains features essential for the conservation of a threatened or endangered species, and that may require special management and protection (a more complete definition can be found in the ESA).

The scope of analysis, or Action Area, considered under ESA is defined as the geographic area within which the direct or indirect effects (physical, chemical, and/or biotic) of the proposed federal action will occur, and conforms closely to the geographic scope of the FEIS. It includes the main channel and floodplain of the Kansas River from its' mouth at Kansas City, Kansas upstream to Junction city, Kansas at mile 170. The Action Area also includes perennial tributaries joining the river for a distance of 0.25 mile upstream or to the first upstream control point.

4.2 Alternatives Evaluation Criteria and NEPA Analysis

Issuance of the requested permits by the USACE is a discretionary federal action that requires an environmental review by the USACE in accordance with the general policies for evaluating DA permit applications at 33 CFR 320.4 and the provisions of the National Environmental Policy Act (NEPA). Unless a federal action is categorically excluded (NEPA Implementing Regulations; 40 CFR 1500 – 1508), NEPA regulations require preparation of a basic environmental assessment (EA) for government funded or authorized actions that would result in finding of no significant environmental impacts (FONSI) and an Environmental Impact Statement (EIS) for those actions that are likely to result in significant environmental impacts. The proposed work is regulated under Section 10 of the Rivers and Harbors Act. Therefore, a permit granted by the USACE is necessary to perform the work within the Kansas River as requested by the applicants. A FEIS has been prepared in accordance with the CEQ Regulations for Implementing the Procedural Provisions of the NEPA (40 CFR 1500-1508) and USACE regulations. The NEPA implementing regulations place great weight on the evaluation of alternatives to a Proposed Action (40 CFR 1502.14). The FEIS included a comprehensive discussion of the Proposed Action,

the No-Action Alternative, the Reduced Limit Alternative and other identified alternatives considered to the Proposed Action in Chapter 2 of the FEIS.

Issues to be evaluated in the EIS were developed through a NEPA scoping process that included public scoping, a public notice and opportunity for public and agency comment. One public scoping meeting and one cooperating agency scoping meeting were conducted on August 3, 2015. A total of 182 scoping comments were received and evaluated to form the framework of further analysis for the EIS.

The following issues were raised during the scoping process.

- Geology and Geomorphology
- Infrastructure and water supply
- Alternatives
- Impacts of the work to the ecosystem and protected state and federal wildlife species
- Existing environmental programs
- Regulatory Authorities under the Clean Water Act
- Recreation and Safety
- Cumulative impacts

Based on the issues raised during scoping and DEIS comment periods and the requirements of NEPA, the FEIS describes the potential environmental consequences of the Proposed and Alternative Actions for the following resource areas:

- Geology and Geomorphology
- Infrastructure
- Water Resources
- Wetlands
- Terrestrial & Aquatic Resources
- Cultural Resources
- Air Quality
- Land Use
- Economics and Demographics
- Recreation
- Floodplains
- Federally Listed Species
- Noise
- Climate Change

The CEQ Guidelines for implementing NEPA require the lead federal agency to identify the Environmentally Preferred Alternative (40 C.F.R. Section 1505.2[b]). The Environmentally Preferred Alternative is the alternative that will promote the national environmental policy as described in NEPA. Ordinarily, this means the alternative that is anticipated to cause the least

amount of damage to the biological and physical environment and that best protects, preserves, and enhances historic, cultural, and natural resources.

The variability of impacts to environmental resources within and adjacent to the river was considered for each alternative. This review found that, for most resource areas identified above, the environmental impacts between the Proposed Action and Reduced Limit Alternative varied only slightly. This is due to the difference in dredged quantities between the two alternatives and the fact that the revised Regulatory Plan for both alternatives is the primary limiting factor for degradation related impacts to the resource categories. Differences between the two alternatives were, however, noted for floodplain and terrestrial habitat resources.

In comparison with the two Kansas River in-stream dredging alternatives, however, the No-Action Alternative resulted in substantial variability relative to most resource considerations with the exception of noise, air quality and climate change. The reason for the substantial difference in potential impacts is the shift from in-river resources associated with Kansas River dredging to floodplain pit mining activities and quarry operations that generally take place outside the river in floodplain and adjacent upland areas.

To identify the Environmentally Preferred Alternative, the results of the environmental consequences analysis completed for the FEIS were reviewed for four alternatives; The Proposed Action, the Reduced Limit Action and the No-Action alternatives consisting of pit mining in the Missouri or Kansas River floodplains or quarry pit operations that take place primarily in upland locations

Four additional alternatives identified and discussed in the EIS but not carried forward for detailed analysis included 1) development of a sediment budget for the Kansas River, 2) dredging in reservoirs within the watershed of the Kansas River, 3) dredging within smaller rivers in other watersheds located in Missouri and Kansas, and 4) Missouri River dredging. The sediment budget alternative, while not further evaluated, has similarities to the reduced limit alternative. The remaining three alternatives were evaluated in the FEIS and shown to be impractical for implementation relative to the purpose and need for the proposed work.

A comprehensive discussion of the anticipated impacts resulting from selection of the Proposed Action, Reduced Limit and No-action alternatives upon all categories of resources considered, were described in detail within Sections 3.2 – 3.15 of the FEIS.

4.3 Identification of the Environmentally Preferred Alternative

In compliance with the CEQ regulations at 40 CFR 1505.2 (b), the Environmentally Preferred Alternative is identified below. The evaluation of the proposed work, alternatives and selection of the Environmentally Preferred Alternative included the use and interpretation of the best currently available information. To make this determination, the resources most closely tied to the environmental consequences of the proposed and alternative actions were selected for further comparison. The resources selected for comparison included the following:

- Geology and Geomorphology
- Water Resources
- Floodplains
- Federally Listed Species
- Climate Change
- Land Use
- Wetlands
- Terrestrial and Aquatic Habitat
- Air Quality

The direct, indirect and cumulative impacts expected to result from the proposed work and alternative actions upon all environmental resource categories were described in detail in Chapters 3 and 4 of the FEIS. The expected impact to the resources selected for consideration of the environmentally preferred alternative were described in the FEIS. Equal consideration was given to the direct, indirect and cumulative impacts stated for the resources selected above to complete the analysis and determination of the environmentally preferred alternative.

In general, impacts to the 9 resources identified above for the proposed action and reduced limit action alternatives, which both involve in-river dredging, were consistent in intensity and occurred within the same resource categories due to the similar nature of work for the two alternatives. Similarly, the resource impact comparisons between the two No-action alternatives involving either floodplain pit or quarry pit mining were also fairly consistent but differed in the degree of impact for the resource categories of geology and morphology, water resources and floodplains. Quarry pit mining had a less severe rating for some direct and indirect impacts for those resource categories when compared to floodplain pit mining.

Marked differences between the expected direct and indirect impacts to the resource categories of geology and morphology, land use, floodplains and aquatic/terrestrial habitats and the intensity of those impacts were noted when comparing the two in-river alternatives with the two No-action alternatives that take place primarily in upland settings. This is primarily due to the dissimilar nature of the two different types of work (dredging or excavation) with respect to location and the types of resources primarily associated with either an aquatic or terrestrial environment. Determinations regarding the direct, indirect and cumulative impacts resulting from implementation of the proposed work or any of the 3 alternatives reviewed were all the same for the resource categories of federally listed species, air quality and climate change.

Under either the proposed work or the reduced limit alternative, no major changes in land use are anticipated. For this reason, either action is expected to result in fewer direct and indirect land use impacts than the no-action alternatives involving either floodplain pit mining or quarry mining. The direct impacts to adjacent floodplain resource resulting from either the proposed action or the reduced limit alternative are also expected to be similar and not more than

minimal in nature. The indirect impacts of the proposed work and reduced limit alternative on floodplain resources are anticipated to be either less than minimal or not more than minimal, respectively because processing plants associated with Kansas River dredging are already in place.

Consideration and comparison of the proposed action and each of the three alternatives identified in the FEIS to determine the environmentally preferred alternative are discussed below:

i. Proposed Action: Approval of the proposed action would not involve significant change to the current condition of the Kansas River or change direct or indirect impacts to the resources considered. All of the proposed dredging areas and upland processing sites are either currently in use or have been utilized for this purpose in the past. The requested extraction tonnage, if approved, would represent the lowest overall dredging quantity ever authorized on the Kansas River. While it is possible that the impacts associated with bed degradation could occur sooner under the proposed action as compared to the reduced limit alternative, bed degradation would be limited to a maximum limit of -2 feet from the baseline elevation under either alternative. The proposed work is expected to have a lower direct impact upon the resource category of terrestrial habitats and a lower indirect impact upon floodplain resources when compared to the reduced limit alternative. The remaining direct, indirect and cumulative impacts of this alternative are all similar to the reduced limit alternative. When compared to the floodplain or quarry pit alternatives, the proposed work would have fewer and reduced direct and indirect impacts to terrestrial impacts, land use and floodplain resources. Conversely, the proposed work would have greater direct and indirect impacts upon aquatic habitats and more potential for impact to Kansas River geology and morphology than the non-river dredging alternatives. Cumulative impacts are not expected to be significant.

The direct, indirect and cumulative effects to the 9 resources considered for determination of the environmentally preferred alternative are not expected to be significant under this alternative.

ii. Reduced Limit Alternative: The reduced limit alternative would authorize a maximum extraction of aggregate from the Kansas River of 1.67 million tons. This is 230,000 tons less than the proposed action. The direct and indirect impacts of this alternative and the intensity of those impacts to the majority of the resource categories evaluated were found to be similar to the proposed work, due in part to the limitations placed on bed degradation by the regulatory plan applicable to either in-river dredging work alternative. The reduced limit alternative does, however, have a slightly elevated indirect impact rating for the resource category of floodplains and an elevated direct impact rating for terrestrial habitats in comparison with the proposed action. This is due to anticipated minor increases in upland mining from quarries or floodplain pits to supply the same amount of aggregates to the market.

Selection of the reduced limit alternative is likely to result in the need for additional aggregate from alternative sources as discussed in Section 3.5.2.3 of the FEIS.

The direct, indirect and cumulative impacts to the 9 resources considered for determination of the environmentally preferred alternative are not expected to be significant under this alternative.

iii. Floodplain Pit Mining: The floodplain pit mining alternative would involve land clearing and the removal of topsoil and overburden materials from sites each approximately 20-60 acres in size. Development of the sites involves the excavation of pits located in areas having shallow groundwater which allows the use of hydraulic dredging. Sites where pits are developed typically consist of agricultural lands in row crop production or mature forested tracts of land. Missouri River and Kansas River floodplain areas contain a much higher percentage of wetlands than other properties found in uplands at higher elevations as described in Section 3.8.2.2 of the FEIS. Environmental losses and impacts related to land use, wetlands and floodplain resources associated with the land clearing, overburden and material stockpiling and the excavation work associated with site development are anticipated to be generally higher than all other alternatives. The severity of the expected impacts associated with this alternative are described primarily in Sections 3.3, 3.9 and 3.10 of the FEIS.

Due to the severity of the direct and indirect impacts upon the 9 resource categories considered, this work in comparison with the other alternatives represents the least environmentally preferred alternative.

iv. Quarry Pit Mining: The quarry pit mining alternative involves the production of aggregate in various gradation through crushing rock mined at quarry sites located primarily in upland locations. These sites may be located on properties containing various degrees and amounts of aquatic and terrestrial resources but disturbances are generally more terrestrial in nature rather than aquatic. Unlike all other alternatives, no direct impacts upon the resource categories of geology and morphology or to water resources are expected to occur from this alternative. As described in Section 3.3 of the FEIS, the direct impacts to the resource category of land use resulting from quarry mining could become significant over time depending on the total number and size of quarries developed under a no-action alternative. The total acreage displaced by quarries over time was considered in the FEIS and found likely to be substantially less, however, than land areas required for floodplain pit dredging operations. The indirect impacts of quarry mining were found to be either less than or similar to floodplain pit dredging for all resource categories. Aquatic resources, including wetlands that may occur at some quarry sites and the direct and indirect impacts of this alternative are expected to be minimal and can vary widely by the specific quarry location. Dependent upon location and jurisdiction under the Clean Water Act, aquatic resources impacted by quarry operations may require compensatory mitigation.

When considering the severity of impacts to the 9 resources considered, this alternative had the most "No impact" ratings when compared to the proposed work and remaining no-action alternatives. This alternative also had the fewest "Not significant" impact ratings when compared to the other alternatives. With the exception of land use, the direct, indirect and cumulative impact ratings of this alternative upon the remaining resource categories considered for this determination were either not significant or not more than minimal.

After review and analysis, USACE has concluded that the quarry pit mining, No-action alternative, would result in the least direct, indirect and cumulative impacts to the biological and physical environment, and best protect, preserve, and enhance historic, cultural, and natural resources. Therefore, the No-action, quarry pit alternative is considered the environmentally preferred alternative.

4.4 Cumulative Impacts Assessment

"Cumulative impacts" are defined as the impact on the environment that results from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes the actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR Section1508.7). The cumulative impact analysis section is intended to provide a broader, more expansive assessment of potential impacts associated with implementing either the Proposed Action or alternatives by considering the wide array of other activities, new and ongoing projects, and programs in the Project area and vicinity. In this way, the potential interactions between commercial dredging of sand and gravel and reasonably foreseeable projects and programs can be explored, and any significant adverse or beneficial cumulative impacts can be identified and considered. The cumulative impacts of all alternatives are fully discussed in Section 4.3 of the FEIS.

The Regulatory Plan will mitigate the anticipated and unanticipated significant direct, indirect and cumulative impacts on the Kansas River, its' resources and the regional economy as assessed in the FEIS. Restrictions are in place for the protection of resources by established limits regarding bed degradation, the rate of total allowed extraction in different reaches of the river based upon sediment analysis, limits on extraction rates by individual dredges, distances between permitted dredging areas and the river length of any single permitted authorization. Two companies, (Kaw Valley and Holliday Sand) have multiple dredging sites and are able to shift some production and associated impacts of the work, if necessary due to bed degradation, to alternate locations on the river to minimize adverse impacts upon the Kansas River and associated aquatic and terrestrial resources. These two companies also operate existing floodplain pit mines that would allow them to shift some production to those sites if necessary due to a change in condition (Primarily bed degradation) in the Kansas River.

4.5 Monitoring and Adaptive Management Framework

During the five-year permit cycle, if the USACE determines from required new survey data collected and analysis conducted every two years that additional measures should be taken to protect critical resources, it may modify, suspend, or revoke the permit at any time. Renewal of the dredging permits after five years would be a new Federal action requiring assessment of the prior NEPA documentation and assessment of any new information.

The USACE has previously concluded that more than two feet of bed degradation from baseline elevations, particularly in the previously most degraded reaches of the river is contrary to the public interest regardless of the cause. Bed degradation of the Kansas River in excess of 2 feet from the baseline elevation could cause potentially significant impacts on multiple resources including but not limited to water intakes, navigation, endangered species, and cultural resources and would be contrary to the public interest.

SECTION 5

Evaluation of the Agency Preferred Alternative

5.1 Agency Preferred Alternative

Identification of the agency preferred alternative follows review of the proposed work and alternatives, environmental considerations, technical analysis and information received from the public and agencies in response to the scoping and DEIS comment periods. Chapters 3 and 4 of the DEIS and FEIS discussed the differences in impact that in-stream dredging and pit or quarry mining would have upon environmental resources. In this section, all affected resources and considerations discussed in the FEIS will be compared to determine the USACE preferred alternative. All resource categories listed in Section 4.2 of this document and more completely described in the FEIS were considered for selection of the agency preferred alternative. Comparisons were made between the direct, indirect, and cumulative impacts of resource categories with equal consideration given to impact type.

5.2 Consideration of Alternatives

The evaluation of the proposed work, alternatives and selection of the Agency Preferred Alternative included the use and interpretation of the best available information obtained during the EIS process. The potentially impacted resources considered for comparison and selection of the agency preferred alternative includes all 14 resource categories described in greater detail in Chapters 3 and 4 of the FEIS. The resource category comment most submitted to USACE during project scoping and the DEIS public involvement process involved river bed monitoring and waterbody/bank integrity of the Kansas River. These issues relate directly to geology and morphologic factors, therefore this resource was important for comparison. The Kansas River contains many structures including dams, weirs, bridges and pipelines important to the public interest particularly within the realm of transportation and drinking water supply. The integrity of these structures while related to and affected by the morphological concerns mentioned, represent important primary intrastate and interstate (I-35, I-435, I-635, I-70, U.S. 24, 59) ground transportation links. Five railroad bridges also cross the Kansas River and several miles of track run parallel to the river. Transportation on these railroads provides interstate commerce and represents the mechanism for the transportation of large quantities of freight, therefore both economic considerations and infrastructure are key resource categories for permit analysis. The Kansas River provides drinking water for a population of more than 800,000. Concerns regarding the possible effect of the work upon water quality and supply were also repeatedly submitted during the EIS process, therefore, the ratings for impacts to water resources resulting from the proposed work and alternatives was important for comparison and selection of the agency preferred alternative. Considerations for the wetlands, endangered species and cultural resources are all factors required for USACE permit compliance with NEPA, ESA and Section 106 of the NHPA.

The expected impacts to each resource resulting from the proposed action and the three alternatives fully carried forward for consideration in the FEIS are discussed on the following pages.

5.2.1 Proposed Action (Applicant Preferred Alternative): The direct, indirect and cumulative impact ratings associated with each resource category for the proposed action were all classified as less than significant in the FEIS. The economic and demographic rating for the proposed alternative differs from other alternatives because at reduced rates of production, operational costs although minor, cannot be distributed as economically, resulting in an increased cost per unit, which in this case is a ton of aggregate. In addition, using alternative sources of aggregate and/or processing methods both add more cost to the finished product as explained in Section 3.5 of the FEIS.

The proposed action sought by applicants is for a total amount of extraction less than the tonnages considered in a bed degradation analysis on the Kansas River (USACE 2010) over the time period of 1998 through 2009 and illustrated in Figures 17 and 18 of the FEIS. During the period of 1998 - 2009, authorized extraction quantities of aggregate from the Kansas River ranged between 3.4 M tons and 2.2 M tons of material and actual dredged quantities ranged between 2.49 M and 1.18 M tons. The results of the analysis indicated that if dredging were the primary cause for bed degradation from 1998-2009, a stronger correlation would be evident. The analysis also showed that cross-sections in dredged reaches (3 or more years of dredging) are slightly more likely to have degraded than nearby cross-sections not in actively dredged reaches of the Kansas River. Since dredging may contribute to bed degradation, compliance with the Regulatory Plan is required as a special condition of permits issued for the proposed work. The proposed action (1.9 M tons) would represent the lowest authorized amount of extraction ever permitted in the history of dredging on the Kansas River. Therefore, the extraction of up to 1.9 M tons of material in combination with the limits and other mitigative measures of the Regulatory Plan is not expected to result in more than minimal bed degradation on the Kansas River.

One of the key factors in preventing adverse impacts that could potentially result from in-stream dredging is the control of bed degradation. For this reason, permit conditions and the Regulatory Plan will limit bed degradation resulting from dredging to avoid direct and indirect impacts to this and all other related resources such as infrastructure and aquatic habitat resource impacts. Should more than 2 feet of bed degradation occur, regardless of the reason, within a 5-mile reach of that work, dredging would be suspended until such time as the bed recovers to a stable level (less than 2 feet) from the baseline elevation. The process of opening and closing areas of the river for dredging work is more fully described within Section I. of the Regulatory Plan, (Appendix A) of this document and also Appendix A of the FEIS. All practicable mitigation measures have been adopted to avoid and minimize impacts to the resources directly and indirectly affected by the proposed work.

5.2.2 Reduced Limit Alternative: The impact ratings associated with each resource category for this alternative are all classified as less than significant. The impact ratings of this alternative mirror the impacts of the proposed action for most all resource categories. The FEIS did, however, demonstrates a distinction between the two dredging alternatives in the magnitude of direct impact for the economic/demographic resource category. The magnitude of indirect impacts also differ for the infrastructure and floodplain resource categories as discussed in Sections 3.4 and 3.9 of Chapter 3 in the FEIS.

The reduced limit alternative is not expected to provide a quantity of aggregate materials from the Kansas River to fully supply the regional market. Selection of the reduced limit alternative is likely to result in additional aggregate materials being supplied from alternative sources as discussed in Section 3.5.2.3 of the FEIS. The aggregate source expected to be utilized if the reduced limit alternative is selected would be floodplain mining in the Missouri River or Kansas River floodplain. That alternative is expected to result in the greatest environmental and overall impact in comparison with other considered alternatives.

Due to the total tonnage limit imposed by the reduced limit alternative, the production cost of material dredged under that alternative would increase approximately $0.50 per ton as shown in Table 21 found in Section 3.5 of the FEIS. Under the reduced limit alternative, that increased production expense at full extraction limits would be approximately $835,000 per year. This alternative would result in reducing the scale at which applicants are able to spread production costs and therefore be expected to increase the existing cost per ton for aggregate.

5.2.3 No-Action Alternatives – Alternate Sources

5.2.3.1 Floodplain Pit Mining: This alternative would be expected to result in a significant impact upon land use. In addition, expected stream and wetland impacts associated with floodplain pit mining would likely require permitting and mitigation under the Clean Water Act or state programs.

Floodplain pit mining is expected to result in equivalent or more overall disturbance and impact to the majority of the 14 resources considered in the FEIS than any other alternative. These impacts would include short-term and long-term direct and indirect losses of terrestrial habitat, altered composition of vegetation, altered habitat functions and impacts to wildlife from habitat fragmentation. Aquatic resources and water quality could be impacted directly by mechanized clearing, excavation, fill, buildings, roads and other associated work for floodplain pit mining. Indirect impacts could include the alteration or destruction of stream or wetland habitat outside the pits from the introduction of contaminants and sediment via process water and waste material discharges and storm water runoff from pit mining sites.

Cultural resource impacts would be more likely to occur in floodplain areas as compared to in-stream dredging. It is unlikely however that the cultural resources in this environment would

have the potential to be of significant value from a historic or cultural resources perspective due to the extent of past disturbance.

5.2.3.2 Quarry Mining: This alternative could result in significant impacts to land use resources, similar to the floodplain pit alternative. The majority of other direct, indirect and cumulative impacts associated with this alternative mirror those of floodplain pit mining with the exception of geology and morphology, water resources and floodplains. No direct or indirect impacts to geology or geomorphology are expected to occur from quarry mining operations. Quarry mining would be expected to generate increased direct and indirect risks to cultural and historical resources as compared with other actions, including floodplain mining although both were assigned similar values. Due to high site variability, the potential for impacts is highly dependent upon the pit/quarry location.

Quarry mining by itself cannot currently provide the total quantity of materials required to supply market demand. The market for any quarry mined aggregate would be low because of the limited uses for the product due to the physical properties of the material. The production, operational and transportation expenses of supplying aggregates to market from a quarry are also anticipated to be greater than aggregates supplied from Kansas River dredging or floodplain mining as described in Section 3.5 of the FEIS. Therefore, in addition to the potential for impacts considered for this alternative, other described alternatives would need to be implemented, resulting in additional impacts to the other described resources. This alternative is not currently practicable due to cost. The increased and additional costs associated with land acquisition, production, permitting and transportation does not meet the project purpose and need as described in Section 3.5 of the FEIS. Due to production costs, the aggregate materials produced by this process would not currently be competitive with others in the market. This alternative also does not meet the purpose and need with regard to quality of the product desired by the applicants. The market for this type of manufactured sand is very limited and the material is not suitable for the majority of applications described in the purpose and need for the work which involves use of the material as a component in concrete.

5.3 Determination of the Agency Preferred Alternative:

The determination of the agency preferred alternative is based upon consideration of the applicants preferred alternative, other identified alternatives, the project purpose and need, environmental and other resource considerations, technical analysis and information received from the public and agencies in response to the scoping and DEIS comment periods. Chapters 3 and 4 of the DEIS and FEIS discussed the differences in impact that in-stream dredging and pit or quarry mining would have upon environmental resources. After thoughtful consideration of all affected resources, the project purpose and need and a review of the impacts associated with each alternative, the Proposed Action to authorize up to 1.9 M tons of extraction from the Kansas River is the agency preferred alternative.

Limiting dredging work to extraction quantities expected to result in no more than 2 feet of degradation, based upon over 25 years of monitoring data and the incorporation of special conditions to permits backed by a Regulatory Plan, creates a safeguard against unreasonable impacts to the Kansas River. During subsequent permit cycles, the USACE will continue to gather more information about the Kansas River by monitoring water surface profiles and bed elevations every two years. This data, in addition to environmental resource information will provide the basis for future permits and permit conditions to help ensure that impacts to the Kansas River and its' resources are minimized and avoided to the maximum extent possible under the authority of Section 10 of the Rivers and Harbors Act. The USACE recognizes that a comprehensive understanding of the system dynamics, geomorphic processes and river bed degradation dynamics of the Kansas River is not yet complete. The monitoring data provided at the expense of the dredging companies will help continue efforts to fully understand the river system and inform considerations for future permits.

SECTION 6

Required Mitigation

6.1 Regulatory Plan and Permit Special Conditions

The proposed dredging permits will be subject to the limitations of the Regulatory Plan (Appendix A). Mitigation and restrictions will include special permit conditions to ensure avoidance or minimization of impacts on environmental resources. The special permit conditions are based on the Regulatory Plan which includes ten types of buffers and restrictions and also requires riverbed degradation monitoring on a two-year cycle. All practicable mitigation measures have been adopted to protect the Kansas River from potential adverse effects resulting from the proposed work.

6.2 Regulatory Plan

The Regulatory Plan was originally developed during the 1990 EIS process. The intent of the plan is to limit the magnitude of dredging-related impacts to the Kansas River and to public and private interests and structures located in and along the river. Implementation of the Dredging Restrictions in conjunction with the Monitoring Program is intended to ensure that the established maximum acceptable level of impacts will not be exceeded.

The Plan consists of two main sections, one describing the operational limits and buffers related to the authorized work and the second describing the survey and monitoring program requirements. Revisions to the Regulatory Plan included topics discussed in the FEIS and in Appendix A of that document. The new conditions were developed based upon past performance of the plan and, in part, are based upon comments received during the public scoping and DEIS processes and are stated in detail below.

6.2.1 Restrictions Concerning Riverbed Degradation

The magnitude of dredging-induced riverbed degradation is a key factor influencing the degree of instability of the river channel. Degradation of the riverbed results in secondary impacts such as bank erosion, channel widening, lowering of water surface elevations in the river channel, lowering of water table elevations adjacent to the river, alteration of aquatic and terrestrial habitat, and a reduction in the structural integrity of manmade structures. Since secondary impacts increase as riverbed degradation increases, the degree of dredging-induced river channel instability can be limited by controlling the amount of dredging-related degradation.

Based on all available information, the Kansas City District has determined that most reaches of the Kansas River cannot sustain more than 2 feet of riverbed degradation below the riverbed elevations from the baseline riverbed elevation survey before secondary impacts exceed acceptable levels. Therefore, the maximum allowable reduction in the riverbed elevations is 2 feet for all reaches of the river subject to dredging operations. As part of the Monitoring

Program, an independent engineering firm will survey various established cross-sections of the riverbed every other year. The Kansas City District will compare the survey data against the baseline survey data collected in 1992, (or in certain cases where the 1992 data is not available, the oldest post-1992 survey data) to identify the average change in bed elevations through a 5-mile-long reach of river. The Corps recently identified that survey data submitted for past review did not include 1992 baseline elevations to fully analyze a full 5-mile reach for the lowest portion of the Kansas River subject to dredging (Kaw Valley Companies, Inc., RM 9.4 – 10.4). To correct this deficiency, 3 additional cross-sections at RM's 4.4, 5.9 and 7.3 were requested in 2015 and 2017. Future analysis and calculation of average changes in bed elevation through this 5-mile-long reach of river from RM 4.4 and upstream to the authorized dredging reach will include this recent data in comparison with the oldest available post-1992 cross-section bed elevations at those 3 RM's.

Any 5-mile-long reach of river is subject to bed elevation averaging. The average bed elevation for a 5-mile long reach will be rounded to the nearest hundredth of a foot using standard rounding procedures. A 5-mile-long reach can begin at any location on the river and will extend 5 miles upstream of that location with the following exceptions: no 5-mile-long reach of river will extend through the WaterOne weir (River Mile [RM]15.0), Bowersock Dam (RM 51.8), or the city of Topeka water intake weir (RM 87.0).

Within several months of receiving new survey data at the frequency intervals outlined in Section IV, the Kansas City District will provide a report of the survey analysis to the producers that:

- Quantifies the amount of bed degradation in every 5-mile-long reach in the surveyed portions of the river;
- Identifies those 5-mile-long reaches that in the current survey have degraded 1.5 feet or more below the baseline in the current survey and may be immediately closed to dredging if the next survey shows the reach has degraded 2 feet or more below the baseline elevation for the reach;
- Identifies those 5-mile-long reaches that in the previous survey had degraded 1.5 feet or more below the baseline elevation for the reach, that in the current survey have degraded 2 feet or more below the baseline elevation for the reach, and will immediately be closed to dredging; and
- Identifies those 5-mile-long reaches that in the previous survey had not degraded 1.5 feet or more below the baseline, that in the current survey have degraded 2 feet or more below the baseline because of an unforeseen event such as a flood or a prolonged period of low reservoir releases, and will be closed to dredging in 1 year.

A 5-mile-long reach of river that has degraded 2 feet or more below the baseline elevation for the reach and has been closed to dredging will not be reopened until its bed elevation increases

to an average elevation exceeding the established minimum for that reach. If a previously closed 5-mile-long reach of river has aggraded, such that the average bed elevation for the reach is less than 2 feet but more than 1.5 feet below the baseline elevation for the reach, it will be reopened with annual extraction of each individual dredging area within the reach limited to 50 percent of the amount that would normally be allowed for each individual dredging area. If the reach has aggraded, such that the average bed elevation for the reach is 1.5 feet or less below the baseline elevation for the reach, it will be reopened to its full annual allotment of sand and gravel.

Closing a reach that has degraded excessively shall be implemented through suspension or modification (not termination) of the permit in accordance with 33 CFR 325.7. Suspension of dredging in dredging areas partially located in a degraded 5-mile-long reach shall be limited to only that portion of the dredging area located within the degraded reach. Reopening a previously closed reach that has recovered sufficiently shall be implemented through reinstatement or modification of the existing permit in accordance with 33 CFR 325.7, not by issuing a new permit.

6.2.2 Restrictions Concerning the Rate of Sand Extraction

The rate[1] of sand and gravel extraction from a reach of river is an important factor affecting the river channel's stability. The magnitude of instability induced into the river channel by dredging activities increases as the rate of extraction increases (channel stability decreases as the length of time utilized to reach a given level of degradation decreases).

Therefore, greater channel stability can be obtained by limiting the rate of extraction within a reach of river to provide a reasonable period for the channel to adjust to declining bed elevations.

The following restrictions are being implemented to limit the rate of sand and gravel extraction from specified reaches of the river:

A. <u>REACH 1: The Confluence of the Kansas and Missouri Rivers to Bonner Springs (RMs 0 - 21.2).</u>

A maximum of 1 million tons of sand and gravel can be extracted from this approximately 21.2-mile-long reach of river annually. Refer to Section VII.B.1.c. for an additional restriction concerning extraction rates within this reach.

B. <u>REACH 2: Bonner Springs to RM 48.0 (RMs 21.2 - 48.0).</u>

No total annual extraction limit has been established for this approximately 26.8-mile-long reach of river. However, the maximum amount of sand and gravel that can be extracted

[1] The term <u>rate</u> is defined for purposes of this report as tons/time.

annually from any 15-mile-long section of river within this reach is 750,000 tons. A 15-mile-long section of river can begin or end at any location within this reach.

C. REACH 3: RM 48.0 to Bowersock Dam at Lawrence (RMs 48.0 - 51.8).

A maximum of 150,000 tons of sand and gravel can be extracted from this approximately 3.8-mile-long reach of river annually.

D. REACH 4: Bowersock Dam at Lawrence to the Confluence of the Kansas, Smoky Hill and Republican Rivers Near Junction City (RMs 51.8 - 170.4).

No total annual extraction limit has been established for this approximately 118.6-mile-long reach of river. However, the maximum amount of sand and gravel that can be extracted annually from any 15-mile-long section of river within this reach is 750,000 tons. A 15-mile-long section of river can begin or end at any location within this reach.

The rate of sand and gravel extraction by an individual dredge is an important factor affecting local[2] river channel stability. The diameter and depth of the dredge hole as well as local degradation beyond the dredge hole increase as extraction rates increase. Local degradation and secondary impacts, such as bank erosion and channel widening, can be limited and greater local channel stability can be obtained by limiting the extraction rate of an individual dredge. Therefore, the maximum annual extraction rate by a single dredge regardless of its location on the river will be limited to 300,000 tons of material. The actual allowable extraction rate for a single dredging operation may be less than 300,000 tons of material and will depend upon the reach of river being dredged and the number of dredges operating within that reach.

6.2.3 Restrictions Concerning the Length of and Distance between Dredging Operations

The maximum length of any reach of river authorized for dredging under the terms of a single permit is 1.5 miles. This restriction is intended to allow the producers fair access to the river by preventing any producer from using the permitting process to create an unfair advantage over other producers by securing a permit for an excessively long reach of the river. This restriction applies to any new dredging operation permitted after implementation of this Regulatory Plan. It does not apply to a dredging operation permitted prior to implementation of the Plan, unless subsequent to implementation of the Plan that dredging operation is altered (such as the relocation of dredging boundaries) to an extent that those changes require the issuance of a new permit document.

A minimum distance of 2,000 feet is required between the permitted reaches of adjacent dredging operations. This restriction will limit dredging-induced local channel instability, by

[2] The term local refers to the area directly impacted by a working dredge. This area could be relatively small, extending only a few hundred feet from the dredge, or it could be quite large, extending many hundreds of feet upstream and/or downstream of the dredge.

maintaining at least a 2,000-foot-long undredged reach of river between adjacent dredges. This restriction applies to any new dredging operation permitted after implementation of this Regulatory Plan. It does not apply to a dredging operation permitted prior to implementation of the plan, unless subsequent to implementation of the plan that dredging operation is altered (such as the relocation of dredging boundaries) to an extent that those changes require the issuance of a new permit document.

The maximum number of dredges authorized to operate within a single permitted reach of river is 1, for each 1.5 miles of river. This restriction will limit dredging-induced local channel instability, by limiting the number of dredges within each permitted reach of river.

6.2.4 Buffer Restrictions for Dams and Weir Structures

The Bowersock hydroelectric dam is located near RM 51.8. It was constructed in 1872 and was enlarged in 1926. The exact construction details of the dam are unknown. The structure is believed to be relatively unstable, since the elevation of the riverbed downstream of the dam is considered marginally adequate to prevent sliding failure of the structure. The dam acts as a riverbed control structure, and if it should fail, it could induce severe riverbed degradation, bank erosion and channel widening for many miles upstream. Construction of a second powerhouse on the north shore of the Kansas River and modifications to control structures for regulating the upstream pool level above the dam crest began in 2011.

Due to the condition of Bowersock Dam and its importance as a riverbed control and hydroelectric generating facility, the following restrictions are being imposed on the reaches of river located immediately upstream and downstream of the dam:

1. Dredging activities upstream of Bowersock Dam will not be allowed within approximately 750 feet of the dam. The actual distance will be controlled by part C. of this section, since two bridges are located immediately upstream of the structure.
2. Dredging activities downstream of the dam will not be allowed within 2,250 feet of the structure.
3. The maximum volume of material that can be extracted annually between RM 48.0 and Bowersock Dam is 150,000 tons.

Due to the uncertainties involved in evaluating the stability of Bowersock Dam, it is not possible to determine how many feet the downstream riverbed elevation can be lowered before the dam will fail. Therefore, the reach of river located immediately downstream of the dam will be closely monitored, and if dredging activities on the river appear to be jeopardizing the integrity of the structure, additional restrictions will be imposed.

No dredging will be allowed within 500 feet of any water intake structure or an associated weir or diversion jetty. This restriction will limit the potential for dredging-induced local channel instability to adversely impact the operation of such structures. This restriction does not apply to irrigation intakes. (These intake types are infrequent and transient in number and location).

The following additional restrictions are being imposed to protect the Water District No. 1[3] weir; and the city of Topeka's water intake structures, diversion jetties, and weir:

Water District No. 1 Weir.

This weir is an important riverbed control located near RM 15.0. The weir was initially constructed in the mid-1960s in response to continually lowering water surface elevations in that reach of river. If riverbed elevations downstream of the weir drop several more feet, the structure may fail. Failure of the weir could induce severe riverbed degradation, bank erosion and channel widening upstream of the structure and could impact water supplies for Water District No. 1 of Johnson County. Major modifications to the weir construction and materials from stacked rock to concrete caisson-style pilings were made in 2008 and other modifications to the weir spillway alignment and north shore bank protection are scheduled.

Due to the importance of the weir to Water District No. 1 for its water supply and due to the structure's importance as a riverbed control, the following restrictions are being placed on the reaches of river located immediately upstream and downstream of the weir:

a. Dredging activities upstream of the weir will not be allowed within 500 feet of the structure.
b. Dredging activities downstream of the weir will not be allowed within 2,500 feet of the structure.
c. The maximum volume of material that can be extracted annually between RM 12.4 (the upstream end of a natural rock deposit) and the Water District No. 1 weir is 300,000 tons.

Refer to Figure A-2 on page A-18 for additional clarification on the restrictions imposed on the reaches of river located immediately upstream and downstream of the weir.

City of Topeka Water Intake Structures, Diversion Jetties and Weir:

The City of Topeka has two water intake structures, two diversion jetties, and a weir located between RMs 86.9 and 87.2. These structures provide the city with its entire water supply. Low flow water surface elevations at the intakes are marginally adequate to meet the city's needs; therefore, any lowering of water surface elevations at the intakes could have a detrimental impact on the city's ability to withdraw water from the river. The diversion jetties divert flows from the left riverbank to the right bank where the intake structures are located. The weir functions like a dam, raising water levels upstream of the structure and increasing water surface elevations at the intakes. Loss of one of the diversion jetties or the weir or diminished

[3] Water District No. 1 refers to Water District No. 1 of Johnson County.

function of the structures could severely impact the city's ability to meet its water supply needs.

Due to the importance of the city of Topeka's diversion jetties and weir to meet the city's water needs, the following restrictions are being imposed:

a. No dredging will be allowed between the most upstream jetty and the weir.
b. Dredging activities upstream of the diversion jetties and weir will not be allowed within 1,000 feet of the most upstream diversion jetty.

Dredging activities downstream of the diversion jetties and weir will not be allowed within 2,000 feet of the weir.

6.2.5 Buffer Restrictions for Other Manmade Structures

Bridges: No dredging will be allowed within 500 feet of any bridge crossing the Kansas River. This restriction will limit the potential for dredging-induced local channel instability to adversely impact the structural integrity of bridges.

Pipelines: Pipelines buried in the riverbed have a high potential to be adversely impacted by dredging activities. If degradation of the riverbed exposes a pipeline, damage could occur through sagging, buoyancy or displacement of the line downstream due to an accumulation of debris. The following restrictions will limit the potential for dredging-induced localized degradation to expose buried pipelines:

1. No dredging will be allowed within 200 feet of any pipeline that is buried 10 feet or more below the riverbed's surface.
2. No dredging will be allowed within 500 feet of any pipeline that is buried less than 10 feet below the riverbed's surface.

Additional restrictions may be required for any pipeline located on or above the riverbed. Such restrictions would be developed on a case-by-case basis.

Each applicant is responsible for determining the locations and elevations of any pipelines crossing the river within a proposed permit's boundaries and within the reaches of river extending 500 feet upstream and downstream of those boundaries. This information or a negative response, if no pipelines exist, must be provided to the Kansas City District before a proposed permit can be issued.

Bank Stabilization Structures: No dredging will be allowed within 200 feet of any bank stabilization structure. When multiple structures (jetties, hardpoints, etc.) are utilized as components of a single project, no dredging will be allowed within 200 feet of the most upstream and downstream structures or landward of a line drawn parallel to the riverbank and located 200 feet riverward of the riverward edge of each structure. These restrictions will limit

the potential for dredging-induced local channel instability to adversely impact bank stabilization efforts.

Levees: No dredging will be allowed within 150 feet of the riverward toe of any functional levee located along the river. This restriction will limit the potential for dredging-induced localized channel instability to adversely impact the structural integrity of levees.

USGS Stream Gages: No dredging allowed within 200 feet of any stream gage or within 150 feet of the riverward toe of any functional levee located along the river. This restriction will limit the potential for dredging-induced localized channel instability to adversely impact the structural integrity of gages.

Boat Ramps: Dredging operations are prohibited within 300 feet of any public boat ramp.

Other Structures: Restrictions regarding other manmade structures not identified in this section will be determined on a case-by-case basis.

6.2.6 Restrictions Concerning Natural Formations

Natural rock deposits located on or in the riverbed may act as riverbed controls and/or may increase aquatic habitat diversity. The importance of a rock deposit is dependent upon its areal extent, its thickness and other relevant factors. Since the physical characteristics of rock deposits vary widely from one to another, and since the value of a deposit is based on its physical characteristics, it is not possible to develop restrictions which will consider all possible contingencies. Therefore, restrictions concerning natural rock deposits will be developed on a case-by-case basis (except for 1. and 2. below).

Restrictions concerning two important natural rock deposits are as follows:

1. Natural Rock Deposit between RMs 12.2 and 12.4:

This natural rock deposit is an important riverbed control, and in addition, it provides valuable habitat diversity for fish and other aquatic organisms. The exact length, width and thickness of the deposit is unknown. The rock deposit functions as a riverbed control, retarding upstream bed degradation in the approximately 2 1/2-mile-long reach of river located between the deposit and the Water District No. 1 weir. If the rock deposit is displaced by dredging activities, it could induce severe riverbed degradation, bank erosion and channel widening in the reach of river between the deposit and the weir, which could ultimately result in failure of the weir.

Due to the importance of the rock deposit as a riverbed control and as valuable habitat for fish and other aquatic organisms, the following restrictions are being imposed:

a. Dredging activities will not be allowed within the reach of river containing the rock deposit (RMs 12.2 - 12.4).

b. Dredging activities upstream of the rock deposit will not be allowed within 500 feet of the deposit.

c. Dredging activities downstream of the rock deposit will not be allowed within 2,500 feet of the deposit.

2. Natural Rock Deposit between RMs 21.8 and 22.8:

This approximately 1-mile-long natural rock deposit is an important riverbed control. It also provides valuable habitat diversity for fish and other aquatic organisms, and during low river stages, it becomes a foraging area for wading and shore birds. The deposit extends from the right riverbank to within 200 - 300 feet of the left riverbank. The heavily dredged 21.8-mile-long reach of river located downstream of the rock deposit has significantly lower riverbed elevations than the undredged reach of river located upstream of the deposit. If the rock deposit is displaced by dredging activities, headcutting would proceed upstream from the heavily dredged downstream area and could induce severe riverbed degradation, bank erosion and channel widening in the reach of river located upstream of the deposit.

Due to the importance of the rock deposit as a riverbed control, as valuable habitat for fish and other aquatic organisms and as a foraging area for birds, the following restrictions are being imposed:

a. Dredging activities will not be allowed within the reach of river containing the rock deposit (RMs 21.8 - 22.8.

b. Dredging activities upstream of the rock deposit will not be allowed within 500 feet of the deposit.

c. Dredging activities downstream of the rock deposit will not be allowed within 2,500 feet of the deposit.

6.2.7 Riverbanks: Dredges operating close to riverbanks have a high potential to adversely impact the stability of those banks, especially when dredging occurs near the outside of sharp river bends. Bank erosion induced by such dredging can result in the loss of land, damages to manmade structures, and adverse impacts to environmental resources. Therefore, the following restrictions are being imposed to limit the potential for dredging-induced local bed degradation to adversely impact riverbank stability:

1. No dredging will be allowed within 300 feet of the ordinary high water mark elevation of any riverbank on the outside of a river bend located in a reach of river which has experienced a significant degree of lateral migration in recent years.

   Those river reaches are identified as:

   RMs 40.5 - 42.0

RMs 47.5 - 48.0

2. No dredging will be allowed within 200 feet of the ordinary high water mark elevation of any riverbank on the outside of a sharp river bend which has a radius of curvature of 4,000 feet or less (provided that this restriction is not precluded by 1., above).

   Those bends are identified as:

   River Miles

   26 .0 - 27.0

   27.3 - 29.0

   34.0 - 35.5

   35.5 - 37.0

   39.2 - 40.0

   40.5 - 42.0

   43.2 - 44.5

   44.5 - 45.3

   46.7 - 47.3

   47.3 - 48.3

   55.0 - 56.5

   57.0 - 58.6

   78.0 - 79.3

   79.5 - 80.2

   114.3 - 114.8

   114.9 - 115.3

   117.4 - 119.0

   120.0 - 120.3

   124.0 - 125.0

River Miles

130.7 - 131.3

131.5 - 132.2

132.2 - 133.6

133.7 - 134.1

139.0 - 139.5

140.6 - 141.2

141.7 - 142.2

142.5 - 143.6

143.6 - 144.4

146.2 - 147.3

150.1 - 150.5

150.6 - 151.3

151.9 - 152.6

153.5 - 154.7

164.9 - 165.3

166.0 - 167.0

168.0 - 169.3

3. Restrictions concerning areas of the river experiencing severe bank erosion and not identified in 1. and 2. above will be considered on a case-by-case basis.
4. No dredging will be allowed within 100 feet of the ordinary high water mark elevation of any riverbank not identified in 1. and 2. above unless special authorization is granted.

6.2.8 Islands: Islands provide valuable ecological diversity by creating variability in water depths and current velocities. These factors are especially important to the river's fishery, since they are requirements for a diverse fish population. Islands also provide a refuge for birds and other wildlife.

Due to the infrequency of islands in the river and due to the importance of islands for the creation of a diverse fishery and to provide a refuge for birds and other wildlife, the following restrictions are being imposed:

1. No dredging will be allowed within 100 feet of the ordinary high water mark elevation of any island. This restriction applies to all islands, including those islands that form within a permitted reach of river after initiation of dredging operations in that reach.
2. No clearing of vegetation will be allowed from any island in the river to facilitate commercial dredging activities.

Natural processes influence the size, shape and abundance of islands over time. Several islands have formed in the river during recent years and more may be forming. Therefore, no attempt has been made to provide a comprehensive list of islands for this Plan. Kansas City District personnel will conduct field investigations to determine the presence or absence of an island, when such determinations are necessary.

6.2.9 Tributary Mouths: A reduction in the Kansas River's bed elevations can induce riverbed degradation in its tributaries. Lowering of bed elevations in the tributaries can result in additional adverse impacts such as bank erosion, channel widening, alteration of aquatic and terrestrial habitat, and a reduction in the structural integrity of manmade structures located in and along those tributaries. The following restriction is being imposed to limit the potential for dredging-induced localized riverbed degradation to adversely impact the Kansas River's tributaries:

No dredging will be allowed within 100 feet of a tributary mouth. The no-dredge zone will extend 100 feet riverward (into the Kansas River) of a straight line drawn across the tributary mouth and connected to the ordinary high water mark elevations on the Kansas River's banks on each side of the tributary.

6.2.10 Restrictions Concerning Water Quality

Water separated from the dredged slurry and returned to the river could affect water quality parameters. Dredged return water may contain inordinately high levels of silt and/or toxic substances liberated from the dredged material during processing. In addition, the return water may pick up a high concentration of suspended solids and/or toxic substances from the plant site if it is discharged directly onto the ground and allowed to run-off into the river. Therefore, the following restrictions are being imposed to limit the potential for dredged return water to adversely impact the river's water quality:

1. Return water discharged from onshore processing plants for commercial sand and gravel dredging operations is required to be routed through an appropriately sized siltation basin to help reduce suspended solids in processing water prior to discharge into any waters of the U.S., including the Kansas River and tributary channels.

2. Dredged return water must be conveyed from the processing facility to the river by sluiceway or by piping.

Silt collected in siltation basins and miscellaneous debris dredged from the river, such as wood, metal, paper and plastic cannot be returned to the water body. These waste materials must be disposed at a location and in a manner that will prevent their reintroduction to the river. This restriction will prevent dredged waste materials from adversely impacting water quality parameters in the river.

6.2.11 Restrictions Concerning Safety

Safety issues relating to the possibility of watercraft colliding with a dredge or its mooring cables are a serious concern. Therefore, the following restrictions are being imposed to limit the potential for dangerous conflicts between watercraft and dredging operations:

- Dredge operators must remain vigilant for approaching watercraft and other activities on the river and must provide safe passage through the dredging area during operations and while the dredge is unattended.
- All cables above the surface of the water must be clearly marked and visible to approaching vessels. Side cables across the main navigation channel must be left slack and at least 10 feet below the water surface or on the riverbed when the dredge is unattended.
- USCG-approved buoys (Danger buoy) must be placed no less than 200 feet and not more than 500 feet of the upstream and downstream extent of the dredging operations area to warn on-coming vessel operators that obstruction(s) to navigation exist.
- USCG-approved blinking or steady white lights must be placed and operational on the channel-ward upstream and downstream extent of the dredge vessel and the midpoint of the discharge pipeline from sunset to sunrise.
- All vessels used in dredging operations must be operated and maintained in accordance with the USCG Inland Navigation Rules (33 USC 2020-2030) and as may be prescribed by the State of Kansas Boating Statutes and Regulations.

6.2.12 Riverbed Degradation Monitoring and Survey Requirements

Reliable monitoring of dredging-related impacts is dependent upon the collection and utilization of various types of information. Certain data pertinent to monitoring efforts is currently available to the Kansas City District; other information which is not available to the Kansas City District must be provided to the District at the expense of the sand and gravel producers. Surveys are required on a two-year cycle that occurs during each odd-numbered year. The monitoring program is subject to modification by the District at any time to ensure that the permitted work does not have more than minimal impact. Production reports from each producer on the river providing the total tonnage of aggregate they extracted at each

authorized dredging reach must be reported to the District every calendar year by the 31st of December.

Survey control sites must be either established or maintained at various locations along the river dependent upon the location of dredging or proposed dredging to provide some of the required information. The establishment and maintenance of the control sites is the responsibility of the producers. Information provided by the producers includes channel cross-section surveys, water surface elevations, LIDAR data and annual production (extraction tonnage) figures. Monumented control sites were established on each riverbank at control site locations to provide channel cross-section and riverbed elevation data. The control site locations are used to collect water surface elevations and to establish ground controls. Control sites were established with x, y, and z coordinates using approved surveying methodology. The use of LIDAR to virtually survey land at new or existing cross-sections at previously established sites with known northing and easting locations is acceptable in-lieu of physical monumentation methods. The survey ranges are generally established at 1.5 mile intervals through approved dredge reaches and for at least 5 miles flanking each of these areas both upstream and downstream.

The surveys must be conducted during flows in the Kansas River of less than 10,000 cfs. Recent surveying on the river during the last two survey cycles have occurred below 7,000 cfs due to reported difficulties with keeping the survey boat stable enough to take a survey "shot" and get accurate bottom readings. Flows also must generally be above 3,500 cfs in order to provide access to the river from boat ramps and navigate along the river to all locations.

6.3 Special Permit Conditions

a. The authorized work is subject to all of the limitations and requirements of the "Regulatory Plan for Commercial Dredging Activities on the Kansas River," (Appendix A of the Record of Decision), except as otherwise directed in writing by the Kansas City District. The authorized dredge locations and dredged quantity amounts for each authorized area will be specified in each permit.

This condition is necessary to ensure that the permitted work results in only minimal impacts to the Kansas River.

b. The total number of tons of material dredged from each separate permitted reach of the river between January 1 and December 31 of each year must be provided to the USACE within 30 days of the end of each calendar year.

This condition is necessary to ensure that only the authorized amount of aggregate materials are extracted from the river each year in compliance with the permit restrictions.

c. Channel cross-section surveys are required to be performed every two years (in odd-numbered years) at your expense. You will be informed in writing regarding the type, number

and location of these surveys when they are required. The data and results from these completed surveys must be submitted to USACE in an approved format by 31 December of each odd-numbered year. The Kansas City District will compare the survey data against the baseline survey data collected in 1992 (or in certain cases where the 1992 data is not available, the oldest post-1992 survey data) to identify the average change in bed elevations through a 5-mile-long reach of river.

This condition is necessary to determine if bed degradation or aggradation is occurring within authorized dredge reaches and implement reach closure or re-opening to dredging as described in Section I. of the Regulatory Plan. This monitoring interval will continue to track changes in bed elevation begun in the 1990's and provide a trend analysis for future considerations.

d. The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

This condition is necessary to ensure the authorized work does not unduly obstruct navigation of the Kansas River or compromise the ability of USACE to implement work under the authority of Section 10 of the Rivers and Harbors Act of 1899 (33 United States Code (U.S.C.) § 403.

e. If any part of the authorized work is performed by a contractor, before starting work you must discuss the terms and conditions of this permit with the contractor; and, you must give a copy of this entire permit to the contractor.

This condition is necessary to ensure compliance with the terms and conditions of the subject permit. Full compliance with the permit is more likely when all parties conducting the authorized work are familiar with the permit

f. You must construct, use and/or maintain an adequately sized sediment basin for all post-processing return water to pass through prior to re-entering the Kansas River.

This condition is a practicable measure and best management practice to reduce potential adverse impacts to water quality resulting from the authorized dredging work and on-shore processing. This condition is also a requirement of Section IX., A. of the Regulatory Plan to help reduce suspended solids in dredge return water prior to discharge back into the Kansas River.

g. You must minimize excessive turbidity as well as preclude the entrance of deleterious and/or toxic materials into the waters of the United States from erosion, surface flows or by leaching.

This condition is a practicable measure to reduce potential adverse impacts of the authorized work on water quality.

h. You must dredge in the watercourse in a manner that will minimize increased suspended solids and turbidity which may degrade water quality and damage aquatic life outside the immediate area of operation.

This condition is a practicable measure to reduce potential adverse impacts of the authorized work on water quality.

i. You must ensure dredging operations are compliant with United States Coast Guard (USCG) safety standards for commercial vessels.

This condition is necessary to reduce potential navigation hazards and help ensure compliance with other federal laws and regulations.

j. You must provide for safe passage to all boats, rafts, and other watercraft on the Kansas River during dredging operations and when idle and conform with the restrictions in Section X of the Regulatory Plan.

This condition is necessary to minimize potential conflict of the authorized work with other watercraft and help ensure compliance with state and federal boating regulations.

k. No structures within, under or over waters of the U.S. are authorized by this permit without separate permit review and/or authorization from the Kansas City District.

This condition is necessary to provide prior review and consideration of other work proposed outside the scope of the current authorization under Section 10 of the Rivers and Harbors Act of 1899.

l. Docks, connecting walkway ramps, support piers, or the repair of existing docks, walkways, or piers, must use lumber products treated with wood preservatives in strict compliance with the Registration Documents issued by the U.S. Environmental Protection Agency (USEPA) under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) and in accordance with standards issued by American Wood Protection Association or the International Code Council.

This condition is a practicable measure that is necessary to ensure that adverse impacts to water quality are minimized.

m. If needed for dredging operations, you must utilize flotation materials which will not become waterlogged (not over 1½ percent by volume ASIM), is resistant to damage by animals, and will not sink or contaminate the water if punctured. Foam bead floatation that is not subject to deterioration through loss of beads, meets the above criteria, and has a minimum density of 1.2 lb/cu ft is authorized. Foam bead floatation with a density of 1.2 lb/cu ft, but does not otherwise meet the above criteria is authorized provided it is encased in an approved protective coating which enables it to meet the specifications above. An approved coating is

defined as warranted by the manufacturer for a period of at least eight years against cracking, peeling, sloughing and deterioration from ultra violet rays, while retaining its resiliency against ice and bumps by watercraft. Metal drum buoyancy units are not permitted unless they are steam cleaned and filled with floatation foam.

This condition is a practicable measure that is necessary to help ensure that impacts to aquatic habitats are confined to the authorized area. This standard generally satisfies floatation requirements used at lakes managed by USACE and additionally described and published at 36 CFR 327.30.

SECTION 7

Determinations

7.1 Section 176(C) of the Clean Air Act General Conformity Rule Review

Section 3.14 of the FEIS analyzed the proposed permit action for conformity applicability pursuant to regulations implementing Section 176(c) of the Clean Air Act. It has been determined that the activities proposed under this permit will not exceed de minimis levels of direct or indirect emissions of a criteria pollutant or its precursors and are exempted by 40 C.F.R. 93.153. Any later indirect emissions are generally not within the Corps' continuing program responsibility and generally cannot be practicably controlled by the Corps. For these reasons a conformity determination is not required for this permit action.

7.2 Endangered Species Act

The FEIS concluded that the proposed action would have no effect upon on the Northern long-eared bat, Sprague's pipit, Topeka shiner, Western Prairie Fringed Orchid and Whooping Crane. In compliance with the ESA, the USACE completed a Biological Assessment (BA) which concluded that the proposed action is not likely to adversely affect the pallid sturgeon, least tern, and piping plover or their designated critical habitat. After informal consultation, the USFWS concurred with this determination in correspondence dated 28 November 2017. The BA and USFWS concurrence with the conclusions regarding endangered species is contained within Appendix D.

7.3 Historic Properties

The proposed work is not expected to result in bed degradation in the Kansas River. This minimizes the direct and indirect effects of the work on cultural resources associated with tributary head cutting. USACE permit conditions will include the requirement to notify the USACE and state agencies if unidentified cultural resources are discovered; a description of existing dredging exclusion zones to avoid and/or reduce the potential for adverse effects to historic properties; and the requirement to notify the USACE and state agencies if dredging is proposed in areas not previously dredged. No potential adverse effects to historic properties, therefore, are expected from authorization of the proposed work. No Programmatic Agreement between the USACE and the National Park Service, State Historic Preservation Offices of Kansas, tribes, or ACHP would be necessary. This decision complies with the provisions of Section 106 of the NHPA.

7.4 Cumulative and Secondary Impacts

Cumulative and secondary impacts are discussed in Chapter 4 of the FEIS and this document. No significant cumulative, indirect or secondary impacts not already addressed in the FEIS are expected to result from authorization the proposed work in this Record of Decision.

7.5 Water Quality Certification

No water quality certification of the proposed work is currently required from USEPA or the State of Kansas. The proposed work is regulated only under Section 10 of the Rivers and Harbors Act.

7.6 Relevant Presidential Executive Orders

7.6.1 EO 11990, Protection of Wetlands

The decision described in this document is consistent with this executive order.

7.6.2 EO 13175, Consultation with Indian Tribes, Alaska Natives, and Native Hawaiians

The decision described in this document is consistent with this executive order. This action has no substantial direct effect on one or more Indian tribes.

7.6.3 EO 11988, Floodplain Management

The decision described in this document is consistent with this executive order. Alternatives to location within the floodplain, minimization, and compensation of the effects were considered above.

7.6.4 EO 12898, Environmental Justice

The decision described in this document is consistent with this executive order. In accordance with Title III of the Civil Right Act of 1964 and Executive Order 12898, it has been determined that the project would not directly or through contractual or other arrangements, use criteria, methods, or practices that discriminate on the basis of race, color, or national origin nor would it have a disproportionate effect on minority or low-income communities.

7.6.5 EO 13112, Invasive Species

The decision described in this document is consistent with this executive order. There are no invasive species issues involved.

7.6.6 EO 13212 and 13302, Energy Supply and Availability

The decision described in this document is consistent with this executive order. The project is not one that will increase the production, transmission, or conservation of energy, or strengthen pipeline safety.

7.7 Significant Issues of Overriding National Importance

None were identified.

7.8 Public Interest Determination

I find that issuance of the permit actions listed below, as prescribed by regulations are based on a thorough analysis and evaluation of the various factors enumerated above; that the proposed work is in accordance with the overall desires of the public as reflected in the comments of state and local agencies and the general public; that the proposed work is deemed to comply with established state and local laws, regulations, and codes; that there have been no identified, significant, adverse, environmental effects related to the work; that the issuance of these permits is consonant with national policy, statutes, and administrative directives; and that on balance the total public interest should best be served by the approval of the following requested permits to extract sand and gravel from the Kansas River subject to the limitations and special conditions described in the Regulatory Plan and permit conditions described above:

- Kaw Valley Companies, Inc. (NWK 2011-1460);
- Holliday Sand and Gravel Company, LLC (NWK-2011-1462);
- Masters Dredging (NWK-2011-1465);
- Builders Choice Aggregates (NWK-2011-1463);
- LBB, LLC (NWK 2013-0632)

APPROVED BY:

_____ Date: 26 FEB 2018

DOUGLAS B. GUTTORMSEN

Colonel, EN

Commanding

SECTION 8

Literature Cited

USACE (1990a), Kansas River Commercial Dredging Final Environmental Impact Statement

USACE (2010), Hydrologic and Geomorphic Changes on the Kansas River

USACE (2011a), Missouri River Commercial Dredging Final Environmental Impact Statement

USACE (2016), Draft EIS for Kansas River Commercial Dredging, including appendices

USACE (2017), Final EIS for Kansas River Commercial Dredging, including appendices

USACE (2017), Biological Assessment for Kansas River Commercial Dredging

USACE (2017), Missouri River Bed Degradation Feasibility Study Technical Report

Simons, Li, and Associates, (1984) Analysis of Channel Degradation and Bank Erosion in the Lower Kansas River

DRAFT

DEPARTMENT OF THE ARMY PERMIT

Permittee ENTER APPLICANT NAME

Permit No. ENTER PERMIT NUMBER

Issuing Office U.S. Army Engineer District, Kansas City

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below, and with the plans and drawings attached hereto which are incorporated in and made a part of this permit.

Project Description: Commercial sand and gravel dredging operation on the Kansas River that utilizes hydraulic pumping to convey a sand and gravel slurry to shore-based facilities for processing. Dredging operations on the river involve the use of a hydraulic dredge to pump a slurry of sand, gravel and water to an upland processing plant through a pipeline that is either supported by floats or the pipe itself floats. After extraction, the slurry of sand and other aggregate materials are sorted, processed and cleaned at the upland site and excess water is returned to the Kansas River. This permit is subject to the restrictions and monitoring requirements stipulated in the Regulatory Plan attached as Enclosure A of this permit.

Permit Drawings: Location map, plan view: Sheets 2 of 2 dated

Project Location: In the Kansas River at

(ENTER RM'S AND LIMITS OF WORK)

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on 31 December 2022. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.

2. You must maintain the activity authorized by this permit in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Special Conditions:

See continuation sheets, pages 4, 5 and 6, of this document.

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

(X) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).

( ) Section 404 of the Clean Water Act (33 U.S.C. 1344).

( ) Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).

2. Limits of this authorization.

a. This permit does not obviate the need to obtain other Federal, state, or local authorization required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal project.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions. General condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

_____ _____
(PERMITTEE) (DATE)

_____
(PRINTED NAME AND TITLE)

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

_____ _____
(DISTRICT ENGINEER) (DATE)
ENTER NAME AND TITLE OF APPROPRIATE SIGNATORY

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

_____ _____
(TRANSFEREE) (DATE)

Special Conditions:

a. The authorized work is subject to all of the limitations and requirements of the "Regulatory Plan for Commercial Dredging Activities on the Kansas River," (Appendix A of the Record of Decision dated 26 Feb 2018), except as otherwise directed in writing by the Kansas City District. The following are the location(s) and annual extraction limit(s) of this permit:

Enter the tonnage and RM limits for each permit here

b. The total number of tons of material dredged from each separate permitted reach of the river between January 1 and December 31 of each year must be provided to the USACE within 30 days of the end of each calendar year.

c. Channel cross-section surveys are required to be performed every two years (in odd-numbered years) at your expense. You will be informed in writing regarding the type, number and location of these surveys when they are required. The data and results from these completed surveys must be submitted to USACE in an approved format by 31 December of each odd-numbered year. The Kansas City District will compare the survey data against the baseline survey data collected in 1992 (or in certain cases where the 1992 data is not available, the oldest post-1992 survey data) to identify the average change in bed elevations through a 5-mile-long reach of river.

d. The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

e. If any part of the authorized work is performed by a contractor, before starting work you must discuss the terms and conditions of this permit with the contractor; and, you must give a copy of this entire permit to the contractor.

f. You must construct, use and/or maintain an adequately sized sediment basin for all post-processing return water to pass through prior to re-entering the Kansas River.

g. You must minimize excessive turbidity as well as preclude the entrance of deleterious and/or toxic materials into the waters of the United States from erosion, surface flows or by leaching.

h. You must dredge in the watercourse in a manner that will minimize increased suspended solids and turbidity which may degrade water quality and damage aquatic life outside the immediate area of operation.

i. You must ensure dredging operations are compliant with United States Coast Guard (USCG) safety standards for commercial vessels.

j. You must provide for safe passage to all boats, rafts, and other watercraft on the Kansas River during

dredging operations and when idle and conform with the restrictions in Section X of the Regulatory Plan.

k. No structures within, under or over waters of the U.S. are authorized by this permit without separate permit review and/or authorization from the Kansas City District.

l. Docks, connecting walkway ramps, support piers, or the repair of existing docks, walkways, or piers, must use lumber products treated with wood preservatives in strict compliance with the Registration Documents issued by the U.S. Environmental Protection Agency (USEPA) under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) and in accordance with standards issued by American Wood Protection Association or the International Code Council.

m. If needed for dredging operations, you must utilize flotation materials which will not become waterlogged (not over 1½ percent by volume ASIM), is resistant to damage by animals, and will not sink or contaminate the water if punctured. Foam bead floatation that is not subject to deterioration through loss of beads, meets the above criteria, and has a minimum density of 1.2 lb/cu ft is authorized. Foam bead floatation with a density of 1.2 lb/cu ft, but does not otherwise meet the above criteria is authorized provided it is encased in an approved protective coating which enables it to meet the specifications above. An approved coating is defined as warranted by the manufacturer for a period of at least eight years against cracking, peeling, sloughing and deterioration from ultra violet rays, while retaining its resiliency against ice and bumps by watercraft. Metal drum buoyancy units are not permitted unless they are steam cleaned and filled with floatation foam.

KANSAS RIVER DREDGING PERMITTEES AND LOCATIONS

Kaw Valley Companies, Inc: Maximum of 400,000 tons cumulatively for all permitted reaches on the Kansas River.

River Mile 9.4 – 10.4: individually no more than 300,000 tons

River Mile 12.8 – 13.9: individually no more than 300,000 tons

River Miles 15.4 – 16.9: individually no more than 300,000 tons

Holliday Sand and Gravel Company: Maximum of 600,000 tons cumulatively for all permitted reaches on the Kansas River.

River Mile 18.65 – 20.15: individually no more than 300,000 tons

River Mile 20.55 – 21.3: individually no more than 300,000 tons

Masters Dredging Company: Maximum of 300,000 tons

River Mile 26.1 – 27.6

Builders Choice Aggregates: Maximum of 300,000 tons

River Mile 77.1 – 78.6

LBB, LLC: Maximum of 300,000 tons

River Mile 89.7 – 91.0

Revised Regulatory Plan for Commercial Dredging Activities on the Kansas River

Appendix A

January 2018

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Introduction

This Regulatory Plan has been developed to aid the Kansas City District, Corps of Engineers in its administration of permit applications for commercial dredging activities on the Kansas River. The Plan is intended to limit the magnitude of dredging-related impacts to the morphology and ecology of the river; to manmade structures located in and along the river; and to other public and private interests such as adjacent land, water supplies and recreation. Adverse impacts include: (a) riverbed degradation[1]; (b) bank erosion; (c) channel widening; (d) lowering of-water surface elevations in the river channel; (e) lowering of water table elevations adjacent to the river; (f) a reduction in the structural integrity of bridges, pipelines, jetties, dams, weirs and other manmade structures; and (g) a loss of environmental values resulting from (a) through (e).

The adverse impacts that result from commercial dredging activities are being controlled by establishing a maximum acceptable level of impacts[2] and by providing the restrictions necessary to keep impacts at or below the acceptable level. The maximum level of impacts established for purposes of this Plan is a level which will have only minor effects[3] on the morphology and ecology of the river and on public and private interests located in and along the river.

This Plan is subdivided into 2 main parts, entitled Dredging Restrictions and Monitoring Program. The Dredging Restrictions consists of criteria developed to limit dredging-related impacts to an acceptable level. The Monitoring Program will utilize data collected from the river to evaluate the impacts associated with restricted dredging to ensure that the established maximum acceptable level of impacts will not be exceeded. Data collected through the Monitoring Program will be used to quantify the actual rate of riverbed degradation, bank erosion, channel widening, and other parameters affecting the morphology and ecology of the river, and to evaluate related adverse impacts occurring to public and private interests located in and along the river. The data will ultimately be used to adjust the Dredging Restrictions, as needed over time, to assure that the established maximum acceptable level of impacts will not be exceeded, and/or to adjust the Restrictions if monitoring efforts reveal that certain constraints can be lessened or eliminated without exceeding the established acceptable level of impacts.

Every effort has been made to develop this Plan through the application of scientific principles. Due to the limitations inherent in predicting future changes in river morphology, some of the elements in the Plan are based upon professional judgment and experience. Development of the Plan has relied on information presented in economic, social, environmental and engineering studies prepared to address this activity; on information provided to the District by various involved parties; and on the information and experience acquired by the District over a decade of analyzing Kansas River dredging.

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[1] The term riverbed degradation refers to lowering of riverbed elevations.

[2] The term maximum acceptable level of impacts is defined for purposes of this Plan as the maximum level of impacts determined by the Kansas City District to be compatible with the overall public interest involved.

[3] The term minor effects, as used in this plan, is described as those effects which are not expected to have a significant impact on nondredging concerns such as adjacent landowners and various entities responsible for structures located in and along the river, nor would those effects be expected to unduly impact environmental resources.

Formulation of this Plan has been based on the following objectives: (a) limit the adverse impacts associated with commercial dredging activities to an acceptable level; (b) minimize the economic hardships which may occur to the producers, related construction concerns and consumers; and (c) provide a plan which will treat all producers equitably. Due to the complex nature of the issues relating to commercial dredging activities on the Kansas River, it has not been possible to develop a plan that will entirely satisfy the interests of all the involved parties. This Plan satisfies the overall public interest involved and represents a compromise between the extremes of the alternatives available to the Kansas City District.

Dredging Restrictions

This section of the Regulatory Plan contains restrictions that have been developed to limit the adverse impacts associated with commercial dredging activities on the Kansas River. The restrictions are intended to limit those impacts to a level which will have only minor effects on the morphology and ecology of the river and on public and private interests located in and along the river. Implementation of the Dredging Restrictions in conjunction with the Monitoring Program is intended to ensure that the established maximum acceptable level of impacts will not be exceeded.

I. Restrictions Concerning Riverbed Degradation

The magnitude of dredging-induced riverbed degradation is a key factor influencing the degree of instability of the river channel. Degradation of the riverbed results in secondary impacts such as bank erosion, channel widening, lowering of water surface elevations in the river channel, lowering of water table elevations adjacent to the river, alteration of aquatic and terrestrial habitat, and a reduction in the structural integrity of manmade structures. Since secondary impacts increase as riverbed degradation increases, the degree of dredging-induced river channel instability can be limited by controlling the amount of dredging-related degradation.

Based on all available information, the Kansas City District has determined that most reaches of the Kansas River cannot sustain more than 2 feet of riverbed degradation below the riverbed elevations from the 1992 baseline riverbed elevation survey before secondary impacts exceed acceptable levels. Therefore, the maximum allowable reduction in the riverbed elevations is 2 feet for all reaches of the river subject to dredging operations. As part of the Monitoring Program, an independent engineering firm will survey various established cross-sections of the riverbed every other year. The Kansas City District will compare the survey data against the baseline survey data collected in 1992, (or in certain cases where the 1992 data is not available, the oldest post-1992 survey data) to identify the average change in bed elevations through a 5-mile-long reach of river. Any 5-mile-long reach of river is subject to bed elevation averaging. The average bed elevation for a 5-mile long reach will be rounded to the nearest hundredth of a foot using standard rounding procedures. A 5-mile-long reach can begin at any location on the river and will extend 5 miles upstream of that location with the following exceptions: no 5-mile-long reach of river will extend through the WaterOne weir (River Mile [RM]15.0), Bowersock Dam (RM 51.8), or the city of Topeka water intake weir (RM 87.0).

Within several months of receiving new survey data at the frequency intervals outlined in Section IV, the Kansas City District will provide a report of the survey analysis to the producers that:

- Quantifies the amount of bed degradation in every 5-mile-long reach in the surveyed portions of the river;
- Identifies those 5-mile-long reaches that in the current survey have degraded 1.5 feet or more below the 1992 baseline in the current survey and may be immediately closed to dredging if the next survey shows the reach has degraded 2 feet or more below the 1992 baseline elevation for the reach;
- Identifies those 5-mile-long reaches that in the previous survey had degraded 1.5 feet or more below the 1992 baseline elevation for the reach, that in the current survey have degraded 2 feet or more below the 1992 baseline elevation for the reach, and will immediately be closed to dredging; and
- Identifies those 5-mile-long reaches that in the previous survey had not degraded 1.5 feet or more below the 1992 baseline, that in the current survey have degraded 2 feet or more below

the 1992 baseline because of an unforeseen event such as a flood or a prolonged period of low reservoir releases, and will be closed to dredging in 1 year.

A 5-mile-long reach of river that has degraded 2 feet or more below the 1992 baseline elevation for the reach and has been closed to dredging will not be reopened until its bed elevation increases to an average elevation exceeding the established minimum for that reach. If a previously closed 5-mile-long reach of river has aggraded, such that the average bed elevation for the reach is less than 2 feet but more than 1.5 feet below the 1992 baseline elevation for the reach, it will be reopened with annual extraction of each individual dredging area within the reach limited to 50 percent of the amount that would normally be allowed for each individual dredging area. If the reach has aggraded, such that the average bed elevation for the reach is 1.5 feet or less below the 1992 baseline elevation for the reach, it will be reopened to its full annual allotment of sand and gravel.

Closing a reach that has degraded excessively shall be implemented through suspension or modification (not termination) of the permit in accordance with 33 CFR 325.7. Suspension of dredging in dredging areas partially located in a degraded 5-mile-long reach shall be limited to only that portion of the dredging area located within the degraded reach. Reopening a previously closed reach that has recovered sufficiently shall be implemented through reinstatement or modification of the existing permit in accordance with 33 CFR 325.7, not by issuing a new permit.

II. Restrictions Concerning the Rate of Sand and Gravel Extraction from Specified Reaches of the River

The rate[4] of sand and gravel extraction from a reach of river is an important factor affecting the river channel's stability. The magnitude of instability induced into the river channel by dredging activities increases as the rate of extraction increases (channel stability decreases as the length of time utilized to reach a given level of degradation decreases).

Therefore, greater channel stability can be obtained by limiting the rate of extraction within a reach of river to provide a reasonable period for the channel to adjust to declining bed elevations.

The following restrictions are being implemented to limit the rate of sand and gravel extraction from specified reaches of the river:

A. <u>REACH 1: The Confluence of the Kansas and Missouri Rivers to Bonner Springs (RMs 0 - 21.2).</u>

A maximum of 1 million tons of sand and gravel can be extracted from this approximately 21.2-mile-long reach of river annually. Refer to Section VII.B.1.c. for an additional restriction concerning extraction rates within this reach.

B. <u>REACH 2: Bonner Springs to RM 48.0 (RMs 21.2 - 48.0).</u>

No total annual extraction limit has been established for this approximately 26.8-mile-long reach of river. However, the maximum amount of sand and gravel that can be extracted annually from <u>any</u> 15-mile-long section of river within this reach is 750,000 tons. A 15-mile-long section of river can begin or end at <u>any</u> location within this reach.

C. <u>REACH 3: RM 48.0 to Bowersock Dam at Lawrence (RMs 48.0 - 51.8).</u>

A maximum of 150,000 tons of sand and gravel can be extracted from this approximately 3.8-mile-long reach of river annually.

[4] The term <u>rate</u> is defined for purposes of this report as tons/time.

D. REACH 4: Bowersock Dam at Lawrence to the Confluence of the Kansas, Smoky Hill and Republican Rivers Near Junction City (RMs 51.8 - 170.4).

No total annual extraction limit has been established for this approximately 118.6-mile-long reach of river. However, the maximum amount of sand and gravel that can be extracted annually from any 15-mile-long section of river within this reach is 750,000 tons. A 15-mile-long section of river can begin or end at any location within this reach.

NOTE: The 750,000-ton extraction limit, per 15-mile-long section of river, referenced in parts B. and D. of this section does not apply to part A. of this section.

III. Restrictions Concerning the Rate of Sand and Gravel Extraction by an Individual Dredge

The rate of sand and gravel extraction by an individual dredge is an important factor affecting local[5] river channel stability. The diameter and depth of the dredge hole as well as local degradation beyond the dredge hole increase as extraction rates increase. Local degradation and secondary impacts, such as bank erosion and channel widening, can be limited and greater local channel stability can be obtained by limiting the extraction rate of an individual dredge. Therefore, the maximum annual extraction rate by a single dredge regardless of its location on the river will be limited to 300,000 tons of material. The actual allowable extraction rate for a single dredging operation may be less than 300,000 tons of material and will depend upon the reach of river being dredged and the number of dredges operating within that reach.

IV. Restrictions Concerning the Length of Individual Permitted Dredging Operations

The maximum length of any reach of river authorized for dredging under the terms of a single permit is 1.5 miles. This restriction is intended to allow the producers fair access to the river by preventing any producer from using the permitting process to create an unfair advantage over other producers by securing a permit for an excessively long reach of the river. This restriction applies to any new dredging operation permitted after implementation of this Regulatory Plan. It does not apply to a dredging operation permitted prior to implementation of the Plan, unless subsequent to implementation of the Plan that dredging operation is altered (such as the relocation of dredging boundaries) to an extent that those changes require the issuance of a new permit document.

V. Restrictions Concerning the Distance between Adjacent Permitted Dredging Boundaries

A minimum distance of 2,000 feet is required between the permitted reaches of adjacent dredging operations. This restriction will limit dredging-induced local channel instability, by maintaining at least a 2,000-foot-long undredged reach of river between adjacent dredges. This restriction applies to any new dredging operation permitted after implementation of this Regulatory Plan. It does not apply to a dredging operation permitted prior to implementation of the plan, unless subsequent to

[5] The term local refers to the area directly impacted by a working dredge. This area could be relatively small, extending only a few hundred feet from the dredge, or it could be quite large, extending many hundreds of feet upstream and/or downstream of the dredge.

implementation of the plan that dredging operation is altered (such as the relocation of dredging boundaries) to an extent that those changes require the issuance of a new permit document.

VI. Restrictions Concerning the Number of Dredges Authorized Under the Terms of an Individual Permit Document

The maximum number of dredges authorized to operate within a single permitted reach of river is 1, for each 1.5 miles of river. This restriction will limit dredging-induced local channel instability, by limiting the number of dredges within each permitted reach of river.

VII. Restrictions Concerning Manmade Structures

A. Bowersock Dam

This hydroelectric dam is located near RM 51.8. It was constructed in 1872 and was enlarged in 1926. The exact construction details of the dam are unknown. The structure is believed to be relatively unstable, since the elevation of the riverbed downstream of the dam is considered marginally adequate to prevent sliding failure of the structure. The dam acts as a riverbed control structure, and if it should fail, it could induce severe riverbed degradation, bank erosion and channel widening for many miles upstream.

Due to the apparent unstable condition of Bowersock Dam and its importance as a riverbed control and hydroelectric generating facility, the following restrictions are being imposed on the reaches of river located immediately upstream and downstream of the dam:

1. Dredging activities upstream of Bowersock Dam will not be allowed within approximately 750 feet of the dam. The actual distance will be controlled by part C. of this section, since two bridges are located immediately upstream of the structure.
2. Dredging activities downstream of the dam will not be allowed within 2,250 feet of the structure.
3. The maximum volume of material that can be extracted annually between RM 48.0 and Bowersock Dam is 150,000 tons.

Due to the uncertainties involved in evaluating the stability of Bowersock Dam, it is not possible to determine how many feet the downstream riverbed elevation can be lowered before the dam will fail. Therefore, the reach of river located immediately downstream of the dam will be closely monitored, and if dredging activities on the river appear to be jeopardizing the integrity of the structure, additional restrictions will be imposed.

Refer to Figure A-1 on page A-17 for additional clarification on the restrictions imposed on the reaches of river located immediately upstream and downstream of the dam.

B. Water Intake Structures and Associated Weirs and Jetties

No dredging will be allowed within 500 feet of any water intake structure or an associated weir or diversion jetty. This restriction will limit the potential for dredging-induced local channel instability to adversely impact the operation of such structures. This restriction does not apply to irrigation intakes.

The following additional restrictions are being imposed to protect the Water District No. 1[6] weir; and the city of Topeka's water intake structures, diversion jetties, and weir:

1. Water District No. 1 Weir.

This weir is an important riverbed control located near RM 15.0. The weir was initially constructed in the mid-1960s in response to continually lowering water surface elevations in that reach of river. If riverbed elevations downstream of the weir drop several more feet, the structure may fail. Failure of the weir could induce severe riverbed degradation, bank erosion and channel widening upstream of the structure and could impact water supplies for Water District No. 1 of Johnson County.

Due to the importance of the weir to Water District No. 1 for its water supply and due to the structure's importance as a riverbed control, the following restrictions are being placed on the reaches of river located immediately upstream and downstream of the weir:

a. Dredging activities upstream of the weir will not be allowed within 500 feet of the structure.
b. Dredging activities downstream of the weir will not be allowed within 2,500 feet of the structure.
c. The maximum volume of material that can be extracted annually between RM 12.4 (the upstream end of a natural rock deposit) and the Water District No. 1 weir is 300,000 tons.

Refer to Figure A-2 on page A-18 for additional clarification on the restrictions imposed on the reaches of river located immediately upstream and downstream of the weir.

2. City of Topeka Water Intake Structures, Diversion Jetties and Weir.

The City of Topeka has two water intake structures, two diversion jetties, and a weir located between RMs 86.9 and 87.2. These structures provide the city with its entire water supply. Low flow water surface elevations at the intakes are marginally adequate to meet the city's needs; therefore, any lowering of water surface elevations at the intakes could have a detrimental impact on the city's ability to withdraw water from the river. The diversion jetties divert flows from the left riverbank to the right bank where the intake structures are located. The weir functions like a dam, raising water levels upstream of the structure and increasing water surface elevations at the intakes. Loss of one of the diversion jetties or the weir or diminished function of the structures could severely impact the city's ability to meet its water supply needs.

Due to the importance of the city of Topeka's diversion jetties and weir to meet the city's water needs, the following restrictions are being imposed:

a. No dredging will be allowed between the most upstream jetty and the weir.
b. Dredging activities upstream of the diversion jetties and weir will not be allowed within 1,000 feet of the most upstream diversion jetty.
c. Dredging activities downstream of the diversion jetties and weir will not be allowed within 2,000 feet of the weir.

Refer to Figure A-4 on page A-20 for additional clarification on the restrictions imposed on the reaches of river located immediately upstream and downstream of the diversion jetties and weir.

[6] Water District No. 1 refers to Water District No. 1 of Johnson County.

C. Bridges

No dredging will be allowed within 500 feet of any bridge crossing the Kansas River. This restriction will limit the potential for dredging-induced local channel instability to adversely impact the structural integrity of bridges.

D. Pipelines

Pipelines buried in the riverbed have a high potential to be adversely impacted by dredging activities. If degradation of the riverbed exposes a pipeline, damage could occur through sagging, buoyancy or displacement of the line downstream due to an accumulation of debris. The following restrictions will limit the potential for dredging-induced localized degradation to expose buried pipelines:

1. No dredging will be allowed within 200 feet of any pipeline that is buried 10 feet or more below the riverbed's surface.
2. No dredging will be allowed within 500 feet of any pipeline that is buried less than 10 feet below the riverbed's surface.

Additional restrictions may be required for any pipeline located on or above the riverbed. Such restrictions would be developed on a case-by-case basis.

Each applicant is responsible for determining the locations and elevations of any pipelines crossing the river within a proposed permit's boundaries and within the reaches of river extending 500 feet upstream and downstream of those boundaries. This information or a negative response, if no pipelines exist, must be provided to the Kansas City District before a proposed permit can be issued.

E. Bank Stabilization Structures

No dredging will be allowed within 200 feet of any bank stabilization structure. When multiple structures (jetties, hardpoints, etc.) are utilized as components of a single project, no dredging will be allowed within 200 feet of the most upstream and downstream structures or landward of a line drawn parallel to the riverbank and located 200 feet riverward of the riverward edge of each structure. These restrictions will limit the potential for dredging-induced local channel instability to adversely impact bank stabilization efforts.

Refer to Figure A-5 on page A-21 for additional clarification on restrictions concerning multiple bank stabilization structures.

F. Levees

No dredging will be allowed within 150 feet of the riverward toe of any functional levee located along the river. This restriction will limit the potential for dredging-induced localized channel instability to adversely impact the structural integrity of levees.

G. USGS Stream Gages

No dredging allowed within 200 ft of any stream gage or within 150 feet of the riverward toe of any functional levee located along the river. This restriction will limit the potential for dredging-induced localized channel instability to adversely impact the structural integrity of gages. SEE Figure A-9 on page A-20 for these locations.

H. Boat Ramps

Dredging operations are prohibited within 300 feet of any public boat ramp.

I. Other Structures

Restrictions regarding other manmade structures not identified in this section will be determined on a case-by-case basis.

VIII. Restrictions Concerning Natural Formations

A. Natural Rock Deposits in the River Channel

Natural rock deposits located on or in the riverbed may act as riverbed controls and/or may increase aquatic habitat diversity. The importance of a rock deposit is dependent upon its areal extent, its thickness and other relevant factors. Since the physical characteristics of rock deposits vary widely from one to another, and since the value of a deposit is based on its physical characteristics, it is not possible to develop restrictions which will consider all possible contingencies. Therefore, restrictions concerning natural rock deposits will be developed on a case-by-case basis (except for 1. and 2. below).

Restrictions concerning two important natural rock deposits are as follows:

1. Natural Rock Deposit between RMs 12.2 and 12.4.

This natural rock deposit is an important riverbed control, and in addition, it provides valuable habitat diversity for fish and other aquatic organisms. The exact length, width and thickness of the deposit is unknown. The rock deposit functions as a riverbed control, retarding upstream bed degradation in the approximately 2 1/2-mile-long reach of river located between the deposit and the Water District No. 1 weir. If the rock deposit is displaced by dredging activities, it could induce severe riverbed degradation, bank erosion and channel widening in the reach of river between the deposit and the weir, which could ultimately result in failure of the weir.

Due to the importance of the rock deposit as a riverbed control and as valuable habitat for fish and other aquatic organisms, the following restrictions are being imposed:

a. Dredging activities will not be allowed within the reach of river containing the rock deposit (RMs 12.2 - 12.4).

b. Dredging activities upstream of the rock deposit will not be allowed within 500 feet of the deposit.

c. Dredging activities downstream of the rock deposit will not be allowed within 2,500 feet of the deposit.

Refer to Figure A-2 on page A-15 for additional clarification on these restrictions

2. Natural Rock Deposit between RMs 21.8 and 22.8

This approximately 1-mile-long natural rock deposit is an important riverbed control. It also provides valuable habitat diversity for fish and other aquatic organisms, and during low river stages, it becomes a foraging area for wading and shore birds. The deposit extends from the right riverbank to within 200 - 300 feet of the left riverbank. The heavily dredged 21.8-mile-long reach of river located downstream of the rock deposit has significantly lower riverbed elevations than the undredged reach of river located upstream of the deposit. If the rock deposit is displaced by dredging activities, headcutting would proceed upstream from the heavily dredged downstream area and could induce severe riverbed degradation, bank erosion and channel widening in the reach of river located upstream of the deposit.

Due to the importance of the rock deposit as a riverbed control, as valuable habitat for fish and other aquatic organisms and as a foraging area for birds, the following restrictions are being imposed:

a. Dredging activities will not be allowed within the reach of river containing the rock deposit (RMs 21.8 - 22.8.

b. Dredging activities upstream of the rock deposit will not be allowed within 500 feet of the deposit.

c. Dredging activities downstream of the rock deposit will not be allowed within 2,500 feet of the deposit.

Refer to Figure A-6 on page A-18 for additional clarification on these restrictions.

B. Riverbanks

Dredges operating close to riverbanks have a high potential to adversely impact the stability of those banks, especially when dredging occurs near the outside of sharp river bends. Bank erosion induced by such dredging can result in the loss of land, damages to manmade structures, and adverse impacts to environmental resources. Therefore, the following restrictions are being imposed to limit the potential for dredging-induced local bed degradation to adversely impact riverbank stability:

1. No dredging will be allowed within 300 feet of the ordinary high water mark elevation[7] of any riverbank on the outside of a river bend located in a reach of river which has experienced a significant degree of lateral migration in recent years.

   Those river reaches are identified as:

   RMs 40.5 - 42.0

   RMs 47.5 - 48.0

2. No dredging will be allowed within 200 feet of the ordinary high water mark elevation of any riverbank on the outside of a sharp river bend which has a radius of curvature of 4,000 feet or less (provided that this restriction is not precluded by 1., above).

   Those bends are identified as:

   River Miles

   26 .0 - 27.0

   27.3 - 29.0

   34.0 - 35.5

   35.5 - 37.0

   39.2 - 40.0

   40.5 - 42.0

   43.2 - 44.5

   44.5 - 45.3

   46.7 - 47.3

   47.3 - 48.3

   55.0 - 56.5

   57.0 - 58.6

[7] Ordinary High Water Mark - Refer to part E. of this section for a definition of this term.

78.0 - 79.3

79.5 - 80.2

114.3 - 114.8

114.9 - 115.3

117.4 - 119.0

120.0 - 120.3

124.0 - 125.0

130.7 - 131.3

131.5 - 132.2

132.2 - 133.6

133.7 - 134.1

139.0 - 139.5

140.6 - 141.2

141.7 - 142.2

142.5 - 143.6

143.6 - 144.4

146.2 - 147.3

150.1 - 150.5

150.6 - 151.3

151.9 - 152.6

153.5 - 154.7

164.9 - 165.3

166.0 - 167.0

168.0 - 169.3

3. Restrictions concerning areas of the river experiencing severe bank erosion and not identified in 1. and 2. above will be considered on a case-by-case basis.
4. No dredging will be allowed within 100 feet of the ordinary high water mark elevation of any riverbank not identified in 1. and 2. above unless special authorization is granted.

NOTE: The Kansas City District can provide ordinary high water mark elevations for any location on the river.

C. Islands

Islands[8] provide valuable ecological diversity by creating variability in water depths and current velocities. These factors are especially important to the river's fishery, since they are requirements for a diverse fish population. Islands also provide a refuge for birds and other wildlife.

[8] Islands - Refer to part E. of this section for a definition of this term.

Due to the infrequency of islands in the river and due to the importance of islands for the creation of a diverse fishery and to provide a refuge for birds and other wildlife, the following restrictions are being imposed:

1. No dredging will be allowed within 100 feet of the ordinary high water mark elevation of any island. This restriction applies to all islands, including those islands that form within a permitted reach of river after initiation of dredging operations in that reach.
2. No clearing of vegetation will be allowed from any island in the river to facilitate commercial dredging activities.

Natural processes influence the size, shape and abundance of islands over time. Several islands have formed in the river during recent years and more may be forming. Therefore, no attempt has been made to provide a comprehensive list of islands for this Plan. Kansas City District personnel will conduct field investigations to determine the presence or absence of an island, when such determinations are necessary.

Refer to Figure A-7 on page A-19 for additional clarification on the identification of an island.

D. Tributary Mouths

A reduction in the Kansas River's bed elevations can induce riverbed degradation in its tributaries. Lowering of bed elevations in the tributaries can result in additional adverse impacts such as bank erosion, channel widening, alteration of aquatic and terrestrial habitat, and a reduction in the structural integrity of manmade structures located in and along those tributaries. The following restriction is being imposed to limit the potential for dredging-induced localized riverbed degradation to adversely impact the Kansas River's tributaries:

No dredging will be allowed within 100 feet of a tributary mouth. The undredged zone will extend 100 feet riverward (into the Kansas River) of a straight line drawn across the tributary mouth and connected to the ordinary high water mark elevations on the Kansas River's banks on each side of the tributary.

Refer to Figure A-8 on page A-20 for additional clarification on this restriction.

E. Definition of Terms

The following definitions are provided to clarify potentially confusing terms found in this section:

1. The term ordinary high water mark is defined for purposes of this Regulatory Plan as the line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank; shelving; changes in the character of the soil; destruction of terrestrial vegetation; presence of litter and debris; or other appropriate means that consider the characteristics of the surrounding areas.
2. The term island is defined for purposes of this Regulatory Plan as a land form that rises from within the river channel and which meets all of the following criteria: (a) it is permanent and not shifting from location to location within the river channel (unlike a sand bar); (b) it rises to an elevation such that it has a distinct ordinary high water mark line, or its surface elevation is greater than the ordinary high water mark elevation on the adjacent riverbank; and (c) it is a discrete land form such that an unbroken contour line can be extended 360 degrees around its perimeter at or above the elevation of the ordinary high water mark on an adjacent riverbank.

NOTE: For purposes of this Regulatory Plan, the definition of an island does not require the presence of vegetation. In addition, islands may not be surrounded by water during low river stages.

IX. Restrictions Concerning Water Quality

A. Dredged Return Water

Water separated from the dredged slurry and returned to the river could affect water quality parameters. Dredged return water may contain inordinately high levels of silt and/or toxic substances liberated from the dredged material during processing. In addition, the return water may pick up a high concentration of suspended solids and/or toxic substances from the plant site if it is discharged directly onto the ground and allowed to run-off into the river. Therefore, the following restrictions are being imposed to limit the potential for dredged return water to adversely impact the river's water quality:

1. Return water discharged from onshore processing plants for commercial sand and gravel dredging operations is required to be routed through an appropriately sized siltation basin to help reduce suspended solids in processing water prior to discharge into any waters of the U.S., including the Kansas River and tributary channels.
2. Dredged return water must be conveyed from the processing facility to the river by sluiceway or by piping.

B. Dredged Silt and Miscellaneous Debris

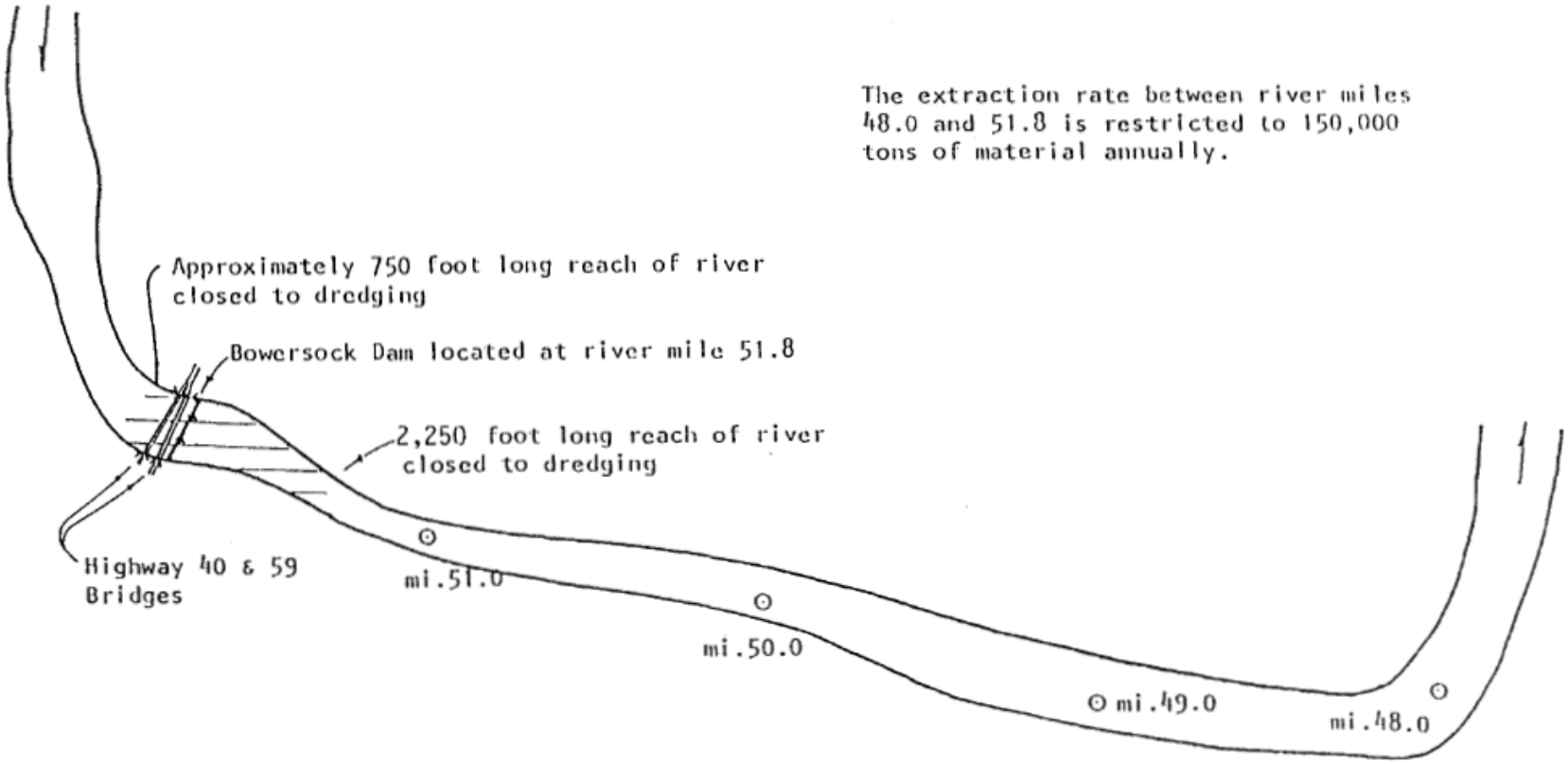
Silt collected in siltation basins and miscellaneous debris dredged from the river, such as wood, metal, paper and plastic cannot be returned to the water body. These waste materials must be disposed at a location and in a manner that will prevent their reintroduction to the river. This restriction will prevent dredged waste materials from adversely impacting water quality parameters in the river.

X. Safety

Safety issues relating to the possibility of watercraft colliding with a dredge or its mooring cables are a serious concern. Therefore, the following restrictions are being imposed to limit the potential for dangerous conflicts between watercraft and dredging operations:

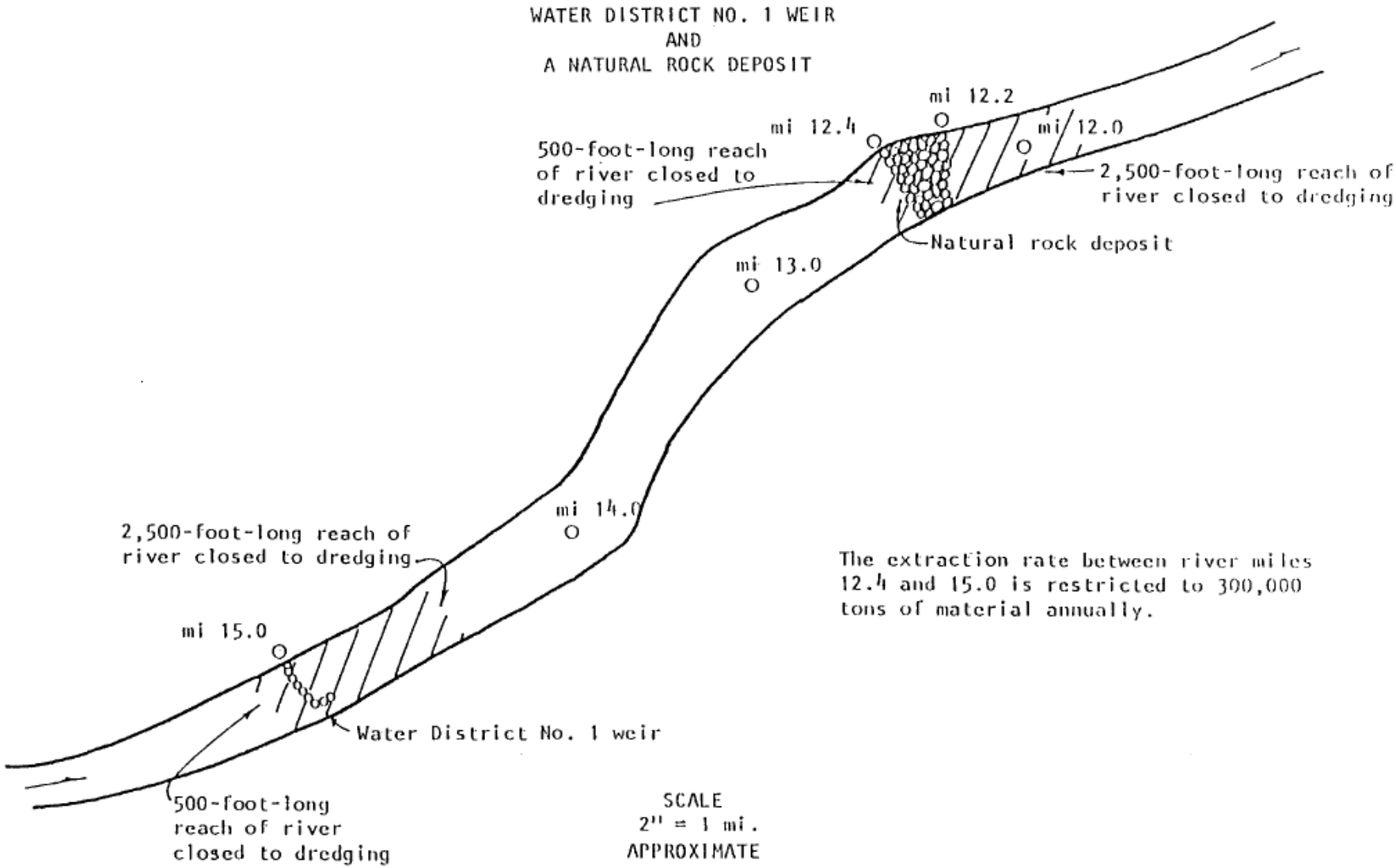
- Dredge operators must remain vigilant for approaching watercraft and other activities on the river and must provide safe passage through the dredging area during operations and while the dredge is unattended.
- All cables above the surface of the water must be clearly marked and visible to approaching vessels. Side cables across the main navigation channel must be left slack and at least 10 feet below the water surface or on the riverbed when the dredge is unattended.
- USCG-approved buoys (Danger buoy) must be placed no less than 200 feet and not more than 500 feet of the upstream and downstream extent of the dredging operations area to warn on-coming vessel operators that obstruction(s) to navigation exist.
- USCG-approved blinking or steady white lights must be placed and operational on the channel-ward upstream and downstream extent of the dredge vessel and the midpoint of the discharge pipeline from sunset to sunrise.
- All vessels used in dredging operations must be operated and maintained in accordance with the USCG Inland Navigation Rules (33 USC 2020-2030) and as may be prescribed by the State of Kansas Boating Statutes and Regulations.

BOWERSOCK DAM



SCALE
2" = 1 mi.
APPROXIMATE

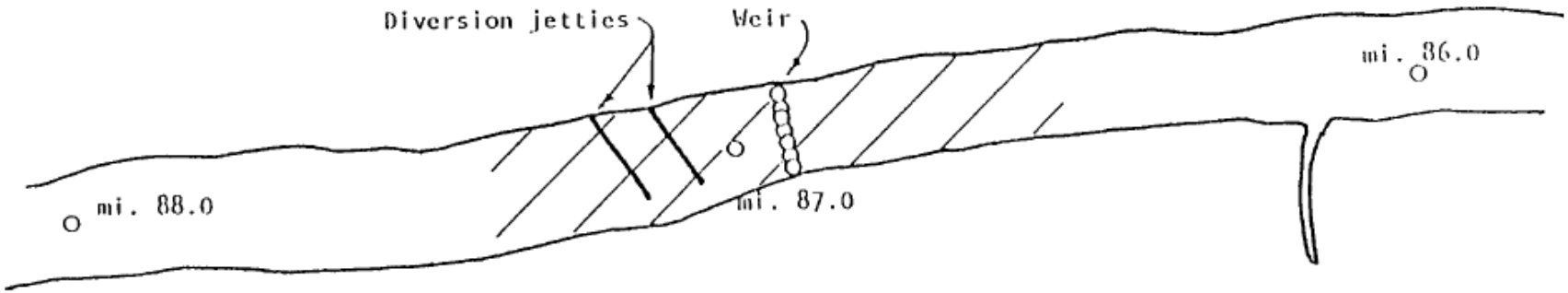
FIGURE A-1



The extraction rate between river miles 12.4 and 15.0 is restricted to 300,000 tons of material annually.

FIGURE A-2

CITY OF TOPEKA
DIVERSION JETTIES & WEIR

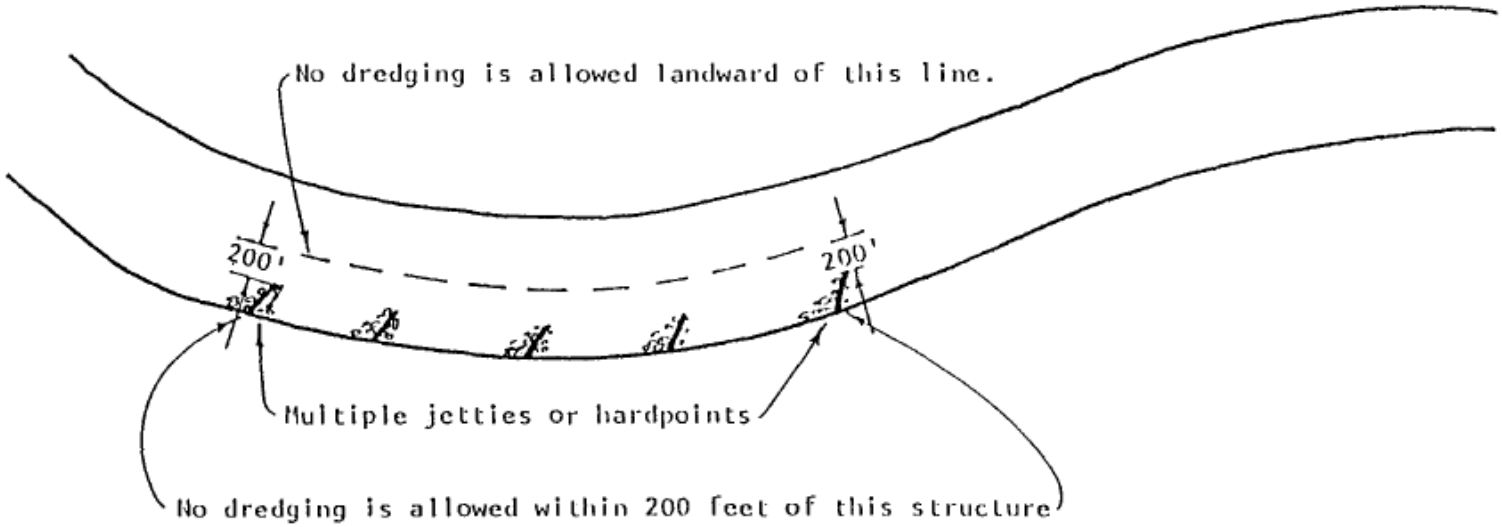


River miles 86.5 (approximately) to
87.4 (approximately) are closed to dredging.

SCALE
4" = 1 mi.
APPROXIMATE

FIGURE A-4

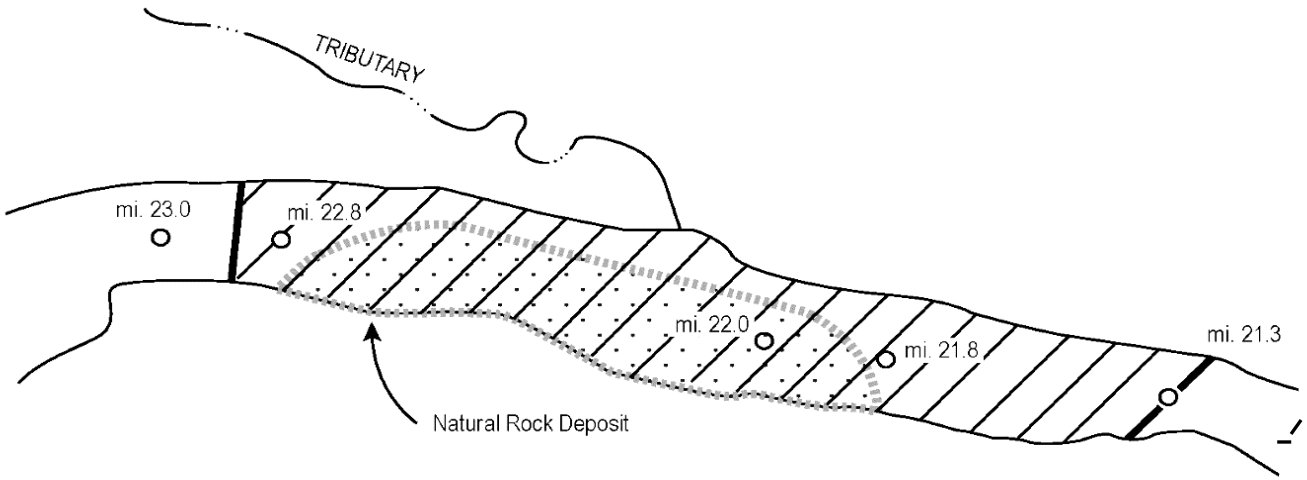
MULTIPLE BANK STABILIZATION STRUCTURES



TYPICAL PLAN VIEW

FIGURE A-5

NATURAL ROCK DEPOSIT



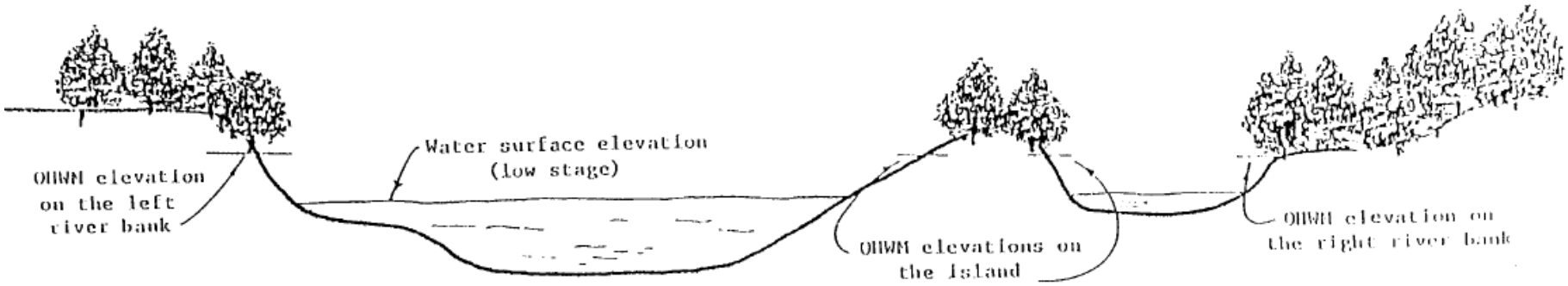
River miles 21.3 (approximately) to 22.9 (approximately) are closed to dredging.

SCALE
4" = 1 mi.
APPROXIMATE

FIGURE A-6

A-18

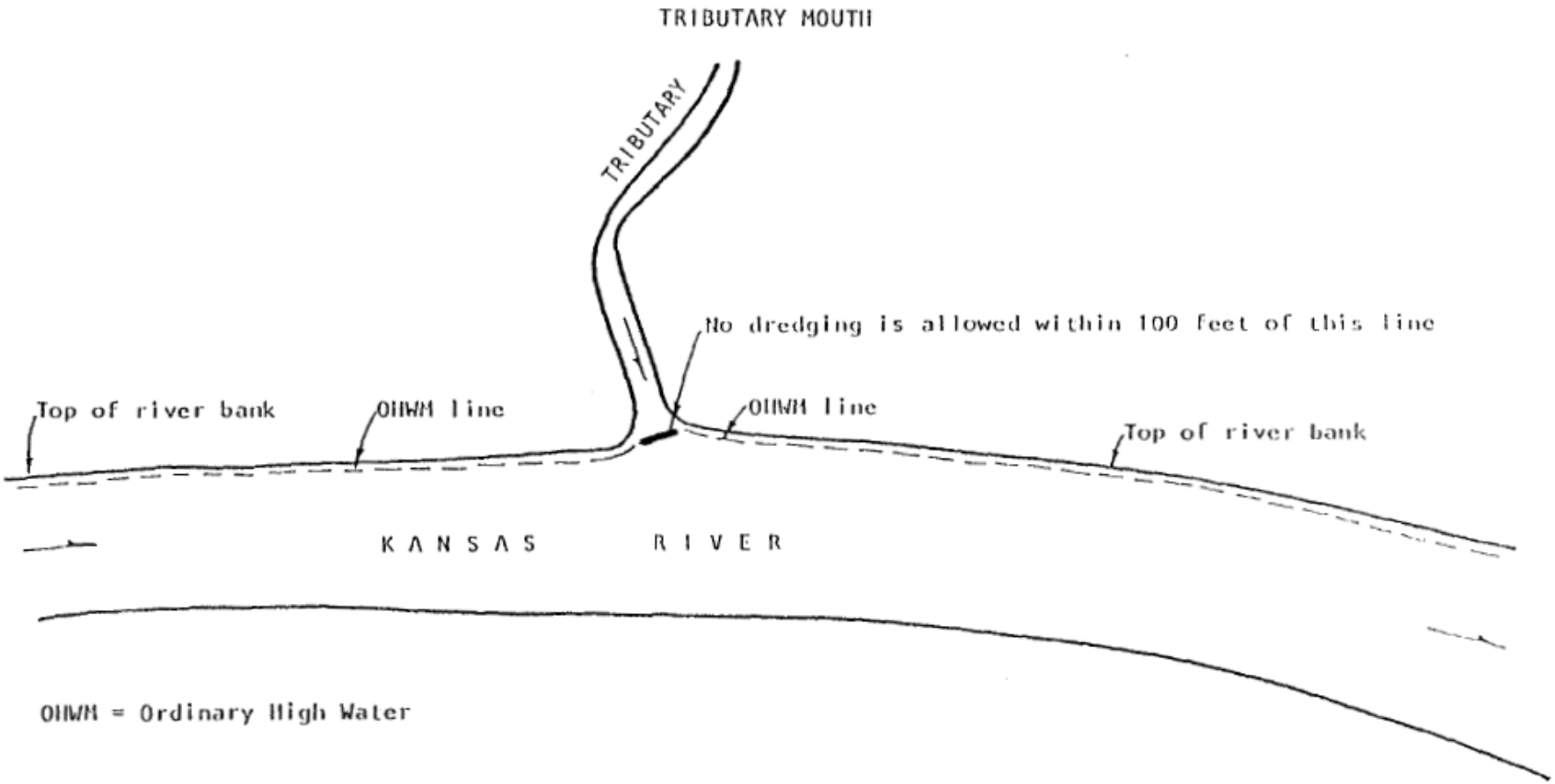
IDENTIFICATION OF AN ISLAND



OHWM = Ordinary High Water Mark

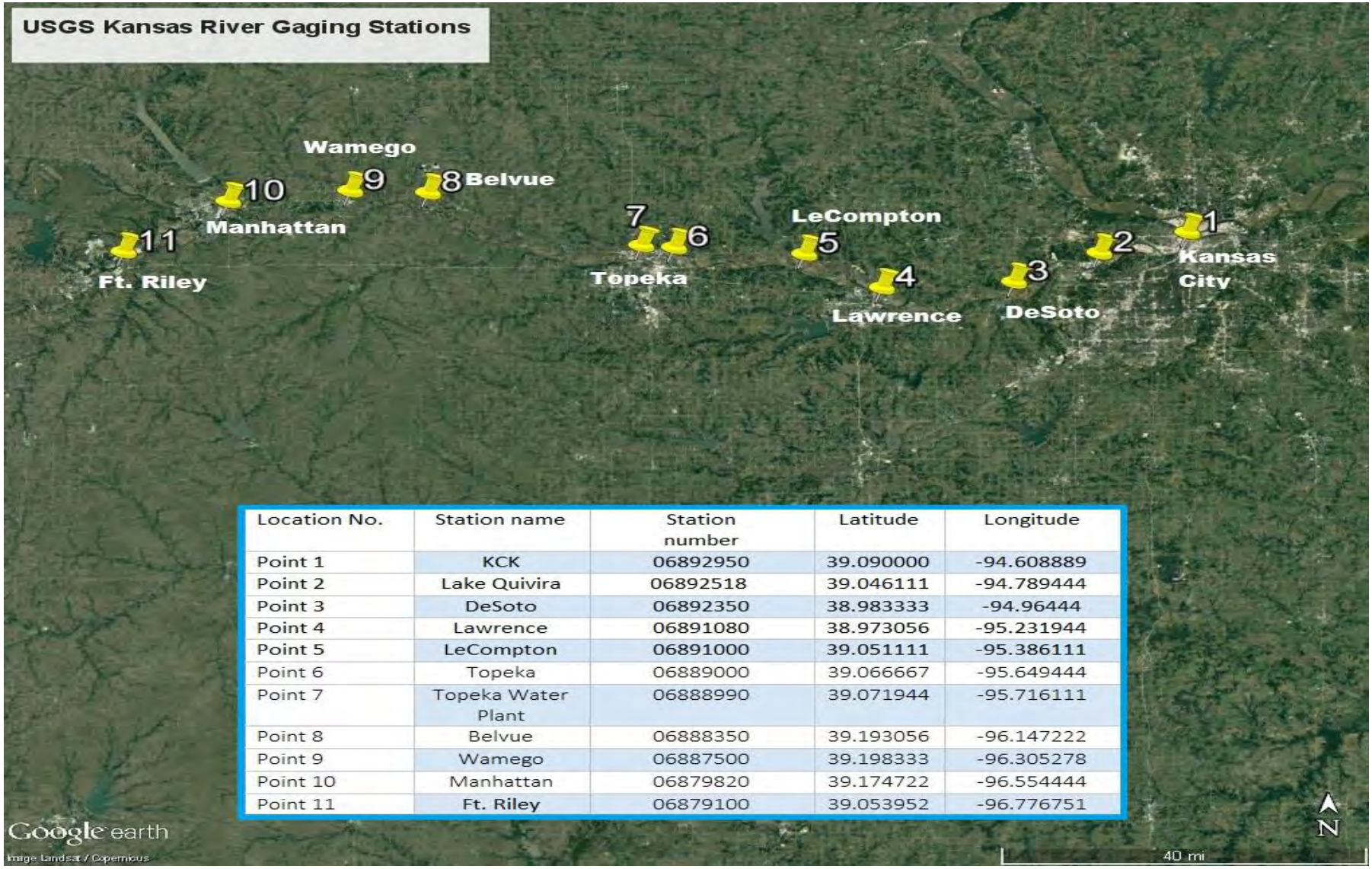
TYPICAL CROSS SECTION

FIGURE A-7



TYPICAL PLAN VIEW

FIGURE A-8



Location No.	Station name	Station number	Latitude	Longitude
Point 1	KCK	06892950	39.090000	-94.608889
Point 2	Lake Quivira	06892518	39.046111	-94.789444
Point 3	DeSoto	06892350	38.983333	-94.96444
Point 4	Lawrence	06891080	38.973056	-95.231944
Point 5	LeCompton	06891000	39.051111	-95.386111
Point 6	Topeka	06889000	39.066667	-95.649444
Point 7	Topeka Water Plant	06888990	39.071944	-95.716111
Point 8	Belvue	06888350	39.193056	-96.147222
Point 9	Wamego	06887500	39.198333	-96.305278
Point 10	Manhattan	06879820	39.174722	-96.554444
Point 11	Ft. Riley	06879100	39.053952	-96.776751

Figure A-9

Monitoring Program

This section of the Regulatory Plan contains the criteria that have been developed to monitor the impacts of permitted dredging activities on the Kansas River. Data required to monitor dredging-related impacts must be collected by the sand and gravel producers on a routine basis and will be utilized by the Kansas City District to measure riverbed degradation and other parameters affecting the river channel's morphology. Implementation of the Monitoring Program in conjunction with the Dredging Restrictions will ensure that the established maximum acceptable level of impacts will not be exceeded.

I. General Information

Reliable monitoring of dredging-related impacts is dependent upon the collection and utilization of various types of information. Certain data pertinent to monitoring efforts is currently available to the Kansas City District; other information which is not available to the Kansas City District must be provided to the District by the sand and gravel producers. Monumented control sites must be established at various locations along the river to provide some of the required information. Establishment and maintenance of the control sites is the responsibility of the producers. Information to be provided by the producers includes channel cross-section surveys, water surface elevations, LIDAR data and production figures. Field data required by the District must be accompanied by field notes containing pertinent raw data in a standard engineering format with appropriate dates, times and locations of data collections. Certain information may be requested in a preprocessed form, such as channel cross-section survey data plotted for each survey range line. In addition, requested information may be required in digital form on diskette in a format acceptable to the Kansas City District.

When a dredged reach of river is abandoned, the producers may be required to continue control site maintenance and data collections, within the abandoned reach, for a reasonable period. Such a requirement would depend upon the location of the abandoned reach, the impact of dredging activities on the reach and other factors pertaining to the river channel's stability within the reach. Termination of control site maintenance and data collection is at the discretion of the Kansas City District.

Contractors employed by the producers and the procedures and equipment utilized by those contractors to establish control sites and to furnish data, aerial photography and any other required information, must be approved by the Kansas City District. This document is not intended to provide all the details concerning data collection and submittal requirements. The producers or the contractors employed by the producers must contact the Kansas City District prior to the initiation of data collection efforts to assure that all data collection and submittal requirements are met. A thorough quality and error check of all required data must be performed prior to submittal to the Kansas City District.

The Monitoring Program is subject to modification by the Kansas City District at any time to ensure that the established maximum acceptable level of impacts is not being exceeded. Therefore, the sand and gravel producers are responsible for providing any additional information requested by the District to meet essential monitoring needs.

II. Control Sites

At least one monumented control site must be established on each riverbank at the control site locations identified in Section III. A., B., and C. to provide channel cross-section survey ranges. The control sites will also be used to collect water surface elevations and to establish ground controls. Control sites will be established with x, y, and z coordinates using approved surveying methodology. The use of LIDAR to virtually survey land at new or cross-sections at previously established sites with known northing and easting locations is acceptable in-lieu of physical monumentation methods.

III. Survey Ranges

Monumented survey ranges must be established at the following locations:

A. Lower River (RMs 0 - 51.8 [Bowersock Dam])

Monumented survey ranges will be located at approximately 1.5 mile intervals (by the Kansas City District) beginning with deviations as requested and ending within 1,000 feet of Bowersock Dam. In addition, beginning near RM 4.4, a maximum of five monumented survey ranges will be located at 1,000 to 1,500-foot intervals through and/or adjacent to each permitted reach between Turner Bridge and Bowersock Dam. The actual number and location of ranges required in association with a permitted reach will be determined on a case-by-case basis and will depend on the length of the permitted reach and other pertinent factors. Existing monumented ranges, established by the Kansas City District, must be utilized when the locations of existing ranges coincide with required range locations. The use of existing ranges for the collection of required data will ensure continuity between historical and future data collections.

B. Topeka Area (Approximately RMs 72 – 96)

Monumented survey ranges will be located at approximately 1.5 mile intervals (any deviation must be approved by the Kansas City District) beginning at least 5 miles below the most downstream permitted reach and ending at least 5 miles above the most upstream permitted reach. One range must be located within 500 feet of the downstream side of the Topeka water supply weir, which is located near RM 86.9. In addition, a maximum of five monumented survey ranges will be located at 1,000 to 1,500-foot intervals through and/or adjacent to each permitted reach. The actual number and location of ranges required in association with a permitted reach will be determined on a case-by-case basis and will depend on the length of the permitted reach and other pertinent factors. Existing monumented ranges, established by the Kansas City District, must be utilized when the locations of existing ranges coincide with required range locations. The use of existing ranges for the collection of required data will ensure continuity between historical and future data collections.

C. Isolated Dredging Operations

Isolated dredging operations are permitted dredging operations that are not located within the monitored areas described in Section III. A. and B. Generally, five monumented survey ranges will be established to monitor each isolated dredging operation. However, the actual number of required ranges could be greater than five and will depend upon conditions present in the reach of river being dredged. Therefore, the number of ranges required to monitor an isolated dredge and the locations of those ranges will be developed on a case-by-case basis.

IV. Data Collection

A. Channel Cross-Section Surveys

A set of channel cross-section survey data consisting of at least one channel cross-section survey recorded along each monumented range line referenced in Section III. Sets of channel cross-section data must be collected 4 years after implementation of the Regulatory Plan; and beginning 4 years after implementation of the Plan, sets of channel cross-section data must be collected at 2 year intervals (4, 6, 8, 10, 12 ...). Channel cross-section surveys must be conducted during discharges of 10,000 cfs or less. Each set of channel cross-section data must be provided to the Kansas City District as soon as possible after the data has been collected.

B. Sand and Gravel Production

Each year the total number of tons of material dredged from each permitted reach of the river between January 1 and December 31 must be provided to the USACE within 30 days of the end of the year.

Appendix B

January 2018

Donahue, Brian T CIV USARMY CENWK (US)

From: Tabor, Vernon <vernon_tabor@fws.gov>
Sent: Friday, November 17, 2017 12:25 PM
To: Donahue, Brian T CIV USARMY CENWK (US)
Subject: [EXTERNAL] Kansas River EIS Dredging

Brian,

Our concerns remain similar to past dredging actions on the Kansas River, and include:

1. Downcutting in the streambed in reaches immediately upstream of dredge sites

2. The erosion of banks impacting water quality and infrastructure that may be negatively impacted creating the need for for future instream work futher affecting channel integrity and aquatic habitat.

3. Impacts to the pallid sturgeon and/or its habitat in reaches from Bowersock Dam to the confluence with the Missouri River, of which will be discussed in informal consultation with the FWS.

Thanks for the opportunity to provide brief comment.

Vernon Tabor
FWS Tracking #2018-CPA-0012

--

Vernon Tabor
U.S. Fish and Wildlife Service
Kansas Ecological Services Field Office
2609 Anderson Avenue
Manhattan, Kansas 66502
785/539-3474 X110

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 7
11201 Renner Boulevard
Lenexa, Kansas 66219

NOV 22 2017

Colonel Douglas B. Guttormsen
District Engineer
U.S. Army Corps of Engineers
601 East 12th Street
Kansas City, Missouri 64106-2896

Dear Colonel Guttormsen:

The U.S. Environmental Protection Agency Region 7 has identified additional information which has become available subsequent to the Public Notice and Draft Environmental Impact Statement and Regulatory Plan for Rivers and Harbors Act Section 10 permits for dredging on the Kansas River for Kaw Valley Companies, Inc., Holliday Sand & Gravel Company, Master's Dredging, Builders Choice Aggregates, and LBB Limited Liability Corporation, which is detailed in the attached document.

Additionally, based on our evaluation of the Corps' responses to our comments (found in Chapter 7 of the FEIS) EPA's concerns identified in letters of December 12, 2016 and January 6, 2017, have not been adequately addressed.

Thank you for the opportunity to provide these comments. We look forward to working with you to resolve the remaining issues and to share more specific concerns with respect to the Regulatory Plan prior to the notice of intent with respect to the permits. If you wish to discuss the EPA's findings or if you have any questions, please contact Brad Horchem of my staff at (913) 551-7137.

Sincerely,

Karen Flournoy
Director
Water, Wetlands and Pesticides Division

cc: Mark Frazier, Kansas City District, USACE
David Hibbs, Kansas City District, USACE
Brian Donahue, Kansas City District, USACE

Printed on Recycled Paper

New information since Public Notice and release of DEIS

In June of 2017, the Kansas City District released the Missouri Riverbed Degradation Feasibility Study Technical Report, which looked at alternatives that would have addressed stream/river bed degradation, including structural approaches and evaluated economics of these different approaches. This report was released after the Draft EIS and the RHA Section 10 Public Notice. The study found that the alternative with the greatest net-economic benefits is the elimination of commercial sand and gravel mining. The projected net benefit to the public could be as high as $4,800,000. This is a new and important finding. It is within the USACE's discretionary authority provided by 33 Code of Federal Regulations § 325.7 to modify, suspend, or revoke the permits on the Missouri River. This would not require tax payer money or Congressional authorization to implement and would result in significant net economic benefits. The report also identifies that if nothing is done and bed degradation continues, potential future municipal infrastructure costs in Fiscal Year 2017 dollars would total $785,500,000, including increased annual operation and maintenance costs of $29,000,000. The report also assessed the effects on Regional Economic Development and states "RED effects of reducing or eliminating commercial dredging from this reach of the Missouri River would be marginal and any employment and income losses would be largely offset by employment and income gains to pit mining operations."

These new findings point to the need for a similar level of analysis to be conducted on the Kansas River before moving forward with the issuance of new permits. The FEIS states, "(h)igh flows on the Kansas River while the Missouri is temporarily degraded could induce head-cutting on the Kansas River, even in the absence of a continued degradation trend in Kansas City," and "existing head cuts on the Kansas River induced by previous Missouri River degradation will likely continue to migrate upstream to channel control points such as bedrock or weirs and major floods on the Missouri River have the potential to induce new head cuts." Considerations of the technical report and how the Kansas and Missouri Rivers interact is crucial. Head cuts moving up tributaries, reduction of sediment being supplied into the Kansas City reach due to Kansas River extraction, and regional economics should all be evaluated.

Additionally, since the RHA Section 10 Public Notice and DEIS, the Kansas River was recently chosen to be a part of the Sustainable Rivers Project, a partnership between The Nature Conservancy and the USACE. The FEIS did not include any reference to the Sustainable Rivers Project. The Sustainable Rivers Project is an ongoing effort to re-operate Corps dams to achieve more ecologically sustainable flows, while maintaining or enhancing project benefits. Moving into the future, synergies between the District's Regulatory Program, Planning, federal reservoir operation, and this partnership can be realized.

Substantial public investment in and along the Kansas River

The City of Topeka has long-term plans to make the Kansas River a recreational, residential, and commercial center for the City. The USACE issued a public notice on October 10, 2017 for proposed improvements to the City of Topeka's existing Kansas River Weir. The approximately $2 million-dollar project includes the construction of north channel navigation chutes and fish passage structures, new bank protection, downstream energy dissipation structures and

replacement of existing downstream boat ramp. The project will help protect the City's drinking water intake and increase recreational opportunities in the area. The City is investing substantial resources along with state funds of $300,000 from KDWPT and $500,000 in federal funds as part of this project. The EPA also recently awarded a $300,000 Brownfields Grant to assist with Topeka's riverfront redevelopment. The National Park Service is working with the City and Shawnee County to develop an Oregon Trail Park near Overland Station along the river in North Topeka. There is also substantial work being conducted by USACE on levees in the area.

The FEIS did not adequately categorize the investment taking place in the River or the changes to the weir that will improve safety, increase recreation and enhance fish passage. The FEIS states, "Based on Dredger experiences, the development of pit dredging operations has a much higher probability of success upstream of RM 90 (west of Topeka) than in downstream areas." Further, there has been other significant investment by Federal, State and local governments as part of the designation of the Kansas River as part of the National Water Trails System. The NPS, the State of Kansas, communities and local organizations have been working to develop a community engagement strategy to gain citizen support for and input on the recreational opportunities. They have identified recreational access, economic development, and natural resource protection as priorities for the Kansas River. There are 18 public access points from Junction City to Kansas City, Kansas, owned and managed by either a local community or the State of Kansas.

Due to the increased interest in developing the River as a recreational resource and economic revitalization project, this fact should be taken into consideration pursuant to the Corps Public Interest review before adding new permits upstream from the Bowersock Dam. With proposed modifications to the City of Topeka's weir, the reach of the river from the confluence of the Smokey Hill and Republican Rivers to the Dam at River Mile 51.8 would constitute over 118 miles of free-flowing recreational river providing great economic opportunities to communities to service and support this growing industry. Safety and aesthetic concerns and conflicts with commercial dredging would interfere with the full benefits of these opportunities. The current proposed permits and buffer widths are not sufficient and would not be compatible with future increases in recreation.

From:	david penny on behalf of David Penny
To:	Donahue, Brian T CIV USARMY CENWK (US)
Cc:	KAPA- Jerry Younger; Penny, David; Penny, Michael; Hoover, Dave ; Jarrow, James; Jarrow, James; Jones, Grace E CIV USARMY CENWK (US); Hibbs, David R CIV USARMY CENWK (US)
Subject:	[EXTERNAL] Re: KS River Survey and monitoring
Date:	Monday, December 11, 2017 9:25:25 AM
Attachments:	2016-12-19 Kansas River Degradation Memo signed.pdf 2017-05-05 2016 5-mile Reach Compare.xlsm Bed Elevation-RM-26.40-Compare 2014 to 1992 Bed Elevations.xls

---

Dear Brian,

I have attached (1) your memo, (2) your 5 mile bed elevation analysis, and (3) my spread sheet on the 1992 vs. 2014 river bed elevations for RM 26.4. My analysis does not include the 10 miles (5 miles in both directions, upstream and down stream) centered on RM 26.4. However, this spread sheet (2014 vs. 1992) shows an aggradation of the river bed at RM 26.4 of nearly one foot instead of a degradation of 1.4 feet as shown in your 5 mile reach comparison.

I am sure that a similar 5 mile analysis using a straight forward bed analysis such as mine would show that there has never been a 2 foot degradation during the last 25 years of our DeSoto permit centered on RM 26. According to your Degradation Memo, the COE bed elevation method of analysis has changed apparently three times since the beginning of the Regulatory Plan over 20 years ago. We need to sit down and get this resolved at the Kansas City District level at a higher level than yourself.

Sincerely,

Dave Penny

-------- Forwarded Message --------
Subject: KS River Survey and monitoring
Date: Thu, 26 Oct 2017 19:04:41 +0000
From: Donahue, Brian T CIV USARMY CENWK (US) <Brian.T.Donahue@usace.army.mil> <mailto:Brian.T.Donahue@usace.army.mil>
To: Builders Choice <joem@cst-bc.com> <mailto:joem@cst-bc.com> , Holliday Mike ODell (mike.odell@hollidaysand.com <mailto:mike.odell@hollidaysand.com>) <mike.odell@hollidaysand.com> <mailto:mike.odell@hollidaysand.com> , Jerry Younger - KAPA-KRMCA (jyounger@kapa-krmca.org <mailto:jyounger@kapa-krmca.org>) <jyounger@kapa-krmca.org> <mailto:jyounger@kapa-krmca.org> , Kaw Valley (danh@kvco.net <mailto:danh@kvco.net>) <danh@kvco.net> <mailto:danh@kvco.net> , LBB llc <onis36201@cox.net> <mailto:onis36201@cox.net> , Masters Dredging <davidpenny@theaquaticgroup.com> <mailto:davidpenny@theaquaticgroup.com> , Bob Henthorne <bhenthorne@midstatesmaterials.com> <mailto:bhenthorne@midstatesmaterials.com>
CC: Hibbs, David R CIV USARMY CENWK (US) <David.R.Hibbs@usace.army.mil> <mailto:David.R.Hibbs@usace.army.mil>

All -
It is my understanding that there are still lingering questions some of you may have related to the accuracy & methodology used by the Corps to compute the 5-mile average bed degradation used for determining compliance of existing permits with the Regulatory Plan.

Please refer to the attached memo and the spreadsheet used for the last survey in 2015/16 for an explanation. Our methodology regarding the survey data submitted to us has not changed since 2010 as explained in the

Memorandum from CENWK-ED-HR dated October 24, 2012. That memo, while lengthy and somewhat technical is on our website under the heading of "Regulatory Data" if you do not already have a copy at the following link: Blockedhttp://www.nwk.usace.army.mil/Missions/Regulatory-Branch/Kansas-River-Commercial-Dredging/ Please refer to page 2, item 6 "Bed method #3 Analysis" of the memo for details.

The excel file attached to this email has all the 2015/16 survey data collected and the 1992 baseline elevation used for the calculations, the interpolated data (for each 1/10 mile for a rolling & smooth 5-mile average, see columns K & L of the spreadsheet) and compares the new data with that from the 1992 baseline. Each 5-mile length of the river is assigned a value based upon the average departure of current bed elevations from the baseline elevations computed in the same way. As explained in the attached memo, there were several RM w/o a 1992 elevation so they are not used in calculations. The most recent survey also had some cross-sections where the water surface elevation was substituted at some points due to an incomplete data set for that cross-section.

I have done a few checks and cannot find any inconsistent values so unless it can be pointed out to me where the data is wrong or where the calculation or methodology was done in error, I have to stand by our results as valid. If you have information/calculations to the contrary, please send them to me in reply to this email and I will be glad to refer them for an engineering review. Without this further specific information or better yet, an example of a differing result for a cross-section, I cannot address your concerns or even have a starting point to know where to advise our engineering folks to begin a quality check. The calculations for 5 mile reach average change is explained in paragraphs 3 and 4 of the memo and results shown in the chart at the end of the memo.

Please refrain from making general statements or proposing new methods of analysis.

You are also reminded that the 2017 survey data is due to us NLT January 31 of 2018. Timely submission of this data has been a problem over the course of the last few survey seasons. The information will be required for continued permit authorization in 2018. I will also need the extraction tonnage reports from each of you that dredged in 2017 under existing KS River permits by January 31st.

Regards,

Brian Donahue
Project Manager
Regulatory Branch
U.S. Army Corps of Engineers
Kansas City District
(816) 389-3703

Here are the notes from John Shelley regarding the last survey information and analysis in the attachments:

2016 5-mile Reach Compare.xlsm : Subtracts the average bed elevations calculated with the previous spreadsheet from the 1992 average bed elevations, interpolates at 0.1 mile increments, averages over 5-mile reaches.

This survey had the need to fill in data gaps caused by the LIDAR and the field crews not collecting data for large portions of a few cross sections. A conservative (i.e. likely slightly low) elevation was assumed, as explained in the memo. As this didn't cause any reach to exceed 2 ft of degradation, no further surveys were required to fill the gaps. The memo explains the data gaps and results.

Best Regards,

John Shelley, Ph.D., P.E.

Appendix C

January 2018

CERTIFIED MAIL – RETURN RECEIPT REQUESTED

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, KANSAS CITY DISTRICT
635 FEDERAL BUILDING
601 E. 12TH STREET
KANSAS CITY, MISSOURI 64106-2824

February 23, 2017

Regulatory Branch
(Kansas River Dredging)

Mr. Jerry Younger
Kansas Aggregate Producers' Association
800 Southwest Jackson Street, #1408
Topeka, Kansas 66612

Dear Mr. Younger:

This letter pertains to the current applications for Department of the Army (DA) permits requesting commercial sand and gravel dredging activities within the Kansas River. During the public notice period for the draft environmental impact statement (DEIS), we received many comments and observations from agencies, organizations and the general public that we will consider, address and incorporate into the final environmental impact statement (FEIS).

In response to the public notice and federal register notices, we received numerous substantive comments for which we request your specific response for additional information in order to adequately address them in the FEIS and during our permit reviews. The specific comments have been highlighted and enclosed with this letter. As a part of our review, you have the opportunity to respond to any or all of the comments received by providing that response to us by March 27, 2017. All of the comments we received during the public notice for the proposed work were previously forwarded to you by CH2M via email correspondence dated January 26, 2017.

We will consider your responses in our final decision whether to issue or deny any or all of the permit applications. To include your comments in our evaluation for the proposed work, you must respond to the following itemized requests for relevant information regarding the potential impacts of that work upon the environment and public interest:

a. Comments regarding the potential for adverse impacts of the proposed work upon horizontal collector wells and other wells used for municipal water supply and operated by the City of Olathe, Kansas and Bonner Springs, Kansas. Any suggestions regarding an appropriate and adequate buffer distance from these structures.

b. The potential adverse impact of the work upon the Water One weir located at river-mile 15 and additional ground water wells operated by Water District No. 1 of Johnson County, Kansas.

c. The proposed permit and Regulatory Plan requirements for all dredge return water to be routed through an adequately-sized settlement basin prior to reintroduction to the Kansas River.

d. Comments submitted from individuals regarding the noise level and hours of operation in which dredging work takes place and the impact of those operations on adjacent landowners. For example, information related to the expected normal hours and days of operation for dredges, the number, type and size of motors proposed for use on the dredges, the use and effectiveness of mufflers and compliance with state or local noise ordinances would be of interest.

e. The issues related to public safety and passage of recreational vessels through active dredging operational areas and unattended dredge facilities located on the Kansas River. Several commenters listed a proposed new permit area near the confluence of Cedar Creek downstream of DeSoto, Kansas as an area of particular concern.

f. Comments submitted by several agencies and individuals suggesting increased yearly monitoring of bed elevations within areas of the river dredging is authorized as well as the rest of the Kansas River from Junction City, Kansas to the confluence with the Missouri River.

g. Comments related to the proposed Regulatory Plan changes regarding the evaluation and decision criteria to be utilized for decisions related to the opening and closure of authorized dredging areas.

h. The potential availability and use of recycled concrete as a suitable alternative for dredged aggregate from the Kansas River.

In summary, we are forwarding the enclosed comments for your information, and we request your specific input into development of the FEIS. If you do not reply to this request for input into our development of the FEIS by March 27, 2017, we will assume you are declining this request to respond, and we will complete our evaluation of the applications without the requested information. We are required to evaluate the effect of the proposed work as part of our public interest review. If there is an environmentally preferable alternative to the proposed work that would have less adverse environmental impact, we may deny some or all of the requested permits. If you have any questions concerning this matter, please feel free to write me or contact Mr. Brian Donahue at (816) 389-3703.

Sincerely,

David R. Hibbs
Regulatory Program Manager
Regulatory Branch

Enclosures

cc (electronically w/enclosures):

Environmental Protection Agency,
Watershed Planning and Implementation Branch
U.S. Fish and Wildlife Service, Manhattan, Kansas
Kansas Department of Wildlife, Parks and Tourism
Kansas Department of Health and Environment
Kansas Department of Agriculture

City of Bonner Springs

P.O. Box 38, 205 East Second Street, Bonner Springs, KS 66012

December 12, 2016

Mr. Brian Donahue
Regulatory Project Manager
U.S. Army Corps of Engineers
Kansas City District Office
601 E. 12th St. Suite 402
Kansas City, MO 64106

RE: Comments to Kansas River Dredging Draft Environmental Impact Study.

The City of Bonner Springs would like to respond to the U.S. Army Corps of Engineers (USACE) Environmental Impact Study draft report regarding new dredging permits within the Kansas River. The City of Bonner Springs currently has five (5) alluvial aquifer wells operating on the north bank of the Kansas River. Our current outtake is 250 – 300 million gallons per year; however of current water rights are one (1) billion gallons per year, therefore our long term sustainability for the City water supply is maintaining excellent water availability from the Kansas River. The City is also a member of the Kansas Water Assurance Water District which maintains upstream water storage reservoirs for sustainable water supply in the future.

The City's Groundwater and Environmental Hydrogeologist reviewed the USACE draft report for the City and the attached memorandum pertaining to the health of the aquifer and associated water levels are considered vital interests for the City, both currently and in the even more so in the future. Any impact on the City wells due to the over-dredging could have a very negative impact on the City's ability to provide self-sustaining water as we current have planned. Our water rights will allow the City to grow in the future with the ability to provide safe drinking water to our citizens and businesses for the next hundred years and into the future. We agree with the recommendation to limit the amount of dredging based on the "Reduced Limit Alternative" as it is referred to in the USACE draft report. The City would also recommend that an annual dredging assessment be completed for our review purpose to determine the overall impact of the River channels and streambed degradation.

We believe our concerns are warranted and appreciate the opportunity to respond to the USACE draft report. The City understands the needs for dredging operations and Holiday Sand is a viable business within our City. The City must ensure however, that our future growth and sustainability is not diminished by the dredging operations on the Kansas River.

Sincerely,

Rick Sailler,
Public Works Director
City of Bonner Springs
rsailler@bonnersprings.org
913-667-3514 – direct 913-207-1530- cell

OLATHE
KANSAS

December 9, 2016

Brian Donahue
Regulatory Project Manager
U.S. Army Corps of Engineers
Kansas City District Office
601 E. 12th St, Suite 402
Kansas City, MO 64106

RE: Comments to US Army Corps of Engineers Kansas River Dredging Draft Environmental Impact Study

Mr. Brian Donahue:

The City of Olathe (Olathe) understands that the US Army Corps of Engineers (USACE) has presented a draft Environmental Impact Study (EIS) to assess the impact of approving new Kansas River instream dredging permits. We are submitting comments on this Draft EIS related to Master's Dredging request for an instream dredging permit from River Mile 26.1 to 27.6. Olathe operates a well field for public water supply adjacent to the area on the river where Master's proposed dredging permit would allow them to operate.

While we recognize the importance of commercial sand and gravel dredging on the Kanas River, we are concerned that the production of sand and gravel could compromise the production capability and water quality of Olathe's well field. Should dredging compromise the production capacity or water quality, it would require substantial investment to compensate for the lost capacity; a cost we do not believe should fall to the rate payers of Olathe. We ask that these factors are taken into consideration if the Master's Dredging permit is approved.

If as a result of the EIS, the USACE decides to allow the proposed in-stream dredging permits, Olathe requests that regulation and monitoring measures are implemented to ensure the integrity and long-term viability of Olathe's public water supply is not compromised by the dredging activities. We also hope that the USACE continues to work with dredging operators to accommodate their sand and gravel needs in other areas without risk to public infrastructure or through the development of off-stream pits.

In addition to regulations listed in the proposed Revised Regulatory Plan for Commercial Dredging Activities on the Kansas River included as Appendix A of the draft EIS, the City requests that the USACE consider implementing the following permit conditions specific to the River Mile 26.1 to 27.6 dredging application:

- A streambed degradation monitoring station be located adjacent to the City's well field, and monitoring of streambed degradation be conducted annually.
- Dredge return water discharged back into the river, upstream from the City's wells, be discharged in such a way as to not to churn up silt from the riverbed and create a silt plume.
- A 500-foot buffer zone be applied to the intake laterals of Collector Well #2 (as indicated in Figure 1).

Enclosed is a technical memorandum that further details the areas of concern Olathe has with dredging operations on the Kansas River. Olathe has reviewed the memorandum and agrees with its assessments and recommendations and believes that these concerns should be addressed as part of approving the Master's Dredging permit application.

In conclusion, Olathe is not opposed to dredging the Kansas River as long as the activities are appropriately regulated and monitored to ensure that critical public water supply infrastructure is protected from capacity

Item a.

reduction and negative water quality impacts. We understand that dredging is not the sole source of river channel degradation. However, allowing dredging this close to Olathe's wells has the potential to compromise Olathe's sole source of public water supply.

Thank you for your time and consideration of our comments. Please contact me at (913) 971-9029 if you have any questions.

Sincerely,

Mary Jaeger, P.E.
Public Works Director
City of Olathe, KS

WaterOne

Setting the Standard for Utility Excellence

Water District No. 1 of Johnson County

December 12, 2016

Mr. Brian Donahue
Project Manager
U.S. Army Corps of Engineers
Kansas City Regulatory Office
ATTN: OD-R
601 East 12th Street, Room 402
Kansas City, Missouri 64106-2896
Brian.t.donahue@usace.army.mil

RE: WaterOne Comments in Response to Draft Kansas River Dredging Environmental Impact Statement

Dear Sirs:

On behalf of Water District No. 1 of Johnson County, Kansas, I am submitting comments to the Draft Environmental Impact Statement on Kansas River Commercial Dredging. WaterOne is a public water supply system that serves over 400,000 customers in 17 cities of Johnson County, KS. About half of the water supply is derived from the Kansas River. WaterOne has a surface water intake at river mile 15 and a well field located adjacent to the river from about river mile 11.5 to 13.9. Previously we operated 21 vertical wells in the well field but were forced to take the wells out of service due to loss of capacity. Currently, the design phase for the installation of a horizontal collector well is underway. The collector well will be located at approximately river mile 11.2. An additional horizontal collector well located at river mile 13.8 and 7 new vertical wells located between river miles 11.2 and 13.8 are planned for construction in the year 2020.

WaterOne would like to reiterate that existing State Regulation established by K.A.R. 5-46-3, subsection c.2.B, be stated in the EIS, acknowledging that a sand and gravel removal operation shall not be located within one mile of a public water supply intake. In addition, a recommendation should be made to modify the regulation to specifically state that dredging will not occur within one mile of a horizontal collector well. Collector wells have become increasingly common in the Kansas City area and are a technology that essentially pulls water in horizontal directions, including from beneath the river. Significant dredging of the river bed will not only decrease potential capacity of the well, but could also compromise the integrity of the structure that reaches beneath the river bed. It appears the Draft EIS is recognizing collector wells as "water intake structures" and would apply the 500 foot restriction on dredging in relation to said collector wells (Draft EIS 3.6.2.1). WaterOne believes the one mile restriction is more appropriate and dredging should not be permitted from river mile 10.2 to 16.0 in order to protect its water source facilities on the Kansas River.

Another concern we previously mentioned is silt discharges from dredging have adversely affected the recharge of the alluvial aquifer that WaterOne wells draw from. Since roughly 90% of the water extracted by a horizontal collector well comes from the

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river, protecting the connectivity of the river to the groundwater formation is critical. The existing wells are essentially worthless to our system as it stands and have resulted in the need to install the collector well to replace the capacity at a cost of $4.7 million. The additional wells in 2020 will cost another $7.2 million. We urge the Corps to examine the impacts of dredging on the Kansas River bed, as well as excessive silt discharge and include the information in the EIS. In 1991, the EIS limited channel degradation to not more than 2 feet per 5 miles and if that limit was exceeded, dredging in that reach would be suspended. This limitation or a more stringent one going forward in the current EIS is critical to the protection of WaterOne's facilities.

Certainly WaterOne is concerned about dredging operations near our water intake structure and the potential for not only physical damage to the structure but its continued viability dependent upon water surface levels that are impacted by degradation of the river bed. We have similar concerns regarding the impact dredging has on WaterOne's ground water wells. WaterOne independently looked into the loss of well capacity in the 21 wells and found that river bed degradation was a significant contributing factor. Findings of the Missouri River Bed Degradation study which are about to be submitted to Corps Headquarters, point to commercial sand dredging as a major cause of degradation of the river bed. Up until now, the Missouri River Degradation study findings have been discounted due to the incomplete status of the study, however we have reached a concluding point. The findings are no longer preliminary and therefore should be considered by the Corps when making decisions regarding dredging permits.

The sand and gravel needs of the Kansas City area can be met by off river mining. Certainly the dredging industry representatives will not be in favor of further restriction of river operations or moving off the river completely. For years dredgers have enjoyed a "no cost" place of operation but it has been at the expense of the public infrastructure in the areas they operate. The proposed EIS for Kansas River dredging must consider the significant cost to the public in the long run in terms of repair and maintenance required to infrastructure if current conditions persist and the threat of total failure of that infrastructure over time.

Best Regards,

Darci L. Meese
Government Affairs Coordinator
WaterOne
(913) 895 5516
dmeese@waterone.org

DLM/dlm

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 7
11201 Renner Boulevard
Lenexa, Kansas 66219

DEC 12 2016

Colonel Douglas B. Guttormsen
District Engineer
U.S. Army Corps of Engineers
601 East 12th Street,
Kansas City, Missouri 64106-2896

Dear Colonel Guttormsen:

The U.S. Environmental Protection Agency Region 7 has reviewed the October 21, 2016, Public Notice for the Draft Environmental Impact Statement for Rivers and Harbors Act Section 10 permits for dredging on the Kansas River for Kaw Valley Companies, Inc., Holliday Sand & Gravel Company, Master's Dredging, Builders Choice Aggregates, and LBB, L.L.C. The recommendations herein have been prepared under the authority of, and in accordance with, Section 10 of the Rivers and Harbors Act of 1899 (33 USC 403) and Sections 402 and 404 of the Clean Water Act.

The Kansas River is an Aquatic Resource of National Importance. The EPA Region 7 designated the Kansas River an ARNI in 2011, and determined that the proposed dredging operations may result in substantial and unacceptable adverse impacts to the ARNI.. On January 3, 2012, the EPA sent a letter to the Corps concluding that the proposed dredging operations will result in substantial and unacceptable adverse impacts to the ARNI.

The EPA's continued designation of the Kansas River as an ARNI is heavily supported. The River's 170 miles drain approximately 53,000 square miles of Nebraska, Colorado and Kansas. Its prairie watershed encompasses Kansas' Flint Hills and other scarce and distinctive prairie systems. Its vital habitats support threatened and endangered species that utilize the River corridor, such as least tern, piping plover, and pallid sturgeon. The Kaw is one of only three public rivers in Kansas that provides unique recreational opportunities attracting participants from across the nation. Vital infrastructure on the Kansas River includes dams, public water intakes, and bridges. The River supplies a primary source of drinking water for over one million people living in northeast Kansas. All these services are of a national importance. In addition to the justifications provided in the letters to support the original designation as an ARNI, the Kansas River was designated on July 14, 2012 as a National Waters Trail by the National Park Service's Rivers, Trails, and Conservation Assistance Program. The Park Service National Water Trails System website states: "The Kansas River offers outstanding scenic, recreational, historic and cultural opportunities, appropriate for novice boaters and families."

Pursuant to Part IV, Paragraph 3(a) of the August 11, 1992, Memorandum of Agreement between our Agencies concerning Section 404(q) of the CWA, the EPA continues to believe that

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the proposed dredging projects may result in substantial and unacceptable impacts on the Kansas River, an aquatic resource of national importance.

In addition to proposing dredging operations, the DEIS suggests that the proper permitting authority for the return water from onshore sand plants to the River falls under Section 402 of the CWA. However, the EPA continues to maintain that the discharges from dredging operations in the Kansas River are covered by Section 404 of the CWA. The EPA believes that the discharges associated with the dredged material piled onshore falls under the regulatory definitions of "discharge of dredged material" and "discharge of fill material." Our position is supported by a recent Supreme Court Decision, *Coeur Alaska*, which makes clear that these discharges of fill material must be regulated under Section 404. Finally, the method in which water is used by these operations is unique and was specifically excluded from regulation under Section 402 by the EPA's Effluent Limitation Guideline covering construction sand and gravel dredging.

The attached detailed comments are a summary of the EPA's preliminary findings with respect to the proposed permits and the DEIS. If you wish to discuss the EPA's findings or if you have any questions, please contact Jason Daniels of my staff at (913) 551-7443.

Sincerely,

Jamie Green for

Karen A. Flournoy
Director
Water, Wetlands and Pesticides Division

Enclosures

cc: Mark Frazier, Kansas City District, Corps
Jason Luginbill, USFWS
Jordan Hofmeier, KDW&P
Scott Satterthwaite, Kansas Department of Health and the Environment

Detailed Comments

Comments pursuant to EPA authorities under the National Environmental Policy Act, Council on Environmental Quality regulations (40 CFR Parts 1500-1508), Section 309 of the Clean Air Act

In separate EPA correspondence, comments were provided on the Draft Environmental Impact Statement and ratings for the alternatives. Under EPA's Section 10 of the Rivers and Harbors Act of 1899 (33 USC 403) and Sections 402 and 404 of the Clean Water Act authorities we concur with the comments provided pursuant to the National Environmental Policy Act, Council on Environmental Quality regulations (40 CFR Parts 1500-1508), Section 309 of the Clean Air Act concerning inadequacies of the EIS in the following areas:

- the DEIS as a programmatic NEPA compliance document
- purpose and need
- range of alternatives
- affected environment and environmental consequences
- recreation
- economic impacts
- cumulative impact analysis
- regulatory plan and revisions

RECOMMENDATION: The DEIS, Regulatory Plan and permitting should be revised to address the issues identified.

Regulation of Return Water from Onshore Sand Plants

The Regulatory Plan requires the use of settling ponds on a case-by-case basis and the use of a sluice or pipe for dredged return water. The DEIS should provide a characterization of typical dredge return water and identify constituents commonly found in the return water and any potential risk to water quality. Further, the efficacy of the treatment and solids removal using this treatment system varies among the applicants and discharge locations. The DEIS should address whether these discharges result in increases in the elevation of the river bottom at each location and characterize the impacts of these shoreline changes. The DEIS does not address this impact at all.

CWA § 402 Versus § 404 Permitting Authority

The DEIS suggests that the proper permitting authority for the return water from onshore sand plants to the river falls under Section 402 of the Clean Water Act. However, EPA maintains that the discharges from dredging operations in the Kansas River are covered by Section 404 of the Clean Water Act. EPA believes that the discharges associated with the dredged material piled onshore falls under the regulatory definitions of "discharge of dredged material" and "discharge of fill material." Our position is supported by a recent Supreme Court Decision, *Coeur Alaska*, which makes clear that these discharges of fill material must be regulated under Section 404. Finally, the method in which water is used by these operations is unique and was specifically excluded from regulation under Section 402 by EPA's Effluent Limitation Guideline covering construction sand and gravel dredging.

The regulations at 40 C.F.R. § 232.2 exclude from the definition of "discharge of dredged material ... (1) Discharges of pollutants into waters of the United States resulting from the onshore subsequent processing of dredged material that is extracted for any commercial use (other than fill). These discharges are subject to section 402...". EPA believes this exclusion from the definition of "discharge of dredged material" does not apply because the dredge suction water is not used in the processing of sand and gravel onshore. Despite the Corps' assertion that the gravel is, in fact, "processed," and should therefore be exempted from the definition of "discharge of dredged material," the regulatory language "other than fill" makes clear that the exemption is lost if the discharge results in the addition of fill material.

Evidence from the discharge sites, including aerial photography, demonstrates clearly that the discharges are changing the bottom elevation of the Kansas River and, thus, meet the definition of "fill material" under 40 C.F.R. § 232.2. The discharges are more than incidental and more than a "de minimus" deposit of dredged material, as evidenced by an aerial photo of one operator raising the bottom elevation over 3 acres in area of the river and half way across the channel (Enclosure 1). The 2009 Supreme Court decision *Coeur Alaska, Inc. v. Southeast Alaska Conservation Council* (557 U.S. 261) is unambiguous in its finding that any deposit of dredged material that becomes "fill" in the receiving stream is covered by Section 404, and that EPA is prohibited from permitting the activity under Section 402 (Enclosure 3).

EPA's conclusion that these activities should be permitted under Section 404 are also consistent with an effluent limitation guideline developed in the 1970s regarding discharges subject to the section 402 NPDES permit program (Enclosure 2). In the development of the ELG, 40 CFR Part 436, Mineral Mining and Processing Source Category, Subpart C, Construction Sand and Gravel Subcategory, EPA made the observation that some facilities used dredge suction water as a means of transporting sand and gravel to shoreline sorting facilities, but did not use the water in any aspect of sorting or cleaning the product. EPA decided in the rulemaking that this water was not "process" water, because the dredge suction water was not used in any processing step. The final rulemaking and preamble have a direct discussion and clarification of the rule based on these facts. EPA was clear in stating that these specific operations are covered by Part 404 of the CWA. In the preamble, EPA stated, "Dredge water discharges from land-based construction sand and gravel process plants are not regulated at this time. Dredging and on-board processing in navigable water are regulated by the Corps of Engineers pursuant to Section 404 of the Act and are not subject to these regulations." Based on the regulatory definition and the facts at hand, EPA concludes the discharge is properly subject to section 404.

RECOMMENDATION: The DEIS, Regulatory Plan, and permitting should be revised to clarify this issue.

Water Quality Concerns in the Kansas River

The most recent information from the 2016 Clean Water Act Section 303(d) impairments for the relevant segments of the Kansas River was not included in the DEIS. The river is listed for polychlorinated biphenyls, impairments to biology, total suspended solids and total phosphorus. Total Maximum Daily Loads have been approved by the EPA for the river for biology/sediment,

Escherichia coli, nutrients/biological oxygen demand impact on aquatic life, chlordane, biology, and fecal coliform bacteria. Dredging significantly degrades waters by increasing turbidity, total suspended solids, and re-suspending metals, pesticides, nutrients and organic contaminants present in the sediments, thus exacerbating water quality problems.

RECOMMENDATION: The DEIS, Regulatory Plan, and permitting should consider all the TMDL endpoints, the state TMDL implementation process needed to meet state water quality standards and the potential for significant degradation of waters.

Climate Change

The DEIS addresses the potential for all alternatives to affect climate based on greenhouse gas emissions associated with sand and gravel production. The document characterizes these incremental impacts as not significant. However, the DEIS does not address how projected climate change might affect these alternatives and their impacts on the river. The National Climate Assessment for the Great Plain shows projections of more frequent and more intense droughts as well as severe rainfall events in this region. A drier or wetter regional climate would affect the basin's hydrology and, therefore, the movement of sediment through the river system. In this report, federal agencies are reaffirming the importance of continuing to improve the nation's resilience to extreme weather events and other impacts of a changing climate when managing our freshwater resources.

RECOMMENDATION: The DEIS, Regulatory Plan, and permitting should be revised to address climate change adaptation and how the Corps plans to avoid, minimize and mitigate potential changes to the river system affecting dredging which could occur as a result of regional precipitation changes. The federal Water Resources and Climate Change Workgroup has applicable resources, including a recently released an update to the National Action Plan, "Looking Forward: Priorities for Managing Freshwater Resources in a Changing Climate" which could be helpful in updating the information on climate.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 7
11201 RENNER BOULEVARD
LENEXA, KS 66219

DEC 12 2016

OFFICE OF
THE REGIONAL ADMINISTRATOR

Colonel Douglas B. Guttormsen
U.S. Army Corps of Engineers
Kansas City Regulatory Office
Kansas City District
601 East 12 Street
Room 402
Kansas City, Missouri 64106-2896

Dear Colonel Guttormsen:

The U.S. Environmental Protection Agency reviewed the U.S. Army Corps of Engineers' Draft Environmental Impact Statement pursuant to our authorities under the National Environmental Policy Act, Council on Environmental Quality regulations (40 CFR Parts 1500-1508), Section 309 of the Clean Air Act, and Section 404 of the Clean Water Act. The statement was assigned the Council on Environmental Quality number 20160253. A summary of our comments are discussed below, and detailed comments and a copy of the EPA's rating descriptions are included as an enclosure to this letter.

The Corps received applications from five companies for five permits under Section 10 of the Rivers and Harbors Act of 1899 for proposed commercial sand and gravel dredging on the Kansas River between river miles 9.4 and 91.0 in eight individual dredging areas. The Corps evaluated the environmental impacts of three alternatives within this draft environmental impact statement. The statement identifies a "no action" alternative, defined as the denial of all five permit applications. The proposed action is for the potential extraction of 3.15 million tons per year of sand and gravel. A second action alternative is for the extraction of 1.67 million tons per year of sand and gravel. Both action alternatives specify an amount of sand and gravel extraction annually, are further regulated by provisions in the Corps' revised 1991 Regulatory Plan, and are not as timely and effective as might be necessary to address the potential impacts on the environment.

The Corps does not identify a preferred alternative within its draft environmental impact statement, necessitating a rating from the EPA specific to each alternative. Although the immediate federal action being considered by the Corps is whether to issue these five permits under the Rivers and Harbors Act of 1899 for commercial sand and gravel dredging totaling 1.9 million tons annually, it is our understanding that the Corps intends to use this environmental impact statement for programmatic National Environmental Policy Act compliance coverage for these and any future permit awards totaling 3.15 million tons of dredged material annually. For purposes of its Clean Air Act, Section 309, review and comments, the EPA will consider the Corps' proposed alternative as being the eventual issuance of any and all permits allowing the extraction of up to 3.15 million tons of sand and gravel.

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The proposed alternative includes the extraction of up to 3.15 million tons per year of sand and gravel. The EPA has rated this alternative **EO-2,** environmental objections/insufficient information. The environmental objections rating for the proposed alternative is based on the potential for a greater than 200% increase in dredging over the annual amounts actually extracted from 2007 to 2015 under the existing permits. Dredging at these levels may not be sustainable, and in the context of historical dredging levels and past bed loss documented by the Corps, could lead to significant biological and ecological impacts.

The second alternative is a "reduced dredging limits" alternative consisting of the extraction of 1.67 million tons per year of sand and gravel. The EPA has rated this alternative **EC-2**, environmental concerns/insufficient information, as it represents extraction over 60% greater than what was extracted from 2007 to 2015 under existing permits. The final alternative is a "no action" alternative with no permits approval. The EPA has rated this alternative as **LO-2,** lack of objections/insufficient information, based on the absence of further dredging contributions to continuing bed loss, damage to infrastructure, and the potential for resulting impacts on the environment.

The draft environmental impact statement does not clearly characterize the Corps' intended use of this National Environmental Policy Act document as a programmatic environmental impact statement to provide compliance coverage for the future permitting of dredging up to a total extraction of 3.15 million tons. The statement also lacks a robust range of reasonable alternatives; specifically lacking an alternative that represents a status quo condition for sand and gravel extraction. The EPA believes that the public may not understand the potential environmental and economic consequences of the proposed project as they are currently portrayed in the draft environmental impact statement, and that a final decision cannot be supported without supplemental information and discussion within a revised or supplemental draft environmental impact statement related to the concerns outlined above.

The EPA is also separately providing recommendations to the Corps under the Memorandum of Agreement governing coordination between our agencies under Section 404(q) of the Clean Water Act regarding the issuance of these permits under Section 10 of the Rivers and Harbors Act of 1899 (33 USC §403).

If you have any questions regarding these comments, please contact Mr. Josh Tapp, Deputy Director, Environmental Sciences and Technology Division at (913) 551-7606 or tapp.joshua@epa.gov.

Sincerely,

Mark Hague

Enclosures

cc: Mark Frazier, Army Corps of Engineers
David Hibbs, Army Corps of Engineers
Brian Donahue, Army Corps of Engineers

Detailed Comments on the Draft Environmental Impact Statement
Council on Environmental Quality #20160253

General Comments

Although the current applicants have requested authorization to dredge a total of 1.9 million tons of material annually, the U.S. Army Corps of Engineers' Regulatory Plan allows for up to 3.15 million tons per year of material to be removed from the river by any current and future permit applicants. The Corps utilizes both a maximum permitted amount and its Regulatory Plan to regulate the extraction of sand and gravel from the Kansas River. This dual regulatory approach, creating two dredging scenarios, within the 'proposed alternative' identified by the Corps is unclearly described in the document, and could affect the public's understanding of the scope and impact of this federal action.

In addition, the National Environmental Policy Act analysis is limited by a narrow range of alternatives and inadequate treatment of the second action alternative. The Council on Environmental Quality regulations at 40 CFR 1502.14 underscore the importance of analyzing the impacts of the proposal and alternatives in comparative form to support establishing a clear choice among options by the decisionmaker and the public. The rigor of the alternatives analysis is a direct function of the range of alternatives and the "substantial treatment" of each alternative required by the Council on Environmental Quality in that analysis.

The draft environmental impact statement does not provide a comprehensive assessment of economic impacts to the regional economy. Although recognizing that commercial dredging affects the safety and nature of recreational use of the river, the statement does not include an analysis of the economic benefits accruing from the recreational use of the river against which to compare the economic benefits of dredging.

Treatment of the Draft Environmental Impact Statement as a Programmatic National Environmental Policy Act Compliance Document

Although the immediate federal action being considered by the Corps is whether to issue the five permits applied for under the Rivers and Harbors Act for commercial sand and gravel dredging totaling 1.9 million tons annually, it is our understanding, based on previous discussions, that the Corps intends to use the proposed alternative within this draft environmental impact statement for programmatic National Environmental Policy Act compliance coverage for these and any future permit awards totaling 3.15 million tons of dredged material annually.

RECOMMENDATION: We recommend that the Corps more clearly describe the relationship between the dredgers' applied-for dredging amounts and the Corps' proposed action amount, and more thoroughly characterize the intent to use this statement as a programmatic approach to permitting dredging activities totaling up to 3.15 million tons annually. If it is the Corp's intent for this environmental impact statement to serve as a programmatic approach to evaluating the effects of this maximum threshold for potential dredging activities under the Rivers and Harbors Act Section 10 or Clean Water Act Section 404 permits, the Corps should provide additional explanation of how they will meet their National Environmental Policy Act compliance responsibilities should any application be received during the permit period supplemental to the 1.9 million tons under current application. The statement should discuss under what conditions or criteria supplemental and/or tiered National Environmental Policy Act compliance documentation would be required. Additionally, the temporal

scope of intended use for National Environmental Policy Act compliance under this programmatic National Environmental Policy Act compliance documentation should be identified.

Project Purpose and Need

We agree with the purpose statement for this federal action which is to "supply sand and gravel required to support the region's construction and manufacturing needs." This material could be extracted from the river, from floodplain sand deposits, from land-based sand deposits and as crushed limestone from quarries, also known as "manufactured sand." Clearly, there are practicable alternative sources for sand and gravel other than the river and, therefore, sand and gravel extraction is not a water dependent action. We would caution that the dredgers' purpose is not the project's purpose. The dredgers' purpose is based on "a competitive requirement to produce a unique, high quality product at the lowest possible cost, in order to compete with other product sources" to meet market demand for this material. The project purpose is to address the market's need for sand and gravel while avoiding and minimizing impacts on the environment. The draft environmental impact statement, particularly by its alternatives and economic analysis, does not appear to make this distinction.

Range of Alternatives

The draft environmental impact statement identifies a "no action" alternative, defined as the denial of all five permit applications. The proposed action is for the potential extraction of 3.15 million tons per year, the maximum amount of extraction allowed under the existing regulatory plan. This amount is significantly higher than the 1.9 million tons per year applied for by the dredgers. The second action alternative, reduced limits, would allow for a maximum of 1.67 million tons per year of sand and gravel extraction based roughly on an approximation of the annual sand load of the river. The Corps does not identify a preferred alternative within its draft environmental impact statement, so the EPA has provided a rating specific to each alternative.

The draft environmental impact statement is unclear regarding the scope and nature of the proposed alternative, referring to both the "applied for" quantity of 1.9 million tons and the regulatory limit of 3.15 million tons as the "proposed" alternative. The difference in these quantities is extreme, and the comparative potential impacts to the river system are significant. Table 4 characterizes the quantities of material requested for extraction by the applicants within each of the four reaches used within the regulatory plan. Table 4 also includes the maximum amounts of material available under the regulatory plan for each of these four reaches. In discussions with the Corps, it was clarified that, although applications had requested only 1.9 million tons of material in their applications, the Corps could entertain other applications for more material in the future up to a maximum of 3.15 million tons allowed under the regulatory plan. The Corps staff explained that this National Environmental Policy Act compliance document would be relied upon should other applicants apply in the future for permits to dredge. As this document would be used for National Environmental Policy Act compliance for future permitting changes or additional permits, the EPA considers the higher value to constitute the 'proposed action.' The draft environmental impact statement does not clearly identify the proposed action as the regulatory plan maximum extraction limit of 3.15 million tons. The document does refer to the "applied for" amount. However, it does not adequately clarify that the 'proposed alternative' is not based on what has been applied, but what might be requested in the future beyond these applications up to a maximum amount possible under the existing regulatory plan. Given the large difference in quantities and the likely difference in expected impacts from these two amounts, the Corps should clarify the nature of

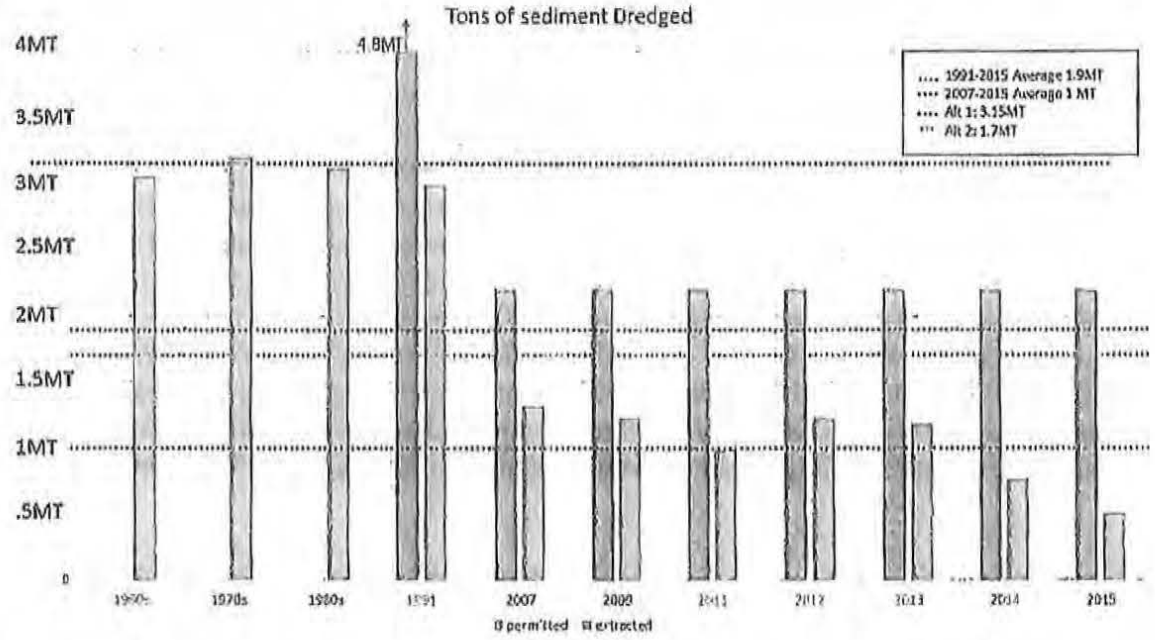
what it has labeled as the "proposed alternative." This is a critical component of the overall National Environmental Policy Act analysis that is inadequately characterized in this draft.

The environmental objections rating for the proposed action is based on the potential for a greater than 200% increase in dredging over the annual amounts actually extracted from 2007 to 2015 under the existing permits. This amount would also constitute the greatest amount of material extracted since the 1960s. Historical bed loss has been shown by the Corps to be the result of past dredging quantities equal to the amount potentially permitted under this alternative. We do not believe the restrictions possibly implemented under the Corps' regulatory plan to reduce permitted amounts below 3.15 million tons are certain enough or adequately supported by impact analysis to treat the proposed action as anything other than a total dredging quantity. We believe the potential permitting of the extraction of 3.15 million tons per year by the Corps would be a significant and unacceptable threat to the biological health of the river and the infrastructure placed throughout the watershed. The 1990 Kansas River Dredging Environmental Impact Statement concluded that continued unrestricted dredging in the river would result in significant and unacceptable environmental impacts. This draft environmental impact statement lists the amount of sand and gravel extracted from the river during "unrestricted dredging" in the 1960s, 1970s, and 1980s as averaging 3,124,103 tons per year. The proposed action identified by the Corps in this draft environmental impact statement would allow for 3.15 million tons per year. Permitting this amount of dredging in the Kansas River has already been characterized by the Corps as causing "unacceptable environmental impacts." Regardless of the possible restrictions imposed by the regulatory plan that underlies this alternative, we judge this alternative to be unacceptable and rate it as environmentally objectionable.

The environmental concerns rating for the reduced limits alternative is based on the proposed dredging quantity being over 60% higher than what has been extracted from the river under current permitting. The draft environmental impact statement identifies the basis for the second action alternative as generally based on a renewable load of sand and gravel in the river system. This alternative would allow for the extraction of 1.67 million tons per year of material from the river based on an approximation of the river's annual sand yields calculated in a 1984 report originally used in the 1990 Environmental Impact Statement. That report used flow duration and suspended sediment data collected at the U.S. Geological Survey and the Corps gauging stations. Although that approach is simple and based on data from 1935 through 1974, overlapping the period when the large reservoirs closed, it is an attempt to allow for the harvest of only the material load the river transports. We have rated this alternative as having environmental concerns because of the age of the data and its simplified approach.

In many aspects, the reduced limits alternative is not fully assessed. The draft environmental impact statement largely characterizes impacts associated with this alternative as being "somewhat less than the proposed alternative." This alternative constitutes a more conservative permitting level than does the "proposed action" alternative, and is roughly based on an estimate of what the river transports through the system. The draft environmental impact statement frames this comparison of alternatives based only on greater and lesser dredged quantities rather than possibly as an estimate of a sustainably harvested quantity. The concept of identifying a "sustainable" amount of material harvest for comparison as part of this draft environmental impact statement is not addressed. This alternative, or one more solidly derived from current data and estimates, requires more analysis and detailed treatment than that which it receives in this draft environmental impact statement. With a range of action alternatives limited to the proposed action and a lightly treated reduced limits/mixed source alternative, a comparison of impacts supporting a decision whether to permit the full or reduced quantity of material extraction is insufficient.

The Corps' reliance on only two action alternatives is not robust, prevents a complete analysis of impacts, and is inconsistent with the Council on Environmental Quality regulations at 40 CFR 1502.14, which requires the lead agency to rigorously explore and objectively evaluate all reasonable alternatives. Specifically, we suggest that a "status quo" alternative, reflecting those quantities of sand and gravel actually extracted over the past nine years under the current Corps permits should be included, evaluated, and compared within the draft environmental impact statement.



In general, the Corps' most recent survey data suggests that bed degradation has slowed since 2007. Many of the eight geomorphological reaches identified in the Simons, Li and Associates 1984 report appear to have aggraded or at least stabilized or slowed their degradation. However, the draft environmental impact statement states that, "At individual locations, degradation and aggradation are more pronounced and sustained." We believe that the Corps' regulatory efforts require reasonable, but conservative, maximum limits to what can be dredged within each reach and the total river in conjunction with a regulatory plan that focuses on preventing bed loss in those individual locations that might threaten infrastructure. To rely completely on the regulatory plan and ignore the magnitude of the dredging quantities permitted, both individually and in total, is not prudent. In the face of incomplete information regarding the systemic impacts of dredging and what might constitute a sustainable quantity of harvest, we recommend that the Corps reduce the levels of extraction permitted to at least those which reflects current condition, and which could not be substituted for by sources off the river.

RECOMMENDATION: The Corps should revise its draft environmental impact statement to include at least one additional alternative reflecting a "status quo" quantity of dredging based on existing extraction amounts since 2007.

Affected Environment and Environmental Consequences

The Kansas River system is a sandy, prairie stream 170 miles in length with an average gradation of about 1.9 feet per mile. It's morphology and biology are defined by multiple modifications affecting hydrology, sediment transport and habitat structure. Eighteen federal reservoirs impound water on most

of the river's major tributaries, and many more dams exist on smaller tributaries in the upper portions of the watershed. In addition to trapping coarser sediment material, these reservoirs cause the river to carry a higher percentage of fine-grained material than would otherwise occur. The reservoirs have also reduced the extremes of the river's hydrograph, reducing both the frequency and magnitude of high and low flows. Sediment transport is naturally driven by high flow events. The river is also characterized by bank and channel protection structures, limiting channel movement and bank erosion. Many channel training structures, weirs and dams also strongly affect the movement of both sediment and water through the system. These river modifications provide context for the additional demands placed upon the river resource by commercial sand and gravel dredging. The draft environmental impact statement characterizes the river's morphology as stable upstream of Bowersock Dam (RM 51.8), with the exception of the Topeka area (RM 80), and less stable below the dam. The lower reaches of the river have experienced the most dredging in the past. The Missouri River creates a backwater area within the Kansas River up to approximately River Mile 9.3. The most degraded reach of the river, based on the Corps' survey data, is between River Miles 27 and 41. The most aggrading reach of the river is between River Miles 12 and 24. The draft environmental impact statement includes the Corps' survey data from 2011/12. It is not known whether more current data was available for analysis in this draft environmental impact statement.

The draft environmental impact statement asserts that any direct impacts from dredging on the river's geomorphology are limited to localized impacts in dredged locations. The Corps states that "localized holes created by dredging activities appear to refill rapidly in the river after cessation of dredging activities." The draft environmental impact statement includes no information or characterization of the physical nature of these backfill materials. The overall impact of the reservoirs and dredging is to increase the proportion of fine sediment material in the river as coarser material is either trapped behind the dams or extracted by dredging.

Contrary to statements in the draft environmental impact statement regarding the limited habitat supporting benthic organisms suggested by studies from the 1980s, other studies suggest that the invertebrate fauna of the Kansas River is richer and more diverse than previously characterized. During the past three decades, biological surveys of the Kansas River conducted by the Kansas Department of Health and Environment have documented some 287 macroinvertebrate taxa (KDHE Stream Biological Database). Many of these taxa attain their greatest population densities in shallow depositional habitats or in areas of swifter current and coarse (i.e., gravelly) substrate, regions of the river potentially vulnerable to dredging activities. Shifting sand habitats, which were highlighted in the draft environmental impact statement, tend to support sparse macroinvertebrate communities; however, some insect taxa are anatomically adapted to survive in these habitats (e.g., Spieth. 1938. Two interesting mayfly nymphs with a description of a new species. *American Museum Novitates* 970:1-7). The draft environmental impact statement does not consider the impacts of dredging on these varied habitats, macroinvertebrate populations, and the fish and wildlife species dependent upon them for food.

The draft environmental impact statement provides no information on mollusks within its sub-section on these organisms, which have a history of presence within the river system. However, freshwater mussel surveys conducted by the Kansas Department of Health and Environment have shown that the Kansas River supports at least nine mussel species, and historically supported at least 17 mussel species (KDHE Mussel Database; see also Angelo et al. 2009. Historical changes in the occurrence and distribution of freshwater mussels in Kansas. *Great Plains Research* 19:89-126). If earlier biological surveys are considered, at least one additional mussel species may be added to this historical total (Call. 1887. Sixth contribution to a knowledge of the fresh-water Mollusca of Kansas. *Bulletin of the Washburn College*

Laboratory of Natural History 2:11-25). Mussels are comparatively long-lived organisms. They undergo a complicated life cycle, are slow to mature, and are sensitive to changes in environmental condition. They cannot rapidly recolonize benthic habitats modified by dredging operations.

Additional information should include data documenting the Corps' consideration of the impacts of dredging on recovery of pallid sturgeon in the Missouri River basin and other threatened or endangered species listed by the Kansas Department of Wildlife, Parks, and Tourism or the U.S. Fish and Wildlife Service. Pallid Sturgeons (*Scaphirhynchus albus*) are protected by the Kansas Nongame and Endangered Species Conservation Act, the Federal Endangered Species Act, and state and federal regulations applicable to those acts. Recent scientific study has determined that pallid sturgeon embryos are negatively buoyant and sink, and they are sensitive to low oxygen environments. Other studies show that dredging can cause low oxygen environments. Current dredging practices in addition to an impaired oxygen demand environment may limit the ability for pallid sturgeon to recolonize the river. The EPA recommends the Corps consider new monitoring data and document additional consultation with the Kansas Department of Wildlife, Parks, and Tourism and the U.S. Fish and Wildlife Service. The document is lacking data on impacts to fish and wildlife. Recent sampling of the Kansas River not included in the draft environmental impact statement indicates that state listed species are found in the river.

Sandy bottom streams and rivers, like the Kansas, Platte and Missouri Rivers, are characterized by the appearance and disappearance of sand bars and point bars, which provide the "wetted edge environment" supporting many aquatic communities. These same habitats are provided along shoreline edges and by side channels, chutes and backwaters. The changes to the hydrology of the river resulting from dam placement have eliminated those peak flows, which transport habitat-building material and form off-channel habitat. That changed hydrology also reduces the magnitude of low flows, which expose habitat to colonization. Reductions in the actual sediment material itself, caused by construction of reservoirs, the placement of bank revetment and the dredging of the river has removed the material needed to form those "wetted edge" environments.

The EPA is concerned that there may be insufficient information to fully assess environmental impacts that should be avoided in order to fully protect the environment.

RECOMMENDATION: The Corps should consider conducting or funding the development of a sediment budget for the river and its major tributaries, which could support the Corps' determination of a sustainable level of sand and gravel extraction by dredgers. A sediment budget should account for sediment transport, erosion and deposition in the Kansas River. This budget would include the mainstem river and its tributaries, particularly the four major reservoirs that serve as sediment sinks within the system. These studies and a sediment budget should be completed and that information evaluated before the Corps considers any applications for dredging within the Kansas River from future applicants.

The Corps should also explore the possibility of conducting or funding studies that would provide information supporting a more direct measure of the biological and ecological health of the river and identifying the locations of particularly critical habitat types such as the natural rock structures present in the lower river.

The Corps should explore the possibility of conducting or funding studies documenting the location and density of sand bars and point bars along the entire 170-mile length of the river to support the development of a more appropriate measure of ecological and morphological health in the river. These

studies would also contribute to the documentation of impacts on these important river features resulting from continued sand and gravel dredging.

Recreation

The draft environmental impact statement notes the presence of 23 access ramps to the river, eighteen since the issuance of the 1990 EIS. Five of the 23 access points are located adjacent to dredging areas as requested by the applicants. The document also recognizes that the river was designated in 2012 as a National Waters Trail by the National Park Service. Yet the Corps claims that "dredging is a historical and ongoing activity" and impacts on recreation only occur if there were to be a change in dredging activities that would cause a change in the availability or quality of recreational access. The revised Regulatory Plan includes measures intended to avoid, minimize and reduce impacts on recreational use.

The draft environmental impact statement provides no information regarding the present or future economic contributions of the river's recreational use to adjacent communities or to the state. With no information provided regarding economic value, the draft environmental impact statement cannot characterize the impacts of greater, lesser or no river dredging on recreational use and, therefore, the economic benefits of more or less recreational use of the river to the region.

The draft environmental impact statement does not evaluate impacts from dredging on boat ramps, particularly those adjacent to dredging areas. The document provides no information on the effectiveness of mitigation measures intended to prevent or mitigate impacts on recreational use or experience. There was no information included in the draft environmental impact statement regarding whether the Corps monitors dredger performance or compliance with these measures.

Nationwide there have been deaths attributed to boats striking dredge pipes. With increased recreation and more access there is a greater risk of boat / dredge interaction.

Economic Impacts

The draft environmental impact statement defines its "economic and demographic study area" as a 30-mile-wide radius from each producer's land-based facility. This radius is based on the Kansas Aggregate Producers Association claim that the individual companies can only remain competitive, with each other, within a material haul radius of 30 miles, as other competing producers are situated closer to market. The draft environmental impact statement should not be evaluating the economic impacts of its permitting decision based on its compatibility with the business plans of individual producers or the preservation of their competitive position. Further, the analysis should focus not on product selling price or the profit margins of individual companies, but on the impacts of its decision on the regional economy.

According to KAPA, the producers' association, the production cost for river dredging averages $4.50 per ton of material west of Topeka and $7.00 per ton east of Lawrence. The draft environmental impact statement states that selling price and the gross profit margin are not presented because those vary between companies and operations. The draft environmental impact statement provides that the overall comparative production cost of floodplain pit dredging is approximately 14% higher than river dredging operations. With regard to indirect impacts, there is no information within the draft environmental impact statement describing how material price might affect construction activity within the region.

The draft environmental impact statement couches its economic analysis in terms of contributions by individual companies, but provides no information on the impact of dredging or reduced dredging on the local and regional economy. The draft environmental impact statement states that the direct effect of the industry on the local economy is not significant and is largely limited to a small number of jobs provided by dredging itself. There is no analysis of the potential impact of either no dredging or reduced river dredging on these regional economies. The analysis is largely limited to statements regarding the competiveness of the dredging companies themselves and the preference for lower cost transportation and extraction and the ease of extracting material from the river. Narratives based on applicant preferences and perpetual access to the lowest cost, highest quality material do not constitute an analysis of regional economic impacts resulting from the selection within a range of reasonable alternatives.

RECOMMENDATION: The draft environmental impact statement should be revised to address the indirect impacts of its permitting alternatives on the regional economy and characterize the economic contributions of recreational use of the river on the regional economy.

Climate Change

The draft environmental impact statement does not include consideration of future climate scenarios, and how they may impact the proposal and its potential impacts. Consistent with the CEQ guidance,[1] we recommend that the FEIS describe potential changes to the affected environment that may result from climate change. Including future climate scenarios, such as those provided by the USGCRP's National Climate Assessment,[2] in the FEIS provides context for the proposal and its impacts and whether those could be affected by the changing climate. The EPA recommends that the proposal's design incorporate measures to improve resiliency to climate change, where appropriate. These changes could be informed by the future climate scenarios addressed in the "Affected Environment" section. Additionally, we recommend the Corps apply information from these future climate scenarios to determine whether the environmental impacts of the alternatives would be exacerbated by climate change. If impacts may be exacerbated, additional mitigation measures may be warranted. For example, a drier or wetter regional climate would affect the basin's hydrology and, therefore, the movement of sediment through the river system.

[1] CEQ Guidance, p. 20.
[1] http://nca2014.globalchange.gov/

Cumulative Impact Analysis

Seven Corps reservoirs and eleven Bureau of Reclamation reservoirs on tributary streams control a major portion of the flow from this system. Six of the Corps and one of the BOR reservoirs are at the lowest end of their respective river systems and functionally control the sediment discharge to the Kansas River. These reservoirs are retaining sand and sediment which historically would have passed down river and, to varying degrees, are experiencing reduced water storage capacity and increased delta formation. The draft environmental impact statement states that 80% of the basin's total drainage area is controlled by reservoirs. It also states that 51% of the river's flow, as measured at DeSoto, Kansas, originates from discharges from the four largest reservoirs on major tributaries (Tuttle Creek, Perry, Milford and Clinton reservoirs). The cumulative impact of these federal and non-federal actions on river hydrology and ecology is immense. The draft environmental impact statement, however, states that this impact is not significant.

The EPA believes that the Corps' conclusion that "The cumulative impacts of the Proposed Action and other past, present, and reasonably foreseeable activities affecting the Kansas River are not significant" is inaccurate given modifications to the river system in the second half of the last century. Construction of 18 dams on major tributaries to the Kansas River, the construction of smaller dams in the headwaters of smaller tributaries and sporadic armoring of river banks has, in conjunction with commercial sand and gravel dredging, disrupted both the sediment transport and hydrology of the river leading to much reduced levels of sediment moving through the system and into the Missouri River. The cumulative impacts of these federal and non-federal actions has completely transformed the hydrology, ecology and morphology of the Kansas River. The impacts of a significant reduction in bed material in a sandy prairie river on habitat structure has been poorly studied, but is likely to have unsatisfactory impacts on aquatic life.

In 2011, the District finalized its EIS supporting the reissuance of dredging permits for the lower Missouri River in which the District stated that the entire lower Missouri River has been degrading since 1999 with accelerating bed loss in the reach near Kansas City. The river bed in the Kansas City reach has lost approximately four feet since 1995.The interplay between the Kansas River and the Missouri River in the vicinity of the Kansas City metropolitan area with regard to sediment transport should be more completely assessed since this was not done for the 2011 EIS for the Missouri River. In addition, the District completed a Reconnaissance Study in 2009 documenting the extent and significance of bed loss in the lower Missouri River. One conclusion from the study was that "the dredging quantities taken from the lower Kansas River should be evaluated in regard to their potential impact on degradation of the Missouri River channel." Since the issuance of the Reconnaissance Study, the District has been working with local sponsors on a Feasibility Study for addressing river bed degradation in the Missouri River and its tributaries from Rulo, Nebraska to St. Charles, Missouri, with particular interest in impacts to infrastructure in the Kansas City metropolitan area. It is our understanding that the Corps does not intend to proceed with a Feasibility Study as a result of new sediment transport modeling results. The Kansas River provides both flow and sediment load to the Kansas City reach of the Missouri River and needs for sand and gravel within the regional economy are met with commercial dredging on both rivers. Yet the draft environmental impact statement provides no analysis of the potential contribution of Kansas River dredging to either Missouri River bed degradation below the confluence or the relationship between dredging restrictions on both rivers to the regional economy.

RECOMMENDATION: We recommend that the Corps provide supplemental discussion on the potential cumulative effects of dredging associated with the proposed action and past modifications to the river system which have profoundly altered the hydrology and habitat characteristic of a sandy, prairie river. Similarly, it should be further explained how the Corps reached the determination that dredging limits exceeding 200% over the last decade of dredging operations will not pose significant direct, indirect and cumulative impacts to the biological health and integrity of the river system, particularly given that the Corps has used a simplified metric of bed loss within dredged reaches as an indicator of ecological health. Without actual biological information, this measure serves as a poor indicator of stream health. Further, even if we were to accept this metric, an amount of extracted material commensurate with the proposed alternative has historically been correlated with significant bed loss in the Kansas River.

Regulatory Plan and Revisions

Public review of the revised Regulatory Plan would be made easier if the draft environmental impact statement included a 'red-line/strikeout' format in Appendix A. Proposed Corps changes to the Plan,

discussed in Chapter 5 of the draft environmental impact statement, are somewhat confusing and would be better explained by providing a version of the Plan which highlighted actual changes to the current Plan.

The Plan should also be revised to remove language that was placed in the original document that no longer applies after 26 years of implementation. We are providing a list of comments, specific to each section, below.

Introduction

The 1990 Regulatory Plan was designed to rely on a benchmark for determining a "maximum acceptable level of impacts" having "minor effects." The definitions provided in the Plan for both of these measures are nonspecific and meaningless. Other than surveying dredged reaches for changes in bed elevation, no information has been gathered regarding either ecological or hydrological change in the river system. Yet the document claims to "limit the magnitude of dredging-related impacts to the morphology and ecology of the river." The Plan links measures and metrics to the prevention of environmental and ecological impacts, however, there is no information or data in the draft environmental impact statement which would indicate that these metrics and measures could serve as indicators of ecological or morphologic condition. The basis for the bed loss and recovery metrics and for prohibitions against dredging too close to structures or river features is completely best professional judgement. The Plan was developed in 1990 to prevent damage to important infrastructure resulting from over-allocating the amount of sand and gravel for harvest in each reach under Corps permit. There is no association between the Plan and its metrics for bed loss and recovery and the potential for damage to river ecology and hydrology. The Plan and its prohibitions are intended only to prevent damage to infrastructure and the Corps has acquired no information regarding sediment budget, habitat damage or alterations to river ecology. There is no basis for claiming, as the draft environmental impact statement does in many places, that implementation of the Plan serves as a protective check against over-allocating extraction under its permits such that environmental damage is prevented.

Dredging Restrictions

The amount of bed degradation from dredging in specific reaches is limited to bed loss equal to or greater than an average of 2 feet along a five-mile reach. The basis for not selecting an amount less than 2 feet as this degradation benchmark was identified as part of the 1990 EIS development process in the District's Regulatory Report as being based on "the difficulty in monitoring such a small change in bed elevations."

The Regulatory Plan's criterion for closure is an <u>average</u> 2-foot limit on bed degradation over 5-miles. This approach could allow for areas well above or well below the limit within the 5-mile reach. Further, the Plan claims that "the maximum allowable reduction in the riverbed elevations is 2 feet for <u>all reaches of the river</u>." The only reaches surveyed within the river are those with active dredging. Bed elevation change is not typically limited to the immediate area of dredging. Coarse and fine bed material moves downstream from other reaches to refill dredge cuts. Comprehensive changes to river morphology are not monitored under the Plan. The draft environmental impact statement misstates the comprehensiveness of the Plan's monitoring component.

Reaches closed when the average elevation change is 2-feet or greater are not reopened until average bed elevation exceeds an "established minimum" and "sufficient materials" have accumulated to support

renewed dredging. These terms are not defined and it appears that neither the dredgers or the Corps have assessed the physical nature of the bed materials replacing those dredged nor the impacts of repeated closing and opening on river morphology. The draft environmental impact statement states that nine dredging areas have been closed to dredging between 1991 and 2007. It is unclear whether any of those areas have been reopened and the draft environmental impact statement lacks any information regarding how those recovered areas have responded to renewed dredging. The draft environmental impact statement also states that the Corps closed four dredging areas in 2013. Table 4 also lists two areas between River Miles 26.1 and 27.1 and between River Miles 89.7 and 91.0 as closed, although two applicants have applied to dredge 300,000 tons per area per year there. The draft environmental impact statement also states that none of the requested areas are located in degraded reaches although Table 4 lists these reaches at an elevation change from baseline of -2.34 and -1.42, respectively.

The Plan provides for immediate closure of a degraded reach when a previous survey indicated 1.5 feet or more degradation and a current survey indicates 2 or more feet of bed loss. Those actions are separated by 2 years between surveys and the additional months needed to process and communicate the data to the dredgers. Only when an "unforeseen event" has caused 2 or more feet of degradation without a previous survey showing 1.5 or more feet of loss will the Corps immediately close that reach, although that action will not be taken immediately as the dredgers have a year to exit that reach. The reach reopening process also allows for return dredging, either partially or completely, <u>before</u> the bed aggrades completely to its 1992 baseline elevation.

The scientific basis supporting the reach-specific and dredge-specific restrictions on dredged quantities and the structure-specific prohibitions on dredge distance is not provided either in the draft environmental impact statement or the Regulatory Plan. Many of the distance prohibitions are common to several structures while others are different, without explanation. For example, the upstream and downstream dredging prohibitions for Bowersock Dam are 75 feet and 2,250 feet. Those for the Water District Number 1 and the City of Topeka jetties and weirs are 500 feet and 2,500 feet and 1,000 feet and 2,000 feet, respectively. Dredge prohibition distances vary for other river structures, but the basis for assigning these is nowhere explained.

Similarly, two natural rock deposits, which the Plan acknowledges provide unique and important habitat for aquatic life, are assigned dredge distance prohibitions without explanation. The draft environmental impact statement does not provide any analysis on the impacts of past dredging on these important and unique habitat structures. Other areas providing critical aquatic habitat, such as shorelines, islands and tributary mouths are assigned distance prohibitions, but there is no analysis of the impacts of dredging on these areas or the appropriateness/effectiveness of the prohibition distances. The Plan provides no protection for sand bars or point bars, which provide critical 'wetted edge' habitat in a sandy-bottom, prairie river.

As discussed above, there have been reports of injuries associated with recreational boaters encountering dredging operations. The Plan provides no monitoring or reporting mechanism by which the Corps could confirm that permittees are in compliance with the Plan's safety requirements. There are reports of unattended dredging operations not providing safe passage for watercraft.

RECOMMENDATION: Revise the Regulatory Plan to remove references to the prevention of morphological and ecological damage and explain the basis for all metrics and prohibitions. We also recommend that the draft environmental impact statement separately discuss the results of 25 years of

Plan implementation specific to the protection of man-made and natural river structures and their condition.

We recommend that a more comprehensive monitoring plan that encompasses additional metrics to address the biological health and integrity of the river should be considered. Additionally, monitoring of river bed degradation should be expanded to include reaches of the river outside of the direct dredging area. Monitoring only at the dredge sites does not give a clear and accurate picture of the effects of dredging.

We also suggest that the Corps include a monitoring and reporting component within the Plan's monitoring component addressing the issues listed under Section X of the Plan's restrictions component regarding recreational safety.

We recommend that the Corps evaluate the response of dredge cuts to reopening, including an analysis of bed material type and size which provides this backfilling and whether reopening previously closed dredge cuts results in changes to bed morphology and flow in the area or the cut. This information could be used to evaluate whether closed reaches should remain closed for longer periods than presently required or whether closed reaches should remain closed permanently.

The Corps should evaluate whether dredging restrictions pertaining to natural hard points in the river are adequately protecting aquatic life.

The Corps should consider prohibiting any further permitting within reaches where boat ramps are in-place or are planned based on safe recreational use of the river.

Revisions to the Regulatory Plan should be identified using redline and strikeout format to better explain those changes to the public.

Draft Environmental Impact Statement Rating Definitions

Environmental Impact of the Action

"LO" (Lack of Objections)

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

"EC" (Environmental Concerns)

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. The EPA would like to work with the lead agency to reduce these impacts.

"EO" (Environmental Objections)

The EPA review has identified significant environmental impacts that must be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative, including the no action alternative or a new alternative. The EPA intends to work with the lead agency to reduce these impacts.

"EU" (Environmentally Unsatisfactory)

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. The EPA intends to work with the lead agency to reduce these impacts. If the potentially unsatisfactory impacts are not corrected at the final Environmental Impact Statement stage, this proposal will be recommended for referral to the Council on Environmental Quality.

Adequacy of the Impact Statement

"Category 1" (Adequate)

The EPA believes the draft Environmental Impact Statement adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

"Category 2" (Insufficient Information)

The draft Environmental Impact Statement does not contain sufficient information for the EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft Environmental Impact Statement which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final Environmental Impact Statement.

"Category 3" (Inadequate)

The EPA does not believe that the draft Environmental Impact Statement adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft Environmental Impact Statement that should be analyzed in order to reduce the potentially significant environmental impacts. The EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. The EPA does not believe that the draft Environmental Impact Statement is adequate for the purposes of the National Environmental Policy Act and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft Environmental Impact Statement. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the Council on Environmental Quality.

Donahue, Brian T CIV USARMY CENWK (US)

From: Holly Moore <holly.dee.moore@gmail.com>
Sent: Monday, December 12, 2016 5:03 PM
To: Donahue, Brian T CIV USARMY CENWK (US)
Subject: [EXTERNAL] No Commercial Dredging in the Kansas River

Brian,

Please see my statement below concerning the draft Environmental Impact Statement (EIS) for Dredging on the Kansas River:

"Under no circumstances do I support commercial dredging in the Kansas City River. The Kansas City river provides my family with fresh drinking water summertime recreational activities. Ongoing commercial dredging will not only endanger our water quality by increasing contamination levels, but sacrifice the pristine natural habitats we value in our community." - Holly Moore, Environmental Scientist II

Sent from my iPhone

Item C

PUBLIC COMMENT

Regarding Permits to Dredge the Kansas River

December 7, 2016

FROM:

Laura Calwell
5610 W. 61st Terrace
Mission, KS 66202

TO:

Brian Donahue, Regulatory Manager
U.S. Army Corps of Engineers
Kansas City Regulatory Office
601 East 12th St.
Kansas City MO, 64106-2896
816-389-3656
brian.t.donahue@usace.army.mil

REGARDING DRAFT EIS & PERMITS FOR:

Kaw Valley Companies, Inc.
Holliday Sand & Gravel Company
Master's Dredging
Builder's Choice Aggregates
LBB, LLC

Dear Mr. Donahue and U.S. Army Corps of Engineers (USACE):

Please accept this as my personal comments regarding the permits referenced in the October 12, 2016 Public Notice on Kansas River Commercial Dredging and the 2016 Draft Environmental Impact Statement. I served on the Friends of the Kaw (FOK) Board of Directors from 1996 to 2003 and worked for FOK as the Kansas Riverkeeper from 2003 to 2015. I am currently the Education Director for FOK. FOK is a nonprofit environmental and conservation group whose mission is to protect and preserve the Kansas River (known locally as the Kaw) for future generations. I have been concerned about the detrimental effects of dredging to the Kansas River since 1994.

The dredging permits under review seek to dredge from the Kaw 1,900,00 tons of sand and gravel from eight sites. I strongly encourage the USACE to select the No-Action Alternative suggested in the draft EIS published in October 2016.

- I request a public hearing on the dredging issue to take place.
- If the USACE issues dredging permits they must require NPDES and 404 permits for these dredging activities.
- If the USACE issues dredging permits they should only allow companies to dredge during business hours on weekdays. Dredges that run all night are a noise nuisance to immediate residential neighbors. With the National Water Trail designation for recreation on the Kansas River, dredging on weekends should not be permitted as this is when a good deal of recreational activity happens.
- I strongly recommend that the Master's in-river permit above Cedar Creek (river mile 26.10 – 27.60) be denied. This proposed permit lies in the five-mile stretch from the De Soto boat ramp to the Cedar Creek boat ramp and this stretch is one of the most popular recreational areas on the Kansas River. A five-mile float trip is very appropriate for novice boaters and families with

Item d

children because it only takes about 3 hours to complete. There are very few five-mile float stretches on the Kansas River and this one is very convenient and located in one of the most populated areas in Kansas. As Kansas Riverkeeper I took an average of 6 educational group float trips per year in this area and the current Kansas Riverkeeper frequently uses this section also. I have witnessed that this section is also used by many private boaters. I estimate that over 300 paddlers use this area every year and an active dredge with cables attached to the banks is an unnecessary and life threatening hazard. Another reason for denying this permit is the active bald eagle nest a quarter of a mile up river from the old ramp Master's will use to put their dredge on the river. The habitat protection afforded by the Endangered Species Act for nesting sites and important feeding and roost sites should be considered before permitting this dredge.

- I have witnessed Edward "Woody" Moses, managing director of the Kansas Aggregate Producers Association, state that there is a nesting pair of bald eagles at every dredge site at multiple public meetings. I question that this comment is factually true.
- I question why permits would be reissued for areas that have had dredge permits denied because of unacceptable bed degradation particularly the Master's permit (river mile 26.1 – 27.60) and the LBB, LCC permit (river mile 89.70 – 91.00.) These areas will most likely quickly degrade again and cause continued bank failure around the dredge site. I suggest that the USACE re-examine and change the current dredging regulations.
- I would also like to make some observations concerning the area east of Lawrence where Penny's Concrete was asked to leave the river because of unacceptable degradation and recently permanently forfeited his dredge permits. The banks on the south side of the river both a half-mile above and below his operation at river mile 46 are filled with concrete tailings presumably dumped to stabilize the bank. When I began kayaking in the early 1990s the main river channel went north of the island across from Penny's Concrete land operation at river-mile 46. The channel running to the south of the island was very narrow and impassible in low water. I notice that Mr. Penny started dredging this south channel about 5 years ago and now this channel is very wide and has become the main channel. The large sandbar on the south bank is gone. The banks on the island have a very steep cut because vegetation has slumped into the river. For the year before Penny's Concrete had to leave this section because of unacceptable degradation I was told by neighbors that the company was running the dredge 24/7 and noise was keeping them wake at night. Currently the north channel is dry during periods of low water. Dredging greatly influenced the cutting of the banks and change in the river channel in that section of the river.
- In my opinion the 2016 Draft EIS mostly relies on material that is very dated – some over 30 years old. Very few new studies or information is referenced which makes the report a rehash of material considered for years. The conclusions of the draft EIS rely heavily on dated facts concerning the economics of dredging but ignore the current and future economics of recreation and the influence of the National Water Trail.
- I have paddled over 300 miles per year for over fifteen years on the Kansas River and paddled the entire 170 miles numerous times. I have witnessed a significant difference in the condition of the banks between the dredged and non-dredged areas. Dredged areas have significantly more bank stabilization structures using rock and concrete rubble and cut banks. The current draft EIS has little reference or consideration to the damage dredging does to the banks of the river particularly 5 miles above dredge sites. Visually the river and banks through the City of Topeka, from Bowersock Dam to Mud Creek and from Cedar Creek to the confluence of the Missouri River (areas that have been heavily dredged for many years) appear very different from the river than in areas that have not been heavily dredged. Through the City of Topeka (from the Topeka dam at river mile 87 to the Sardou Bridge) and from the K-7 Bridge to the confluence of the Missouri River there are no sandbars further demonstrating the damage done by many years of dredging. For the *Hydrologic and Geomorphic Changes on the Kansas River* (2010) complied by the USACE, the researchers conducted a three-day river survey, but during a high river flow level when all in-river structures (including Bowersock Dam) were submerged. In my opinion, this was an important opportunity missed. A great deal of useful data on the channel could be obtained relatively easily if the river and banks are surveyed at low water, and the USACE cannot reasonably claim to have surveyed the river with only three days of field work carried out at flood levels. As the report stated on page 31: "The many sand

bars and other bed features of a braided channel were completely submerged on the days of the survey." However, I would like to point out that these very features are of concern when examining the impact of dredging and the USACE needs to start examining the river from the river instead of relying on limited site visits, aerial views and cross sections.

- I strongly urges the USACE to deny all permits, and end sand and gravel dredging on the Kansas River however I would be amenable to only allowing the current permits a five-year window to allow for the transition to appropriately sited pit mines in the Kansas River Valley.

The proposed dredging activities are not in the public interest and they fall far short of the necessary criteria to receive a permit from the USACE. The private and public needs for the proposed river dredging are minimal. There are several appropriate locations along the Kansas River where sand and gravel companies can practically pursue the alternative of obtaining high quality and affordable sand and gravel from pit mines. Sand from pit mines can easily fulfill the public's need for raw materials in building and construction. Several companies have already sited these mines in the Kansas River Valley. In the current draft EIS it states "it is estimated that 25 to 34 acres of land would need to be converted to pit dredging operations each year (Blechinger, 1997; Booker Associates,1986)." First this is a very dated report and more acres are developed for commercial and residential properties with paved streets and parking lots happen in the Kansas River Valley every year. Why single out additional acres for pit mines when other commercial and residential developments annually take much more valuable farmland out of commission than pit mining would.

Above all, the detrimental effects of dredging on public and private interests significantly outweigh the benefits. The long-term environmental effects of private dredging operations will permanently damage several public uses of the river, such as providing affordable (cost-effective to treat and distribute) drinking water, as well as water for irrigation. Dredging also causes erosion to valuable farmland and creates risk for public infrastructure such as bridge footings. The impact of dredging also alters the physical river channel to the extent that it has an impact on local fish communities - potentially even on endangered species that live adjacent to the Kaw, in tributaries further up the watershed.

Again, there are definitely less environmentally damaging, practicable alternatives available rather than in-river sand and gravel dredging. I urge the USACE to deny the permits.

Thank you very much for the opportunity to submit this public comment.

Sincerely,

Laura Calwell

Laura Calwell
5610 W. 61st Terrace
Mission, KS 66202
913-963 3460

2016 DEC 13 AM 9:17
RECEIVED
REGULATORY BRANCH

Mr. Brian Donahue
Regulatory Project Manager
U.S. Army Corps of Engineers
601 East 12th Street, Room 402
Kansas City, MO 64106

2016 DEC -1 PM 2:01

Re: Comments on Draft Environmental Impact Statement (EIS) for Commercial Dredging on the Kansas River

Thank you for the opportunity to provide comment on the draft EIS for Kansas River dredging.

I found the EIS lacking in science and providing little new information to the decision making process. It does provide a reasonable economic analysis of dredging. It correctly identifies many factors affecting geomorphology of the river but avoids meaningful analysis of geomorphology as affected by specific past or current dredge sites and does not consider channel widening in a dredge site specific context.

Cumulative Impacts:

The dredging industry simply does not take responsibility for the elimination of sand bar habitat, bank and riparian quality or stability. The dredging industry and COE need to consider that the natural character of the river developed prior to 1990 when tracking of bed elevations began. Sand bar habitat persisted in portions of the lower Kaw through the 1960s. To date an estimated 28 percent of the Kaw's stream miles have been severely degraded by dredging (http://www.kansasriverinventory.org). The Kaw is virtually lacking in sand bar habitat at any flow downstream of Bonner Springs due to dredging. Abandoned and current dredging sites do not represent no cumulative impact, they represent very large change to the landscape. I am not aware of any significant mitigation of habitat degradation at abondoned dredge sites.

Sand bar habitat supports a wide array of aquatic and terrestrial species and serves as the interface between wildlife and the river. Birds, turtles and other reptiles use sand and gravel bars extensively for reproduction and terrestrial mammalian nest predators exploit the opportunity. Back water areas associated with sand bars provide reproductive habitat for declining amphibian populations as well as waterfowl and shorebirds. Sand bar habitat that no longer exists supports only fish.

Loss of sand bar habitat, replacement of stable riparian vegetation with rip-rap or unstable sloughing banks is commonly associated with in-stream dredging sites, whether historical or active. Although this loss has accumulated over many decades it continues under the current regulatory plan for commercial dredging activities on the Kansas River which has been in place for more than 20 years. It can not be disputed that each dredge site adds a few more miles of loss to the natural riparian cover as well as loss of sand bar habitat. Reclamation of dredging sites has simply not been practiced.

Authors of numerous scientific papers published in the last two decades indicate habitat loss and modification as the principal driving factor in continuing species loss (Fisher et al., 2012; Angelo et al., 2009; Paukert et al., 2008; Haslouer et al., 2005; Brady et al., 1998; U.S.F.W.S., 1995; Sanders et al., 1993). In-stream sand and gravel removal or dredging is often specifically listed among the major anthropogenic causative factors in habitat loss. This is a widely held view among Kansas aquatic scientists from state and federal natural resource and environmental agencies as well as academic institutions.

Item e

Benthic invertebrates are frequently dismissed from consideration in sandy rivers, due to low abundance in shifting sand substrate. Biologists familiar with the river understand that the bulk of the secondary production occurs near shore on more stable substrate, on woody debris and in patchy rock and gravel substrate. Macroinvertebrate diversity in the Kansas River is considerable and in line with other dissimilar rivers and streams, unless you focus on shifting sand and dredge holes. There are no citations of Kansas Department of Health and Environment's (KDHE) Stream Biological Monitoring Program data in the EIS. KDHE has monitored benthic macroinvertebrate communities in the river for many decades.

Reduced demand for sand has no doubt been influenced by reduced government infrastructure spending but may also be influenced by attempts in construction to reduce impervious surface area, recycling concrete products and shifting asphalt composition to replace sand with crushed limestone aggregate. Future increases in demand should be met with sand from pit mines or other sources (not smaller streams). The cost of sand has always been subject to how far it is transported and the dredgers stress the need to locate as near to the demand centers as possible. Pit mine sand is roughly the same cost as river sand for the consumer and transportation has always been the majority of the cost of sand products to the consumer. The costs of pit mined sand is affordable for consumers and the loss of agricultural land for pit mines is greatly exceeded by loss from commercial and industrial expansion, along with road development in proximity to urban areas.

I would note that over the last decade or two that several permits were suspended for bed degradation when the self reported take was considerably lower than the permitted take (due to poor demand).

There should be No increase in current take (recent demand has been considerably less than permitted take and any future increase in demand should be met with other sources including pit mines). There should be No new in river dredging sites. There should be No return to river dredging at the site immediately upstream of Kaw State Park (LBB,LLC) or near Cedar Creek (Masters).

Safety Concerns:

FOK has many group floats with novice paddlers on the 5 mile segment from Desoto to the Cedar Creek boat ramp, reopening the Masters site is a very great safety concern. Construction of a new boat ramp at the Maple Hill bridge and possibly at the Willard bridge will open the new Kaw State Park boat ramp to additional use as a take out for the middle reach of the river. Return of the LBB,LLC dredge at that site is also a concern.

I personally have had several problems with the Builders Choice Aggregates dredge. I have encountered this dredge on several occasions stretching fully across the river removing a sandbar or facing mostly downstream. Under both kinds of circumstances the dredge operator had no awareness of my approach and took no action to aid in my passage. This does not happen every time but has happened more than tree times in the last three years. I have needed to duck down in my canoe to pass under cables, have passed under them when I did not have to duck. I have been forced to pass over the rubber dredge pipe because there was no portion of the wetted width of the river not ocuppied by dredge or pipe to the bank. A similar occurrence happened with the LBB,LLC dredge upstream of Topeka on one occasion.

At the Builders Choice Aggregates site on one occasion when there was no response from the dredge operator I exited my canoe to walk it along the sandbar edge to pass by and realised that the dredge had been working on the sandbar and there was no shallow passage opposite the dredge. Realizing I might

be walking into the edge of the dredge hole I got back in my boat and went under the cable.

In my experience dredge operators are not always displaying due diligence with regard to boaters and if they are not facing upstream believe they are much less likely to observe boaters. The replacement of dredge to bank pontooned pipelines (above water) with rubber pipeline makes boating more dangerous. The rubber pipelines, when in reaches with current and particularly when they do not have much slack, bob up and down in the current, disappearing from site and in an instant popping up partially above the water. They are very dangerous to paddle over and when dredges are across the river inexperienced paddlers see an open passage to proceed downstream until they get close enough to see the pipeline bobbing up and down.

M Steve Cringan, M.S.
Friends of the Kaw, Director
Environmental Scientist

Donahue, Brian T CIV USARMY CENWK (US)

From: David Sain <davidsain@sunflower.com>
Sent: Monday, December 12, 2016 11:49 AM
To: Donahue, Brian T CIV USARMY CENWK (US)
Subject: [EXTERNAL] KAW DREDGING

Mr. Donahue,

I do not support further dredging of the Kaw.

I am confident there are competitive alternatives to taking any chance with our vital waterways.

I assume the amount of dredging being proposed is connected to the demand for virgin gravel. I noticed at the public meeting a few weeks ago that recycling concrete was not listed as alternatives to dredging for gravel. It seems to me reducing demand is an alternative.

Existing concrete can be crushed, the steel removed if it is reinforced (and then recycled) and then the material used for aggregate in new concrete. Typically this is only done if the conditions lead to it being cheaper than using virgin gravel. Like many sustainable practices we need incentives to do the right thing in the construction industry. If the supply of virgin gravel were reduced (along with dredging or other extraction techniques) this would lead to higher prices for the virgin material the sustainable options would be more aggressively pursued. Not only would the dredging be reduced or eliminated but vast amounts of old concrete scattered about the landscape that might find a use. I do not know as much about using existing concrete to replace sand but I have found that we can be very creative if there is a profit.

Thank you for your time,

David

David Sain

Rockhill and Associates

785-393-0746

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Item h.

Holliday
SAND AND GRAVEL COMPANY
9660 LEGLER ROAD
PH: (913) 492-5920 LENEXA, KS 66219-1291 FAX (913) 438-0200

3/27/2017

Mr. Brian Donahue
Project Manager
U.S Army Corps of Engineers
Kansas City District Office
Brian.t.donahue@usace.army.mil

RE: Response to Kansas River Commercial Dredging DEIS Comments

Dear Brian:

Holliday Sand & Gravel, LLC (Holliday) appreciates all those that took the time to submit substantive comments, as the process provides an opportunity for us all to educate the other party and when possible address their concerns. In response to the letter to Jerry Younger of the Kansas Aggregate Producers' Association dated February 23, 2017, Holliday provides the following Company specific responses. With these comments, Holliday also writes in response to several comments received by the Corps from other parties.

Response to specific comments requested by David R. Hibbs:

Response to "a":

Holliday appreciates the comment from the City of Bonner Springs recognizing the value and need for sand dredging to provide the highest quality and affordable sand supply for construction. In response to the stated concerns about drinking water impacts to Bonner's alluvial well field, which is directly across from one of our two existing sand plants and within our permit area, approximately at river mile 19.8, Holliday points out that it has not dredged in the vicinity of the Bonner Springs well field since prior to its expansion toward the river in 2008 and has no immediate plans to resume dredging. Because we are not actively dredging within a mile of the wells we would request to continue with our existing bed surveys every 2 years.

As to the suggestion that the Reduced Limit Alternative is necessary, Holliday submits the following results of the most current bed elevation surveys that are used to monitor and compare the actual

average river bed elevation changes between 1992 (the Regulatory Plan baseline) and late 2015, in the vicinity of the Bonner Springs well field at RM 19.8:

X-Section Mile	Bed Change since 1992
RM 19.0	+7.89 feet of aggradation (term for gain in elevation of bed level, versus degradation)
RM 19.2	+6.45 feet of aggradation
RM 19.5	+3.55 feet of aggradation
RM 19.7	+8.46 feet of aggradation
RM 19.8	**Approximate Location of Bonner Springs Alluvial Wells**
RM 19.95	No bed level data, so it is noted that the water surface elevation was lower by 0.88 feet
RM 20.2	-1.48 feet of degradation
RM 20.4	+ 1.19 feet of aggradation
RM 20.75	-0.71 feet of degradation
RM 21.1	-2.33 feet of degradation (However this section is exactly within Holliday's dredge hole.)
RM 21.3	-1.61 (again this measurement is for the drop in water surface elevation)

Prior to 1992 and the Dredging EIS, Regulatory Plan, and 2 foot limit on degradation, the River *was* over-dredged. But as can be seen by the bed measurements above there has not been any significant additional loss in bed since 1992, and for **the area of the river adjacent to the Bonner Wells there has been up to 8 feet of bed level recovery.**

As such, the evidence supports Holliday's position that the current permit levels and restrictions are sufficient to prevent degradation and there is no supportable regulatory reason to impose the Reduced Limit Alternative, or other sand dredging reductions, adjacent to Bonner Springs. While it is possible that dredging in the area of the river near the well field could resume during the next permit cycle, the existing Regulatory Plan does not allow more than a two foot average bed drop and should that occur, dredging would cease and the bed would once more recover as it has since dredging in this area ceased in 2009. This is how the existing Regulatory plan already limits dredging to the rate of sediment inflow for each site. The Reduced Limit Alternative is therefore an unnecessary change.

It may provide some reassurance to note there are also riverbed grade controls above and below the Bonner Springs well field: the 1000 foot wide K-7 highway bridge no-dredge zone, the 1 mile long cobble armored bed at RM 21.8 – 22.8, and as mentioned, the WaterOne weir at RM 15. Nevertheless, Holliday would also agree to a 500-foot dredging setback from conventional wells and collector well intake laterals (or 1000 feet from the horizontal collector wells itself) though we are not aware of any collector wells near Holliday's permitted dredge sites.

Response to "b":

In response to the comments from Water District No. 1 of Johnson County (WaterOne), and the Corps specific request for additional comment, Holliday believes there is little risk to an impact from river dredging to the Water One weir located at river-mile 14 and additional ground water wells operated by WaterOne, and any risk is mitigated by the two-foot limit on degradation provided for in the Regulatory Plan.

Ms. Meese also implies dredging has had an impact on the performance of their conventional wells through degradation or lowering of the water surface. Similar to the comments from City of Bonner Springs, we contend that degradation in these areas of the river is a thing of the past, and as such there is no impact. In fact, there has not been any river dredging adjacent to their well field since 2004. As on the Missouri River, the current Kansas River dredging levels are a small fraction of what they were prior to and during the early the 1990's as the 1990 Kansas River Dredging EIS restrictions were phased in for 5 years. To the extent there ever was a relationship between dredging and degradation in this location, and if dredging were to resume in this area, the two foot maximum degradation limit in the permits has and will prevent anything but slight and temporary degradation.

The most current bed elevation surveys that are used to monitor and compare the actual average river bed elevation changes between 1992 (the Regulatory Plan baseline) and late 2015, in the vicinity of the WaterOne intake, RM 15, and well field, RM 11 to 13.9 shows **no average degradation** over any five-mile reaches from RM 10.1 to RM 23.9 and **aggradation of approximately two feet** in the five-mile reaches from RM 14.5 to RM 20.1.

Therefore, we are not sure why WaterOne has commented as they have. There is no dredging occurring near their well field and Kaw Valley is dredging a full mile above their surface intake. There is no average bed depth loss since 1992 and up to two feet of gain. The objections to river dredging with respect to ground water quality are misplaced. It is land based sand pits that have a potential to impact groundwater and that concern is one of the reasons it is near impossible to find alluvial floodplain deposits more than a mile away from a drinking water well.

WaterOne also has suggested a 1-mile dredging buffer for drinking water wells may be appropriate, though no specific information was provided to support this suggestion. Although the inapplicability of this regulation to sand dredging permits is acknowledged by WaterOne in its comment by suggesting a modification to the regulation is needed, it seems appropriate to explain the present regulatory structure. The regulation mentioned by Ms. Meese, K.A.R. 5-46-3, applies to a General Permit and pertains to mechanical excavations of sand and gravel, not the Specific Permit for in-stream hydraulic dredging which is covered in another regulation, K.A.R 5-43, Sand Dredging Permit. K.A.R. 5-43-2 states that in the context of river dredging, a 200 ft buffer is appropriate for other features such as public water intakes. River water is surface water and river dredging has a potential to impact surface water, but not groundwater. Further, even if the structure of 5-46-3 applied, the remedy provided by the regulation if a fixed operation is within the one mile radius of a public water supply intake, then a Specific Permit such as what is provided under K.A.R. 5-43 would be needed. Thus, the suggested change by WaterOne would have no effect on the permit structure.

Response to "c":

Holliday agrees with the suggestion of a settling pond requirement to treat the sand plant discharge prior to the return to the river. The fines that are collected in the pond are blended back into the sand products. Therefore, Holliday believes it would be reasonable for a sand operation to install a pond

system adequate to catch solids if they are immediately upstream of a horizontal collector well as water quality is everyone's concern.

EPA has presented some pictures of areas of settling pond discharges maintaining that sand plants are placing a fill in the River and should obtain a 404 permit for that action. The photo of Holliday's plant shows a small bar of approximately .25 acres along the bank of the Kansas River. EPA has tried to extrapolate the area of underwater fill by the color of the water on Google Earth. If you look at all the Google Earth photos available, back to 1991, you will see that there has never been an accumulation of material from the settling pond backflow. Some photos show a sand bar that formed naturally on this inside bend, but that was a result of low water and reduced dredging. This site has been operating in this same location, with the same discharge point since the 1960's. Holliday will be diligent in keeping the pond dug out to prevent any solids from reaching the River. However, the very area where the sediments are shown is dredged out every year. There is no evidence of a growing discharge fill in the river if you look at the photos over the years. However there have been sand bars that formed on that inside bend which we have subsequently dredged.

Response to "d":

Related to noise levels and hours of operations, sand plants require local permitting in the form of conditional use permits that are regularly reviewed for compliance and periodically renewed. The major potential concerns to neighbors from river sand plants are the noise of operation and truck traffic on the city streets. The flood plain mining alternative that commenters seem to favor adds additional concerns, that of dust emissions from the removal and placement of the overburden and additional trucking as sand pit property will be more remotely located.

Sand plants are normally open between 6 AM and 5PM on weekdays, but operation of the dredge and plant is often required multiple shifts and on Saturdays. These extended production hours are normally only during peak construction season and prior to shutdown for the winter. Dredging does not normally occur from mid-December through February due to freezing temperatures.
Holliday is taking the following actions to improve in the areas of noise and truck traffic:

1. Operate quiet electric dredges whenever possible
2. Line gravel chutes and screen decks with noise deadening wear material
3. Install silent strobe light backup alarms for non-daylight use
4. Install hospital grade mufflers and sound reduction panels on engines and machinery
5. Establish a safe trucking program with rules of the road and monitor driver compliance
6. Maintain open communication with the community

Response to "e":

Holliday is committed to the safe passage of recreational watercraft though its dredge area and has previously commented with the details of its Safe Passage Plan which includes practices and precautions and required lighting that accommodates the safe passage of watercraft. We believe all Dredgers are

amenable to shutting down their operation for events on the river such as float trips if they are but contacted and made aware of it.

Holliday has seen one vessel go past our dredge in 2016 and if we were not dredging, they would have likely hadto walk by our dredge rather than paddle. The reason some people that float on the river notice dredges is because the only reaches of the river that are navigable are those that are regularly dredged. The reason they don't go somewhere else is because there is too much sand in the river to float very far except for periods of high water. I would think that a real issue for recreation would be dams and water company weirs. There is always safe passage past our dredge if they maintain control of their craft and exercise reasonable caution as there is always a minimum of 100 feet between the dredge and the bank.

Response to "f"

Riverbed surveying and monitoring provided by the dredgers every two years as required by the Monitoring Plan is designed to monitor the impacts of dredging within a particular reach of the river. Reaches can have differing physical features including bed controls structures.

With regard to EPA's comments about whether the two- foot limit is right for the river as a whole and that the Monitoring Plan does not check the whole river, Holliday has been paying to monitor 85 miles of river and our permits only cover 1.83 miles of river. Also asking Holliday to monitor when there is no dredging is not reasonable. There is no reason to monitor un-dredged reaches of the river that cannot be affected by dredging in another reach. For example, dredging near Bonner Springs is neither going to impact reaches upstream in the river because of the vertical bed control provided by the one-mile long cobble bar immediately upstream, and above the Bowersock Dam in Lawrence; nor downstream because of the WaterOne weir. There may be degradation going on in an un-dredged reach because of other causes, such as weir and dam discharges, unrelated to dredging, and Holliday or other dredgers should not be required to pay for this type of survey entirely unrelated to their activity.

The current methodology monitors and sets the two-foot limit for a distance of five miles upstream and downstream of the permitted dredge area, over ten miles. Many dredge sites have been terminated due to the two-foot rule even though no dredging was occurring within miles. This is not because dredging caused a problem five miles away, but because the dredge area happens to be located in a reach of the river that is "naturally" degrading or was already degrading long before any dredging occurred there; for example, the Linwood and DeSoto reaches are naturally degrading reaches.

We hope the public understands that reservoir discharges and major flood events are scouring the riverbed and banks. Dredging at current levels is just dredging what refills in the dredge hole in front of our plants. It is not headcutting. Dredging in a non-stable or naturally degrading reach has always resulted in termination by the two-foot degradation limit.

Response to "g"

Holliday believes other parties who have experienced shutdowns have commented on how the Regulatory Plan should address areas that have aggraded, and many of the concerns about the analytical methods of the Corps have been expressed through in-person meetings.

Echoing comments made by Master's Dredging, if a dredge permit or part of a permit aggrades above the 2 foot limit, then the dredge permit must be restored to its full permitted, not partial, extraction limit. The full amount is taken away if the bed degradation exceeds the two-foot limit; therefore, the full amount should be restored if the bed aggrades above the 2 foot limit. If only part of the permitted area is disqualified, then the rest of the permitted area should have the full limit. If only a part of the permitted area is qualified then that portion should have the full limit.

Before 1990, the two-foot, five-mile rule was understood by us dredgers as being 2.5 miles in each direction from our permitted dredge area. That is the area that was saturated with cross sections for survey accuracy. Now it has become a 2-foot 10-mile rule or 2-foot 11.5-mile rule (for a 1.5 mile permit area) as it included the whole length of the permitted area.

The problem with this is the cross sections do not occur every tenth of a mile, but bed elevations must be extrapolated to determine the moving 5-mile average for every one-tenth of a mile. Therefore a lot of data is "created" from a limited number of cross sections, watering down the accuracy. For this reason, the two-foot rule should have some flexibility. There is no reason to start qualifying by the tenths of a foot. That may be engineering, but that is poor science. There is no reason to create a 1.5-foot rule for partial re-entry.

Response to "h"

Response to Comment 211, David Sain, Recycled Concrete Aggregate (RCA)

There is very little gravel in the Kansas River and almost none of it used in concrete or asphalt products, sand being the primary product dredged from the Kansas River. A small percentage of sand with the proper gradations for concrete or asphalt can be produced from crushing recycled concrete or limestone. Because of overcrushing, only a small percentage of the crushed product would ever make proper sand gradation. There is an excess of waste fines.

Comments were received suggesting that if virgin or natural river sand was not available, then the added cost to recycle would be acceptable and RCA would be used extensively. The use of recycled concrete for aggregate has been studied. The following are the results of one study: https://www.fhwa.dot.gov/pavement/t504037.cfm completed by the USDOT Federal Highway Administration, Technical Advisory T 5040.37 Use of Recycled Concrete Pavement as Aggregate in Hydraulic-Cement Concrete Pavement

Table 1. Effect of RCA on Mechanical Properties of Concrete

Property	Range of expected changes from similar mixtures using virgin aggregates. (ACI 555R)	
	Coarse RCA only	Coarse and Fine RCA
Compressive Strength	5% to 24% less	**15% to 40% less**
Strength Variation	Slightly greater	Slightly greater
Modulus of Elasticity	10% to 33% less	25% to 40% less
Creep	30% to 60% greater	30% to 60% greater
Tensile Strength	10% less	10% to 20% less
Permeability	200% to 500% greater	**200% to 500% greater**
Thermal Expansion	Somewhat less than expected for coarse aggregate used	Somewhat less than expected for coarse aggregate used
Specific Gravity	5% to 10% lower	5% to 10% lower

Table 2. Effect of RCA on Fresh Concrete Properties

Property	Range of expected changes from similar mixtures using virgin aggregates. (ACI 555R)	
	Coarse RCA only	Coarse and Fine RCA
Water Demand	Greater	Much greater
Drying Shrinkage	20% to 50% more	**70% to 100% more**
Finishability	More difficult	**More difficult**

Table 3. Effect of RCA on Concrete Durability

Property	Range of expected changes from similar mixtures using virgin aggregates. (ACI 555R)	
	Coarse RCA only	Coarse and Fine RCA
Corrosion Rate	May be faster	May be faster
Freeze-thaw Durability	Dependent on air void system	Dependent on air void system
Carbonization	65% greater	65% greater
Sulfate Resistance	Dependent on mixture	Dependent on mixture

The chart above shows that even in controlled experiments the strength, permeability, finishability and durability are greatly reduced with the use of RCA. The primary problem is that of quality control, not of cost. Quality of concrete depends on the physical properties of the ingredients and their uniformity. Aggregates are such a small portion of the cost of construction that the risk of future performance is too great not to use the most consistent and highest quality aggregates where strength and durability are important. Use of RCA for coarse aggregate is much more feasible than for fine aggregate or sand. However, Kansas River aggregate is 97% fine material or sand, not coarse aggregate or gravel.

In a $10,000 driveway job, the entire value of the sand is $75. It does not make sense to reduce the life of your driveway by 25-70% (approximated from the Tables above) in order to use recycled concrete? The RCA will be better used as base or fill rock, but not for structural concrete.

Manufactured sand is not a viable alternative for natural sand dredged from the Kansas River.

<u>Response to some general comments:</u>

Bank erosion (several commenters)

Farmers and dredgers have been the caretakers of the riverbanks. If dredging was the cause of bank erosion we would be hearing from our neighboring property owners. Bank erosion is a result of reservoir discharges. Aerial images of the river adjacent to our sand plant do not reveal any erosion.

Headcutting is the "mantra" of those that oppose dredging, though if you come out to our sand plant you will see for yourself that our dredge hole does not headcut upstream. The headcut effect was disproven by the Army Corps' experiments with dredge hole erosion on the Missouri River where dredge holes are much deeper, larger and the current is much faster. Headcutting exists, but has been incorrectly used in association with dredging. Headcutting occurs from clear reservoir water discharges and riverbend cutoffs, for example, but not from dredging. The simplistic models of filling a chute with sand and running a garden hose in it and saying that is an example of headcutting from dredging is over-simplistic and is refuted by expert HEC-RAS modelers and knowledgeable hydrogeologists we have worked with.

Response to FOK, Various Topics

Holliday believes that the Friends of the Kaw (FOK) dramatically and irrationally overstate the potential impacts to sand dredging. In particular, the following quote is so sensationalistic to the point that it discredits any rational points that may otherwise be found in the comment letter.

> "Arguably, the largest existing threat to this vital economic and recreational resource is sand dredging in the channel of the river."

There is so little dredging still being done on the Kansas River presently that arguably it's hard to believe that dredging is threatening recreation. There are only 3 or 4 dredges operating on the entire Kansas River, and they have been there for many decades. They are limited to lowering the river two feet since 1992 or they will be terminated, as many have been already.

Again, last year Holliday saw one boat go by our one and only dredge that has been operating.

There are issues with water quality in the river, but dredging is not a source of any of them. Specifically, there are numerous chemicals and waste being discharge into the river from other industries that create water quality concerns and should be the focus. Dredging is not discharging ANY chemicals or pollutants.

It is frustrating to read comments that do not seem to be aware of the changes that have occurred regarding regulating dredging: the low tonnage limits set, the permits that have been cancelled due to degradation, the sites that have been closed, the ongoing bed measurements every other year. At one time, Holliday had up to six operational dredge sites. Now we are down to two of which only one has been operated routinely.

Loss of Sand Bars

Immediately upstream of our sand plant there are numerous sand bars, which have been there for decades. Our sand dredging is not impacting any sand bars except right in our dredge area which is minute at less than one-half mile. True, there are no sand bars below Bonner Springs, but looking at

Google Earth the river is full of sand bars immediately upstream of our Bonner Springs plant. (In fact, there are approximately 26 large sand bars between Bonner Springs and DeSoto.) Dredging is not expanding. There are no new sites. Even if the full potential dredging being evaluated were to be implemented, the potential impacts of dredging are prevented by the two-foot restriction on degradation that limits any potential impact to a short term impact.

Habitat Loss

The continuation of dredging is not going to result in the loss of any habitat. The sand plants that are currently operating are sustainable mature sites that are not expanding. However, in contrast, the flood plain alternative requires new sand pits every 10 to 20 years and could impact hundreds of acres of wetlands over the next 50 years.

River Restoration

FOK commented about concerns about reclamation of the river after closure of a sand plant. After 10 years, Holliday's closed plant site in DeSoto (see photo below) shows the property being used by the City as a park and for river access for boating. The attached Google aerial shows that sand bars have reformed in the River to the extent that the boat ramp is becoming unusable. Holliday continues to provide cross sections that continue to monitor the bed in that reach and show that the bed has recovered about 6" and more.

(See next page)

Response to Comment 31, Jordan Hofmeier, Kansas Department of Wildlife, Parks, and Tourism

Impacts to state-listed species

With regard to the maps provided by KDWPT, documenting recent (2013-2016) occurrences of listed species in the Kansas River, by far the greatest presence of chubs, minnows and suckers is where the greatest amount of dredging has occurred and continues to occur downstream of Edwardsville, KS. Info provided shows no presence near Holliday's area of dredging.

Dredging at a sustainable level at the existing locations has proven to not headcut, not impact species, not contaminate drinking water, not erode personal property, not drown canoers, not deteriorate roads, not cause dust emissions, not increase greenhouse gases, not impact groundwater quality or quantity. However, we must concede that it has prevented sand bars from forming within our limited dredge permitted reach, but one look on Google Earth will quickly confirm that sand bars are prevalent nearby.

h(

Response to Comment 17, Mary Jaeger, P.E., City of Olathe

The City of Olathe, through Ms. Jaeger, has presented the following recommendations from their consultant, HDR, Inc. regarding their well field near RM 26.6, which is downstream 1400 to 2800 feet from the point of dredging and backflow discharge of the Master's Dredging operation in DeSoto:

- A streambed degradation monitoring station be located adjacent to the City's well field, and monitoring of streambed degradation be conducted annually.
- Dredge return water discharged back into the river, upstream from the City's wells, be discharged in such a way as to not to churn up silt from the riverbed and create a silt plume.
- A 500-foot buffer zone be applied to the intake laterals of Collector Well #2 (as indicated in Figure 1).

We respectfully reply based on studies conducted by our own groundwater consultants, and our experience with dredging methods:

1. Since a drop of every foot of water surface elevation can be critical to well operation, it would be helpful to monitor the historic drop in groundwater elevation at the well since dredging commenced near the Olathe well field. This is probably already being monitored at each well and such data could be helpful. Since the dredgers have been surveying the riverbed biannually since 1992 and the USACE determining the average bed changes, it would seem appropriate for the City to obtain this data and determine if there has in fact been some correlation between the two before it is determined that annual bed surveys are necessary.
2. Regarding concerns of silty return water, this minimal discharge occurs on the river surface and if it would accumulate, it would be on the surface of the riverbed. Surprisingly the City recommends dredging in the flood plain which could impact the alluvial aquifer as opposed to river dredging that could only impact surface water.
3. Holliday has stated that it supports the 500-foot no-dredge buffer zone for collector well laterals and for conventional water wells.

Thank you once again for the opportunity to respond to the comments received. There have been no impacts, this is not a new project, and there is no reason not to continue with the existing Kansas River Commercial Dredging Regulatory Plan.

Sincerely yours,

Holliday Sand & Gravel Company, LLC

Michael R. Odell

Mike Odell
Vice President - Operations

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March 27, 2017

David R. Hibbs
Regulatory Program Manager
Corps of Engineers
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Dear Mr. Hibbs:

In your letter dated February 23, 2017, you had requested that the Kansas Aggregate Producers Association (KAPA) provide responses to an itemized list of subjects/topics. I will categorize our responses using the same alphabetic assignment used in your letter.

Response to "a": David Penny, President, The Master's Dredging Company, submitted a letter, dated March 13, 2017 to Brian Donahue in your office. Mr. Penny has much experience working with the City of Olathe in the vicinity of their wells and, in his letter, shared some good history of why, practically speaking, it would be unlikely that dredging activities would occur in close enough proximity to cause any impact. I understand that Holliday Sand & Gravel Company will submit their individual responses which will include comments regarding their dredging activities around the Bonner Springs wells.

Response to "b": Kaw Valley Sand & Gravel, Inc. has a long history of dredging in the area of the Water One weir and associated groundwater wells. To their knowledge, there have been zero problems due to their dredging activities. One should easily be able to conclude that, if Kaw Valley continues to operate as they historically have, there should be no anticipated problems into the future.

Response to "c": I would reference comments submitted by the Kansas Department of Health & Environment (KDHE) during the DEIS comment period. In KDHE's comments, they provided specific background on federal law, guidelines and history that builds a strong case that the proposed regulatory plan changes would be contrary to past interpretations and applications of federal rules.

Response to "d": Dredging activities must also comply with local land use permit requirements. These permits have always included noise restrictions and most include restrictions on operating hours. For all but one of the active Kansas River dredging operations, 8 hours/day, M-F is the normal operation. Dredges can be powered by either electric motors or combustion engines. Electric motors are inherently quiet but even combustion engines through the use of turbochargers or mufflers are low noise, too. It is also worth noting that dredging activities fall under Mining Safety Health Administration (MSHA) purview which places an 85 db. maximum noise level for the operators on a dredge.

Response to "e": Mr. Penny's letter referenced previously provides a good anecdotal history of dredging/recreational boating interactions. I think the key takeaways are that those interactions occur relatively infrequently and, when they do, dredgers go out of their way to assure safe passage for those boats.

Response to "f": It would appear that with 20+ years of history collecting survey data biannually, that frequency has provided suitable timeliness in application of the Regulatory Plan. To our knowledge, there are no examples of environmental impacts becoming worse due to survey data being collected biannually versus annually.

Response to "g": Again, there is 20+ years of history associated with the application of the current regulatory plan. Having seen no examples of failure of the current regulatory plan to serve the original intent of protecting certain aspects of the Kansas River, why would we change? And, would such a change be contrary to the original and/or implied intent of Regulatory Plan as understood by all stakeholders when this process began 20+ years ago?

Response to "h": Sand dredged from the Kansas River has unique qualities associated with particle shape and size, as well as, the distribution (gradation) of those shapes and sizes within the large quantities needed for construction purposes. From a practical and cost effective perspective, recycled concrete would require excessive processing (crushing, screening, grading) to end up with a material that would be suitable for replacing Kansas River sand. Plus, the volume of recycled concrete available, at best, would only provide a very small fraction of the material needed to supply the ongoing construction needs of the area.

KAPA does appreciate the Corps allowing our Kansas River dredging community an opportunity to respond to the comments submitted during the DEIS process. Please let me know if you need further information on any of our responses in this letter.

Lastly, as the Corps finalizes the EIS and associated Regulatory Plan, we need to keep in mind what I believe was the original intent as this EIS process began 25+ years ago: Can a balance be found where society reaps the benefits resulting from dredging activities while still protecting the Kansas River environment from significant impacts? I would offer that there is now 20+ years of convincing data and history showing a successful achievement of that balance.

Sincerely,

Jerry Younger, P.E.
Managing Director, Kansas Aggregate Producers Association

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Brian Donahue **March 13, 2017**
Project Manager, Regulatory Branch
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Dear Mr. Donahue,

I want to respond to some of the Kansas River Dredging EIS comments which you received. Many appeared to simply be rubber stamped from several environmental groups such as The Friends of the Kaw who oppose all dredging on the Kansas River. Most of their objections have been properly addressed in the past public hearings and comment periods over the last 40 years by the Corps of Engineers.

Several in this latest EIS comment period, although largely addressed in the previous 1990 EIS and the more recent EA, probably need to be responded to.

First, at least one respondent advocated the used of land based pit operations. Historically, that is interesting because when I applied for an off-river pit operation east of Lawrence, Kansas, a number of people who were in the The Friends of the Kaw group strenuously opposed my land based pit operation. At least three other entities have also tried to establish land based sand pit operations in the Kansas River alluvium between Lawrence and Topeka and they failed, largely because they were strenuously opposed by many of the same environmental people. There has been a certain hypocrisy in the opposition to sand production whether from the river or from land pits by the environmental groups over a long period of time.

We have operated both land based and river based sand production operations. Presently, it is virtually impossible to establish a land based sand pit operation in the Kansas River alluvium, the only source of commercial sand outside of the Missouri River alluvium, from the mouth of the Kansas River to a distance west of Topeka. Many attempts have been made by ourselves and others to set up land based sand plants. It is nearly impossible to find any land in the Kansas River bottoms for sale because it has often been in the same ownership for generations. If land can be purchased, it is generally not in a suitable location for truck transport. It must be near a major highway with roads suitable for legal but heavy loads. It must be often rezoned and with suburbanites on the zoning boards that is nearly impossible because sand operations are industrial grade. Since sand mining requires conditional use

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zoning (CUP or SUP), these zoning permits are only temporary and must be renewed every 5-10 years with a whole new set of hearings. Meeting local and state regulatory requirements for sand pit operations is costly, both in time and money (engineering, legal, etc.), and generally impossible to accomplish.

In addition, the principle technical deficiency of land based sand pits is that they are non-renewable. When the sand reserves are depleted, the sand production is terminated. The Kansas River has been a renewable source of sand and gravel for well over one hundred (100) years without a depletion of the sand nor significant changes in the river due to sand extraction. This is most obvious at Bowersock Dam in Lawrence where the elevations upstream and downstream of the dam have not change in over one hundred years. The Kansas River has been a source for renewable sand as the earlier Simons and Li and Dort river morphology studies showed for the original 1990 EIS.

Even if the local, state, and federal permits can be obtained, the land pit operations have a number of other problems such as: (1) overburden removal costs, (2) large loss of available sand reserves due to state and local setbacks and slope requirements, and (3) very limited (good quality and depth) sand reserves even in the Kansas River alluvium.

<u>Secondly</u>, a letter was received from the City of Olathe concerning their horizontal collector wells (Rainey wells) which are near our application for renewing our previous river dredging permits at Kansas River Miles 27-26. If my information is correct, this letter was generated out of concerns from their engineering firm, Black and Veatch. Since 1983 when we began our sand dredging on the Kansas River centered on river mile 27, we have had a very good relationship with Olathe.

Only once during a period of 20 years of dredging, did we dredge adjacent to Olathe's property. Because we dredge with our dredge aimed upstream, allowing our dredge line to tether behind us between our plant and the dredge, it is very difficult to dredge downstream from our property and in front of Olathe's property.

Once, at the request of Dave Cox, the Olathe Water Engineer, we inverted our dredge, holding the dredge line upstream with a cable, to dredge in front of their property. In the area of Olathe's wells, there is a clay seam below the river bottom that prohibits river water from easily replenishing the water aquifer below the clay seam. The collector well's capacity decreased significantly from initial production tests, although the laterals were operating

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properly. Olathe confirmed the present of the clay seam in the river by using a coring rig mounted on mobile unit and making several cores through a sand bar in the river adjacent to their collector well.

By trying to dredge through the clay seam, it was hoped that the river water could more easily replenish the aquifer. Even in that case, we maintained a distance of more than 200 feet out from the river bank, at least more than 100 feet out from the end of the nearest well lateral. Unfortunately, we were not able to dredge far enough along Olathe's property to reach a position adjacent to the collector well which is located approximately at the mid-point of Olathe's property. The dredging improved the collector well performance only marginally.

Although the collector well's lateral was supposed to extend further, it was determined that the riverward lateral only extended about 50 feet under the river. An adequate buffer for a dredging permit might be 250 feet off the river bank in the area of collector wells which would be more than 200 feet from the end of Olathe's riverward lateral.

<u>Thirdly</u>, one of the respondents wants the return water from the sand dredging operations to go through an adequately sized settlement basin prior to reintroduction to the Kansas River. The 404 permits apply to discharging land based materials into the waters of the United States. Sand processing plants from river dredging, whether the plant is located on a barge in the river or is located on land, does not introduce any land based material in the return water before it returns to the river. Consequently, river sand dredging does not discharge any land based materials into the river, either solids or water.

All of the return materials (sand, gravel, silt, or water) came directly from the river and are being returned to the same source within minutes of being dredged. There are no land based materials in the return water to settle out before returning to the river and no need for a settling basin. It was not the intent of the 404 law to prevent river materials from immediately returning to the river. Otherwise, all sand dredging river operations with a sand processing plant mounted on a river barge would be required to collect all of their return water and materials on a barge mounted settling basin to be disposed of on land. The lack of settlement basin also applies to a land based sand processing plant which does not introduce any land based material into its return water. The Kansas River dredging permits should not require a settlement basin for their direct return water according to the intent of the 404 law.

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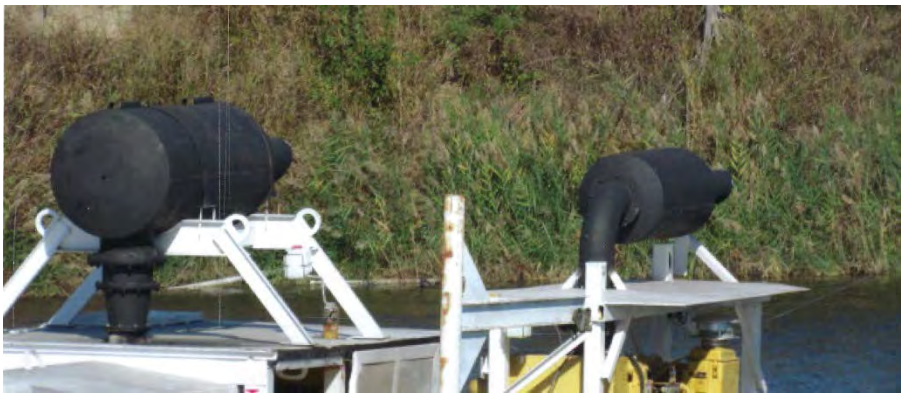
<u>Fourthly</u>, questions in some of the comments were concerned with the noise levels and hours of operations for the sand dredging and the impacts of these on the adjacent land owners.

The Kansas River alluvium where the dredging is taking place is largely surrounded by farming operations and industrial operations with almost no residential buildings. Past floods have caused residents to cease living in the Kansas River bottoms. Also, most local zoning ordinances and FEMA requirements do not allow for residential buildings in the Kansas River bottoms. As a consequence, there almost no residences near the dredging operations on the Kansas River. As an example, historically of the five dredging permits that we have had in the past, only one had residences within a mile of the dredging operations.

Dredging operations fall under federal MSHA regulations which require that the sound levels be 90 decibels or less on the dredge itself. The sound levels drop off dramatically with distance from the dredge. Modern diesel engines, such as our Caterpillar diesels, greatly reduce noise levels with turbocharges which use the energy of the exhaust gases to increase the efficiency of the engines and to reduce exhaust noise. Large mufflers also reduce the residual exhaust noise to less than that of most farm tractors which are working in the surrounding fields. The photo below shows the diesel engines on a dredge with large mufflers.



The sand dredges operate about 25 feet below the surrounding Kansas River land so that the river banks and their riparian vegetation on both sides of the river attenuate most of the remaining sound from the dredge on the land. The photo below shows a typical diesel dredge which has no direct line of sound to the surrounding land.

The Master's Dredging Company, Inc.

Dredging Contractors
P.O. Box 9, Lawrence, KS 66044
(913) 583-3335

Further, most local zoning requirements for sand dredging operations require screening and buffering plans which have standards to greatly reduce any sound or noise levels, especially in the vicinity of residential, commercial, or industrial locations. Hours of loading are generally restricted to daylight hours. Although dredging operations can have extended hours, it is very rare to dredge during the night, except for emergencies, because night operations are generally inefficient.

<u>Fifthly</u>, several commented on the public safety and passage of recreational vessels through dredging operational areas and dredges parked at night. Several were pointed at our application as a new permit area (Kansas River mile 27-26) upstream from the Cedar Creek boat ramp east of DeSoto.

We operated this dredge permit area from 1983-2003 as a Kansas River sand dredging operation so this is not historically a new dredging area. Our dredging operations only included one positioning cable across the river which might have obstructed recreational boats on the river. During our 20 years of operations: (1) we saw very few recreational boats during our dredging operations and no canoes coming upstream from the Cedar Creek boat ramp (it was rare to see more than one boat per week), (2) we dropped our one cable which might obstruct the boat passage so that the boat could pass, (3) we

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mounted Coast Guard markings and signs on our dredge, and (4) we parked our dredge against our bank when not operating and dropped our cables in the river below the water level.

With the exception of some airboaters who vandalized our dredge, we have friendly relationships and even conversations with passing recreational boaters. On a couple of occasions, we helped them with minor repairs to their boats. We occasionally used the Cedar Creek ramp for our small service Jon boat but found it nearly unusable except in higher river levels because of extreme shallowness, fallen tree obstructions, and distance from the Kansas River. Most recreational boat owners prefer to use the Desoto west boat ramp, especially canoeists coming from upstream of DeSoto, because of its ease of access to the river.

<u>Sixthly</u>, several agencies and individuals recommended increasing yearly monitoring of bed elevations in dredging areas and intermediate areas for the entire length of the Kansas River. After the implementation of the Regulatory Plan, beginning in 1994 until the present biannual cross section monitoring has been done. With well over 20 years of biannual monitoring and no majoring issues having arisen during this time, it might be appropriate to increasing the length of time between cross sections monitoring instead of decreasing the time between surveys. The surveys are rather expensive and with the exception of the 1993 flood there have only been marginal changes in the two year intervals. It is rather unclear why there is a call for increasing the frequency of cross section surveys.

<u>Seventhly</u>, several comments criticized the proposed changes to the opening and closing of dredge areas. At the beginning of the 1990 Regulatory Plan we had four permits of which we could only use three at any one time for a total of 750,000 tons per years. Largely because of the 2 foot five mile degradation rule we lost all of them. The one centered at Kansas River mile 27 east of DeSoto later aggraded above the 2 foot degradation but was not given back. We have strong feelings about the analytical method of determining the bed degradation using the biannual survey data. However, even with the flawed methodology we should have been given back the dredge permit because it met the 2 foot 5 mile rule.

In a different venue we will approach the COE analysis of bed degradation but we feel that if a dredge permit or part of a permit aggrades above the 2 foot limit, then the dredge permit must be restored to its full permitted, not partial, extraction limit. The full amount is taken away if the bed degradation exceeds the 2 foot limit; therefore, the full

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amount should be restored if the bed aggrades above the 2 foot limit. If only part of the permitted area is disqualified, then the rest of the permitted area should have the full limit. If only a part of the permitted area is qualified then that portion should have the full limit.

Before 1990, the 2 foot 5 mile rule was understood by us as dredgers as being 2.5 miles in each direction from our permit center. As applied by the COE analysts, it is became a 2 foot 10 mile rule or 2 foot 11.5 mile rule (for a 1.5 mile permit area) as it included the whole length of the permitted area. In the original EIS discussion before the 1990 Regulatory Plan, the 2 foot 5 mile was acceptable to the dredgers but to have it turn into a 2 foot 11.5 mile rule have proven very dramatic to us. The whole permitted area was disqualified if only a portion (which could be removed from the dredge area) was affected by the 2 foot 11.5 mile rule.

<u>Eight and lastly</u>, someone suggested recycled concrete as a suitable substitute for sand and gravel dredged from the Kansas River. With very little gravel from the Kansas River and almost none of it used in concrete or asphalt products, sand is the primary product dredged from the Kansas River. On certain past projects, we have tried to use sand manufactured from limestone by the same process that it would be produced from recycled concrete. Very little sand with the proper gradations for concrete or asphalt can be produced from crushing recycled concrete or limestone. Because of overcrushing, only a small percentage of the crushed product will make proper sand gradation.

Even when it is manufactured from recycled concrete or limestone, the concrete/limestone sand is very undesirable for concrete or asphalt production (high absorption of water, cement paste, and asphalt oil; bridging at gates in production plants; poor finishability, etc.). Natural sand is imported for long distances into areas where it is unavailable locally because of the technical difficulties of producing concrete and asphalt from sand manufactured from recycled concrete or limestone. Manufactured sand is not a viable alternative for natural sand dredged from the Kansas River.

Sincerely,

David Penny
President
The Master's Dredging Company, Inc.

LBB, LLC
3620 SW Hodges Road
Topeka, KS 66614

2017 MAR 23 AM 11:45

03/22/2017

Mr. Brian Donahue
Project Manager, Regulatory Branch
U.S. Army Corps of Engineers, Kansas City District
Brian.T.Donahue@usace.army.mil

Dear Mr. Donahue,

The following is our response in regards to the Kansas River Dredging EIS public comments. LBB, LLC has applied for a permit to dredge on the Kansas River Reach Mile (RM) 89.7 to 91.0. The majority of the negative comments were based on perception verses facts or data. On, February 23, 2017, David Hibbs with the Corps of Engineers sent a letter to Mr. Jerry Younger with the Kansas Aggregate Producers Association (KAPA) to obtain KAPA's response to various concerns. Dave Penny, with The Master's Dredging Company, Inc. has addressed many of these concerns sent forth in said letter to Mr. Younger. Mr. Penny's letter was dated March 13, 2017. We are in agreement with Mr. Penny's comments.

Several of the public comments were in regards to the LLB, LLC location and permit. We would like to address those comments. It is a common misconception that the LLB dredging site is a new location, dredging at this site has been going on since 1968. Dredging continued until 2008. If approved this will be permitting a site that has been in existence for 49 years.

I have personally kayaked and canoed the Kansas River several times passing dredging operations both active and inactive. During active operations the dredge operator stopped and dropped all cables to the bottom of the river allowing us to pass safely by. On weekend float trips the dredging operations I witnessed were not operating. The dredge was tethered tight to the bank with all cables slack. All dredges had lights on them.

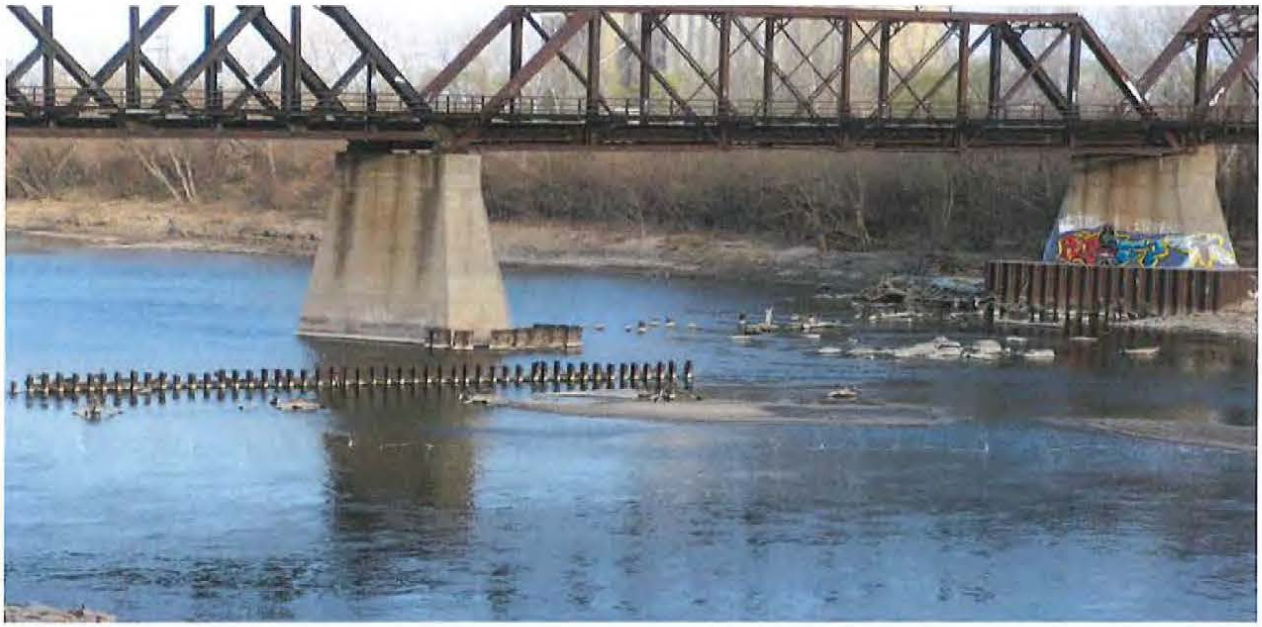
Comments were made has to how dangerous and detrimental it would be in the Topeka area if the LBB, LLC was permitted to dredge. The dangers were listed as: the dredging operations themselves, damage to infrastructure, and erosion of the banks.

Dredging Operations: This was discussed above and is true for the proposed site as well.

Damage to Infrastructure: Bridges over the Kansas River are designed to resist foundation and contraction scour. All of the Kansas Department of Transportation and City structures are founded into bedrock. Scour from extended periods of high CFS flows from Tuttle Creek and Milford Reservoirs are much more of a concern than dredging. Damage to the existing intake weir in Topeka was also mentioned. This weir is approximately 3 miles downstream of the proposed dredging site, again very little to no impact would be expected from sand at this location. However, the weir is a major hazard to boaters on the river with swift currents violent drops and a rock and debris filled splash pool. At least 2 individuals have died at this site.

Erosion of the Banks: Erosion of the river banks is not a function of the amount of sand removed by the dredging process. The major contributor to bank erosion is extended periods of high discharge from the upstream reservoirs and/or periods of heavy rain.

As previously stated, I have floated the Kansas River several times. I have been through the River Reach that LBB, LLC is requesting to dredge. The major safety concerns especially at slightly elevated flows is the debris and cut off piling at the railroad bridge crossings. See the following photos:



Thank you for taking this information into consideration for the issuing of dredging permits on the Kansas River. Please let me know if you have any questions or comments.

Sincerely,

Bob Henthorne, P.G.
Geologist
Cell 785-640-2477

Appendix D

January 2018

Donahue, Brian T CIV USARMY CENWK (US)

From: Tabor, Vernon <vernon_tabor@fws.gov>
Sent: Tuesday, November 28, 2017 3:24 PM
To: Donahue, Brian T CIV USARMY CENWK (US)
Cc: Jason Luginbill
Subject: Re: [EXTERNAL] Kansas River Dredging Consultation

Yes sir.

On Tue, Nov 28, 2017 at 3:09 PM, Donahue, Brian T CIV USARMY CENWK (US) <Brian.T.Donahue@usace.army.mil <mailto:Brian.T.Donahue@usace.army.mil> > wrote:

So, am I to assume an end of the Section 7 ESA process and concurrence with our letter and the BA we sent to Jason dated Oct 13th?

Your shallow-water habitat (SWH) comment is noted.

Brian Donahue
Project Manager
Regulatory Branch
U.S. Army Corps of Engineers
Kansas City District
(816) 389-3703

Let us know how we're doing
Blockedhttp://corpsmapu.usace.army.mil/cm_apex/f?p=regulatory_survey <Blockedhttp://corpsmapu.usace.army.mil/cm_apex/f?p=regulatory_survey>

-----Original Message-----
From: Tabor, Vernon [mailto:vernon_tabor@fws.gov <mailto:vernon_tabor@fws.gov>]
Sent: Tuesday, November 28, 2017 1:17 PM
To: Donahue, Brian T CIV USARMY CENWK (US) <Brian.T.Donahue@usace.army.mil <mailto:Brian.T.Donahue@usace.army.mil> >
Cc: Jason Luginbill <jason_luginbill@fws.gov <mailto:jason_luginbill@fws.gov> >
Subject: [EXTERNAL] Kansas River Dredging Consultation

Hi Brian,

We recently reviewed the information you provided in the Environmental Assessment for sand and gravel dredging in the Kansas River, proposed between river miles 0 and 170.4. This proposal was sponsored by a consortium of dredgers that are, or have been active on this stream in the past.

Following review. we concur with your determination of "no effect" for the Topeka shiner and northern log-eared bat. We also concur with your determination of "may affect, not likely to adversely affect" for the interior least tern, piping plover and pallid sturgeon. However, I want to state, that we do not agree with all the information provided concerning upstream affects and shallow water habitat due to instream dredging of large quantities of unconsolidated

streambed. The case in point being the statement, "Dredging's effects on SWH (shallow water habitat) are estimated to be minor and insignificant."

Thank you for the opportunity to comment. If you have any further questions or comments, please feel free to contact me.

Vernon Tabor

FWS Tracking #2018-CPA-0023

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Vernon Tabor
U.S. Fish and Wildlife Service
Kansas Ecological Services Field Office
2609 Anderson Avenue
Manhattan, Kansas 66502
785/539-3474 X110

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DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, KANSAS CITY DISTRICT
635 FEDERAL BUILDING
601 E. 12TH STREET
KANSAS CITY, MISSOURI 64106-2824

October 13, 2017

Regulatory Branch
Kansas River Dredging

Mr. Jason Luginbill
U.S. Fish and Wildlife Service, Region 6
Kansas Ecological Services Field Office
2609 Anderson Avenue
Manhattan, KS 66502

Dear Mr. Luginbill:

This letter pertains to permit applications received from five applicants to dredge sand and other aggregate materials from the Kansas River at eight different locations. I am writing to request initiation of informal Section 7 consultation under the Endangered Species Act of 1973 in accordance with 50 CFR §402.13. The activities proposed by the applicants may affect the interior least tern (*Sterna antillarium*), piping plover (*Charadrius melodus*) and the pallid sturgeon (*Scaphirhynchus albus*). Our preliminary determination is that the proposed activity, if conditioned as described below, may affect, but is not likely to adversely affect these species or designated critical habitat. We request your concurrence with this determination.

To assist in your review, we have assembled the following information:

1. Description of the activity: The applicants propose to hydraulically dredge up to a maximum annual total of 1,900,000 tons of materials from the following locations:

Company	Requested Dredging Areas (River Miles)	Requested Quantities (Tons)
Kaw Valley Companies, Inc.	9.4 – 10.4	400,000
	12.8 – 13.9	
	15.4 – 16.9	
Holliday Sand & Gravel Company	18.65 – 20.15	300,000
	20.55 – 21.50	300,000
Master's Dredging	26.1 – 27.6	300,000
Builders Choice Aggregates	77.1 – 78.6	300,000
LBB, LLC	89.7 – 91.0	300,000

2. Description of Proposed Permit Conditions: The following conditions will be incorporated into proposed permits for the work and are proposed to avoid adverse effects to listed species:

   a. Bed degradation will be limited to an elevation two feet below the baseline river bed elevation measured at crossection locations in 1992.

      This measure is expected to minimize possible direct or indirect disturbance to pallid sturgeon and potential habitat. This permit condition will help reduce possible sandbar instability and maintain adequate coverage of this habitat type throughout the river for use by the least tern or piping plover.

   b. If at any time a pair of interior least terns or piping plovers nest within one mile of an active dredging operation, additional consultation under the authority of the Endangered Species Act regarding the potential for impacts to these species will be required.

      This measure is proposed to reduce possible direct or indirect impacts and disturbance resulting from the work to nesting activity by either the least tern or piping plover. Previous permits contained a 3-mile buffer, but upon reconsideration it is proposed this buffer distance be reduced to a one mile before any further consultation is required. This assertion is based upon information about the species gained from current literature plus monitoring and recovery efforts since 2007 when the buffer was first implemented. Disturbance on the sandbars present in the river from human recreational activities and losses from avian and terrestrial predation or flooding are considered the primary physical disturbance threats to these individuals if present on the Kansas River. Noise from dredging operations is not expected to be more than minimal and noise is not listed as a factor adversely affecting this species, listed as a cause of species decline or associated with reasonable or prudent measures for either species. For example, nesting by both species has been documented within active pit mines on the Platte River in Nebraska, the Westar Jeffrey Energy Center near Belvue, Kansas and other floodplain pit mining operations. Dredging activities are not expected to cause nesting disturbance to either species and potential morphological impacts resulting from the work are not expected to be more than minimal.

   c. Water separated from the dredge slurry is required to be routed through an appropriately sized siltation basin prior to returning to the Kansas River. This condition will aid in reducing the amount of suspended solids in the dredged process water and help maintain acceptable water quality.

      The Kansas River is primarily a sand bed system with little fine silts or clays. Previous studies have shown that the entrainment of dredged materials at the dredge cutterhead is highly efficient and suspended solids resulting from the actual dredging operation are minimal and localized. The low efficiency of the silt basins to reduce suspended solids from upland processing plant process water is acknowledged but will be

implemented as a Best Management Practice to help minimize any possible impact to aquatic resources and endangered species. Suspended solids re-entering the river in process water from silt basins is not regulated under Section 404 of the Clean Water Act. EPA and the Kansas Department of Health and Environment have not regulated water discharges associated with these operations in the past under Section 402 or 401 of the Clean Water Act.

3. Description of the area affected: The action area was identified in the Kansas River Environmental Impact Statement (EIS) as the Kansas River, tributary mouths and adjacent floodplain.

4. Listed Species and Critical Habitat: No critical habitat has been identified for any of the three species within the identified action area.

5. To assist in your review, a Biological Assessment for the proposed work is enclosed for your review.

6. Assessment of impacts: Please refer to Section 3.11 and 4.3.9 of the Kansas River FEIS for information regarding the direct, indirect and cumulative impacts assessed for the three identified species relative to the proposed work. This document is available at the following link within the "2017 Documents" folder: http://www.nwk.usace.army.mil/Missions/Regulatory-Branch/Kansas-River-Commercial-Dredging/

7. We have considered the following information in making our determination that the activities may affect but are not likely to adversely affect these species:

Least Tern and Piping Plover

No nesting activity has been documented on the Kansas River since 2009 for the interior least tern and no nesting by piping plover has been observed since 2006. Productivity for both species on the river from 2000 through 2005 was very minor with plover nests comprising between 0.4 – 0.9 % and least tern nests comprising between 1.9 – 7.2% of all nests within the larger Missouri River basin. The number of Kansas River fledglings within the larger basin area during this period comprised 0.2% for plovers and 1.4% for terns. All nesting on the Kansas River during that time frame occurred well upstream of all the proposed dredging areas, including those near Topeka, Kansas.

Pallid Sturgeon

The Kansas River is sampled and identified as Segment 11 in annual reporting for the "Pallid Sturgeon Population Assessment and Associated Fish Community Monitoring for the Missouri River" conducted by the Missouri Department of Conservation. This sampling has taken place since 2006 between Lawrence, Kansas downstream of Bowersock Dam (RM 52) and the confluence of the Kansas and Missouri Rivers. Prior to the 2007 capture of a single pallid in the lower extent of the river below the Johnson County WaterOne weir at RM15, no documented

captures of the species had occurred on the river since 1952. No captures of pallid sturgeon have occurred above the Johnson County weir since construction in 1967.

Two of the eight proposed dredging areas are below the Johnson County WaterOne weir. Those two dredge areas have not been subject to active dredging since 2008. One authorized dredging reach below the weir was however recently modified to allow for the removal of a sandbar that has formed just below the weir. The pallid captures in the 2014 and 2015 seasons were located below these dredge areas at approximate RM 8. Earlier sampling captures occurred primarily between RM 0 and RM 1. When comparing years when dredging took place at these two most downstream authorized dredge sites on the river with corresponding years of sampling, we were unable to discern any correlation between the number of pallid sturgeon sampled and the amount of dredging (if any) in a given year. A total of 18 pallid sturgeon captures (including recaptured fish) were documented using standard and non-standard sampling methods from 2006 through 2015. One wild fish was documented in the Kansas River during the 2011 sampling season.

Please review this information and respond if you concur with our determination that the proposed work may affect, but is not likely to adversely affect these three species if work is conditioned as described above. If you have any questions concerning this matter, please contact Brian Donahue at 816-389-3703, or by e-mail at: brian.t.donahue@usace.army.mil.

Sincerely,

David R. Hibbs
Program Manager, Regulatory Branch
Operations Division

Enclosures

BIOLOGICAL ASSESSMENT

PREPARED FOR

COMMERCIAL SAND AND GRAVEL DREDGING

KANSAS RIVER

RIVER MILE 0.0 - 170.4

Geary, Riley, Pottawatomie, Wabaunsee, Shawnee, Jefferson, Douglas, Leavenworth, Wyandotte and Johnson Counties in the State of Kansas.

Prepared by:

USACE, Kansas City District

October 2017

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A. Executive Summary

1. The proposed dredging work is regulated under Section 10 of the Rivers and Harbors Act, but not under Section 404 of the Clean Water Act. Sand and gravel dredging operations on the Kansas River consist of two processes, the in-river material harvesting dredging component and the land-based material processing and delivery component. Dredging operations in the river involve the use of a hydraulic dredge to pump a slurry of sand, gravel and water to a land-based processing plant. The current dredging authorizations are based on an Environmental Impact Statement (EIS) prepared in 1990 and subsequent Environmental Assessments (EAs) prepared in 1997 and 2007. The determinations in this assessment are based upon proposed special conditions of the proposed work including a Regulatory Plan that contains tonnage limits, operational buffer restrictions and a 2 foot riverbed degradation limit as compared to a 1992 baseline riverbed elevation condition. Five applicants have requested permits to annually extract a total of 1,900,000 tons of sand and gravel aggregate from the river at eight locations.

SPECIES	LISTING STATUS	DETERMINATION
Interior least tern	Endangered	May Affect, Not likely to adversely affect
Piping plover	Threatened	May Affect, Not likely to adversely affect
Pallid sturgeon	Endangered	May Affect, Not likely to adversely affect
Topeka shiner	Endangered	No effect
Northern long-eared bat	Threatened	No effect

B. Project Description

1. Location: The work regulated under Section 10 of the Rivers and Harbors Act of 1899 involves hydraulic dredging operations within the Kansas River from its' mouth to river mile 170.4 at the confluence of the Republican and Smokey Hill Rivers near Junction City, Kansas. Dredged materials are transported in a slurry to upland processing sites where the sand is extracted and sorted. Water and fine materials remaining after the upland processing are then returned to the river after passing through a sediment basin.

2. Definition of Action Area: Kansas River (mile 0 to 170.4), tributary confluences and portions of adjacent floodplain including processing plant sites and haul roads in the immediate vicinity of these sites.

3. Proposed Action: The USACE has received permit applications received from five applicants to dredge sand and other aggregate materials from the Kansas River at eight different locations. The work involves the hydraulic extraction of sand and gravel from the riverbed utilizing a suction head device driven by a barge-mounted pump. The aggregate materials dredged from the river are transported in a slurry of water to an on-shore upland facility where sorting and other processing steps take place. The remaining water and fine sediments from this processing

combined with water from subsurface drains used to de-water stock-piled material is then returned to the Kansas River after passing through a settling basin and returned to the river through a pipe or sluiceway.

Special conditions included as a requirement of permitted work would include restrictions related to bed degradation, the total amount of aggregates extracted each year by each location and each dredge, buffer restrictions around sensitive structures and natural formations in the river in compliance with a revised Regulatory Plan as proposed in the final EIS (FEIS) recently completed for the proposed work. Appendix A from the Kansas River FEIS, which comprises the proposed Regulatory Plan for future permits, is included as an enclosure of this assessment.

The materials extracted from the Kansas River are offered for commercial sale to a wide variety of construction markets located in or near metropolitan areas along the River depending upon the location of the dredging operation. The primary markets are Kansas City plus Lawrence and Topeka, Kansas. Sand and gravel are essential components of concrete, asphalt, brick mortar, tile grout, landscape materials, and fiberglass production. These materials are used to construct roads, public, commercial, and industrial facilities; and multi-family and residential housing. The action area regarding endangered species concerns regarding the proposed work includes the Kansas River, tributary confluences and the adjacent floodplain from its' mouth to mille 170.4 in Geary, Riley, Pottawatomie, Wabaunsee, Shawnee, Jefferson, Douglas, Leavenworth, Wyandotte and Johnson Counties in the State of Kansas. The following table summarizes the proposed work:

Summary of Permit Requests		
Company	**Requested Dredging Areas (River Miles)**	**Requested Quantity (Tons)**
Kaw Valley Companies, Inc.	9.4 – 10.4	400,000
	12.8 – 13.9	
	15.4 – 16.9	
Holliday Sand & Gravel Company	18.65 – 20.15	300,000
	20.55 – 21.5	300,000
Master's Dredging	26.1 – 27.6	300,000
No dredging requested in Reach 3	None	None
Builders Choice Aggregates	77.1 – 78.6	300,000
LBB, LLC	89.7 – 91.0	300,000
	Total Quantity	1,900,000

a) Other Alternatives Considered

Other alternatives to the proposed work considered include a) A no-action/denial of permit applications which would shift aggregate supply from a combination of sources including; Missouri River dredging, Kansas and Missouri floodplain pit dredging and crushed rock from quarry operations; b) A reduced limit alternative, capping yearly extraction at 1.67 M tons of materials based upon past studies of the Kansas River annual sediment load. Three additional alternatives were also evaluated but were not further considered because they were not reasonable or feasible.

The No Action Alternative:

The No Action Alternative for the FEIS is defined as not approving any of the pending permit applications for commercial sand and gravel dredging on the Kansas River. Denial of the requested permits and termination of all existing dredging on the Kansas River would impact the sand and gravel Dredgers operating on the river, as well as those business interests (ready mix, glass production, etc.) that depend on sand and gravel produced from the river. After existing stockpiles of Kansas River sand and gravel are exhausted, the Dredgers would be unable to satisfy market demand and contract requirements for customers whose business models are dependent on a steady source of high quality Kansas River sand and gravel. The No-Action Alternative would shift aggregate extraction to other sources of sand and gravel in order to meet the market demand. The development of alternative sources of sand and gravel associated with floodplain pit dredging and/or land-based quarry operations within the region, as well as the production and transportation of sand and gravel from regions located outside the Kansas River valley could result in substantive direct and indirect effects.

Under the No-Action Alternative, the elimination of commercial sand and gravel production from the Kansas River would require material to be obtained from alternate sources. Historically, sand and gravel dredged from the Kansas River and local reaches of the Missouri River have provided the majority of the sand and gravel used in the region's markets (use of Missouri River sand is primarily limited to the Kansas City metropolitan area market). Four distinct types of sand and gravel production have been identified as reasonable and feasible alternative sources of sand and gravel to replace material currently dredged from the Kansas River. Those sources include: Sand and gravel dredged from the Missouri River; Pit mines located in the Kansas and Missouri River floodplains; and Crushed rock manufactured from limestone quarries.

The Reduced Limit Alternative:

The Reduced Limit Alternative would establish a maximum cumulative annual dredging limit of 1,670,000 tons of material for all dredged reaches of the Kansas River. This restriction would limit the total annual amount of material dredged from the river to the average annual amount of sand load transported through the river system. The total annual dredging limit of 1,670,000 tons of material for the entire extent of the Kansas River would be further limited by individual river reaches as follows:

- No more than 1,260,000 tons of material could be extracted annually between RM 168.9 at Fort Riley and RM 126.9 at Wamego);
- No more than 1,210,000 tons of material could be extracted annually between RM 126.9 at Wamego and RM 63.8 at Lecompton;

- No more than 1,370,000 tons of material could be extracted annually between RM 63.8 at Lecompton and RM 31.0 at DeSoto; and
- No more than 1,670,000 tons of material could be extracted annually between RM 31.0 at DeSoto and the confluence of the Kansas and Missouri Rivers.
- The cumulative annual dredging limit of 1,670,000 tons of material would be the combined total dredging allowed from the four reaches described above.

The Reduced Limit Alternative is based on the long-term average annual sand load estimates developed at four locations on the river by Simons, Li, and Associates in its 1984 report entitled, "*Analysis of Channel Degradation and Bank Erosion in the Lower Kansas River*."

C. Description of the species and their habitat

1. Interior Least Tern: The interior population of the least tern (*Sterna antillarum*) was listed as endangered on June 27, 1985 (*50 Federal Register [FR] 21,784-21,792*) (USFWS, 1990). The USFWS has the authority to designate areas of critical habitat for federally listed endangered species, but has not done so for the interior least tern in Kansas.

The interior least tern is a migratory species recognized as having distinct interior and coastal populations. The interior population occurs along major rivers in the interior United States, including the Missouri and Mississippi Rivers and their major tributaries. The coastal populations breeding areas include the Pacific Coast south of the San Francisco Bay, the Gulf Coast, and the Atlantic Coast up to central Maine. The interior least tern winters in coastal areas of Central and South America.

The interior least tern is the smallest North American tern and is a colonial nester (Thompson, et al., 1997). Shallow nests, or scrapes, are built in sand or fine substrate gravel with sparse vegetation. A 2005 breeding bird distribution survey (Lott, 2006) found that, although interior least tern populations occurred over much of the species historical range, populations were limited to locations with suitable nesting habitat along rivers and lake shorelines. Colonies were also identified in sand pits, industrial sites, alkali flats, and on rooftops (Lott, 2006). The 2005 nationwide breeding bird distribution survey identified 17,591 interior least terns (Lott, 2006).

The interior least tern is primarily piscivorous (fish-eating) but may occasionally consume aquatic invertebrates (Thompson, et al., 1997). Least terns feed in shallow waters of rivers and reservoirs by hovering over and diving into the water to catch fish (USFWS, 1990).

The USFWS published a recovery plan for the interior population of least terns in 1990 (USFWS, 1990). The recovery plan identified threats to the species, which included the physical and functional loss of breeding habitat due to river management actions. Loss of habitat results from channelization, dredging, and impoundment of rivers, which eliminates nesting habitat. Nesting habitat is also functionally affected by managed water levels, which have the potential to inundate occupied or potential nesting habitat.

In 1996, the interior least tern was discovered nesting on several recently scoured sand bars in the Kansas River, in Wabaunsee County, between the cities of Manhattan and Wamego. This was the first documented account of least terns nesting on the Kansas River (Busby et al., 1997). In the same year USFWS documented a total of seven breeding pairs. In the following year, five breeding pairs of least terns were documented on the river. It is suspected that recent occurrences of least terns can be attributed to scour events following the 1993 flood, which removed riparian vegetation and created new sandbars (Busby et al., 1997).

From 1998 to 2005, 99 pairs of interior least terns nested on the Kansas River, with an average of 12 nesting pairs each year. These birds successfully fledged 47 juveniles (USACE, 2005). During both the 2006 and 2007 nesting seasons, there were 10 nesting pairs of terns, resulting in an average of 5.5 fledged juveniles each year. No successful nesting of least terns has been documented on the Kansas River since the 2009 season. The following table graphically represents the survey and monitoring data for the least terns on the Kansas River from 1998 through the 2015 seasons. Nest monitoring during the 1998-2007 period showed that least tern distribution on the Kansas River was concentrated between RMs 112 and 119 with occasional occurrences further upstream near RM 129 and RM 145, and also the Jeffery Energy Center, located 6 miles north of the Kansas River near Belvue, Kansas.

Least Tern Population Survey & Monitoring for the Kansas River

YEAR	NESTING PAIRS	NESTS	NEST HATCHED	NEST SUCCESS (Percent)	EGGS	EGGS HATCHED	TOTAL FLEDGE	FLEDGE RATIO
1998	18						14	0.78
1999	7						0	0.00
2000	11	23	12	52	58	30	15	1.36
2001	6	7	2	29	15	5	3	0.50
2002	17	39	4	10	87	10	7	0.41
2003	19	36	7	19	80	17	5	0.26
2004	16	31	2	6	75	4	0	0.00
2005	5	18	5	28	37	9	3	0.60
2006	10	13					6	1.60
2007	10	12	8	75	25		5	0.50
2008		4			9			
2009		1			3			
2010	0							
2011	0							
2012	No data							
2013	0							
2014	0							
2015	No data							
TOTALS	119	184					58	

2. Piping Plover: The piping plover (*Charadrius melodus*) was federally listed on December 11, 1985 (50 FR, 50726–50734) (USFWS, 1988). The USFWS has the authority to designate areas of critical habitat for federally listed endangered species, but has not done so for piping plover. The piping plover is a migratory species recognized as having distinct interior and coastal populations. The interior populations include the Great Lake–Big Rivers population and those that occur in the Great Plains region. This Great Plains population breeds along major rivers in the interior United States, including the Missouri and Mississippi Rivers and their major tributaries. The coastal populations nest on sandy substrate on barrier islands, beaches, and estuaries on the Atlantic Coast from North Carolina to Maine. The piping plover winters on the Atlantic and Gulf Coasts from North Carolina to Texas, Mexico, Central America, and the Caribbean.

The piping plover is a small (6 to 7 inches long) whitish plover the color of dry sand. It has a narrow black band above the forehead which reaches from eye to eye, a complete or incomplete dark ring around the neck, and yellow legs. In summer, the bill is yellow with a dark tip. In winter the bill and legs are dark.

Historical breeding habitat primarily consisted of unvegetated sand bars within major river systems, alkali wetlands, and reservoir and lake shorelines with suitable nesting substrate (USFWS, 1988). Piping plovers feed on freshwater and marine benthic invertebrates and terrestrial invertebrates (Elliot-Smith & Haig, 2007) found in shallow water near the shoreline or on beaches (USFWS, 1988). They require sparsely vegetated shallow wetlands and open beaches for foraging near sparsely vegetated islands or sandbars adjacent to or within streams and impoundments that are suitable nesting habitat. Piping plover nests consist of shallow scrapes on sand bars, beaches, or shorelines. Nesting has been recorded on sand bars along the Kansas River. Piping plovers may occasionally occur throughout the state, where suitable habitat is found.

The USFWS published a recovery plan for the Great Lakes and Great Plains piping plover (USFWS, 1988). The Great Plains region, as defined for the recovery plan, did not include rivers in Kansas. The recovery plan identified threats to this species as the physical and functional loss of breeding habitat due to recreational activities and river management actions. Recreational effects to habitat include vehicular and pedestrian traffic in suitable nesting sites. Channelization, dredging, and impoundment of rivers can also eliminate sand bar nesting habitat.

Two breeding pairs of piping plover were documented on the Kansas River in 1996 by researchers (Busby et al., 1997). These were the first documented piping plover nest sites ever recorded in Kansas (Boyd & Olsen, 2006) (USACE, 2006). Between 1998 and 2015, 23 pairs of piping plovers nested on the Kansas River with an average of two to three pairs nesting on the river annually through 2006. No documented piping plover nesting on the Kansas River occurred during the period of 2007 through 2015 although the USFWS documented the presence of a few individuals along the river during summer surveys in 2013 and 2014.

The USFWS 1998 nationwide recovery plan goal was to establish 465 piping plover breeding pairs throughout their range. The number of breeding pairs has increased steadily since 1998, until it surpassed the recovery plan goal in 2005. The number of breeding pairs has fluctuated

below the recovery plan goal since 2005, but has been approximately three times the baseline number of breeding pairs identified in the recovery plan (USFWS, 2009a) (USFWS, 2009b). The data shown in the following table illustrates the distribution and number of piping plovers on the Kansas River system.

Piping Plover Population Survey & Monitoring for the Kansas River.								
YEAR	NESTING PAIRS	NESTS	NEST HATCHED	NEST SUCCESS (Percent)	EGGS	EGGS HATCHED	TOTAL FLEDGE	FLEDGE RATIO
1998	3						6	2.00
1999	2						0	0.00
2000	2	2	2	100	7	7	6	3.00
2001	2	3	1	33	9	4	0	0.00
2002	3	4	2	50	14	4	4	1.33
2003	4	6	1	17	23	3	0	0.00
2004	2	3	2	67	10	8	3	1.50
2005	3	5	3	60	17	12	1	0.33
2006	2	4					5	2.5
2007	0							
2008	0							
2009	0							
2010	0							
2011	0							
2012	No data							
2013	0							
2014	0							
2015	No data							
2016	No data							
TOTALS	23	27	11		80	38	25	

Least tern and piping plover combined nesting on the Kansas River produced only 0.2 percent of the total chicks fledged within the Missouri River Basin population from 2000 to 2005. This low level of productivity contributed little to the overall basin or national population for recovery of the species.

3. Pallid Sturgeon: The pallid sturgeon *(Scaphirhyncus albus)* was listed as endangered on September 6, 1990 (55 FR 36641). The USFWS has the authority to designate areas of critical habitat for federally listed endangered species, but has not done so for the pallid sturgeon. The pallid sturgeon may reach a length of 60 inches. However, no Kansas specimens have been recorded that were longer than 30 inches. The belly is entirely naked of scales and the barbels across the snout are unequal in length with the outer pair being longer. The pallid sturgeon prefers the main channel of large excessively turbid rivers and frequent areas with swift currents over a firm sand substrate.

The pallid sturgeon is morphologically adapted to life in swift waters on the bottom of large, turbid, free-flowing rivers (Kallemeyn, 1983 and Gilbraith et al., 1988). This species evolved in

the diverse environments of the Missouri and Mississippi Rivers where the floodplain, backwaters, chutes, sloughs, islands, sand bars, and main channel provided numerous microhabitats (USFWS, 1993). Historically, these habitats were subject to constant change. Since the 1950s, construction of dams on the upper Missouri River has resulted in dramatic long-term changes to the character of the river (Busby et al., 1997). The construction of dams in the Kansas River basin has also changed the character of the Kansas River.

According to the USFWS (2003), the pallid sturgeon has been captured in tributary mouths, over sandbars, along main channel borders, and in deep holes. Tagged wild pallid sturgeon have been found to move short distances up some tributaries, which suggests that pallid sturgeon use tributaries opportunistically for feeding when conditions allow (DeLonay, et al., 2009). In addition, small pallid sturgeon have been captured in off-channel shallow-water habitat areas (USFWS, 2003).

Pallid sturgeon primarily use main channel, secondary channel, and channel border habitats throughout their range. The most recent information suggests that the species spend the majority of their time at or near the river bottom where relative depths exceed 75 percent of the maximum channel cross section as expressed as a percent. (USFWS 2014 Recovery Plan). Juvenile and adult pallid sturgeon are rarely observed in habitats lacking flowing water, such as backwaters or sloughs. DeLonay and Little (2002) reported that sturgeon were often found in locations of turbulence where currents vary by as much as 1.5 meters per second (m/s). They also found that sharp changes in bottom relief and the position of the channel thalweg appear to have greater influence over sturgeon location than depth, substrate, or velocity. In Missouri River sampling efforts of newly released pallid sturgeon hatchery larvae, the concentration increased as sampled from the inside bend towards the outside bend across the river channel with the highest concentration found near the bottom in the high-velocity thalweg of the channel (Braaten et al. 2010).

Population monitoring for the species in the lower Kansas River is accomplished by the Missouri Department of Conservation (MDC). Data regarding pallid collection and surveys for the Kansas River are found in Annual Reports “Pallid Sturgeon Population Assessment and Associated Fish Community Monitoring for the Missouri River: Segment 11”. These reports are prepared in association with the Missouri River Recovery Program. The study area for Segment 11 described in the report is restricted to the Kansas River from Lawrence, Kansas to the confluence with the Missouri River. The study area is divided into 22 separate bends in the river at locations between the mouth at RM 0 and Bowersock Dam at RM 52.1. Since sampling in this area began in 2006, a total of 17 fish have been captured within the 52-mile sampling reach and all were restricted to areas below the Johnson County WaterOne weir at approximate RM 14.7. The capture of a pallid sturgeon in 2007 during sampling represented the first capture of a pallid sturgeon in the Kansas River since 1952 when five were caught just downstream of Bowersock Dam at Lawrence, Kansas. Only one wild pallid sturgeon has been captured in the Kansas River since the beginning of sampling by the MDC and that occurred during surveys conducted in 2011.

Within the State of Kansas, pallid sturgeon are mainly restricted to the main stem of the Missouri River. It is questionable if the Kansas River provides permanent suitable pallid sturgeon habitat (KDWPT, 2011b). Noteworthy however, is the documentation of the shovelnose sturgeon, which

is often considered a surrogate for pallid sturgeon. The MDC has captured 983 adult shovelnose sturgeon from the Kansas River, both below and above the WaterOne weir. All but five of 23 of those young-of-year sturgeon sampled were found above the WaterOne weir. Some of these sturgeon were too small to determine species by external characteristics alone but were most likely shovelnose sturgeon due to the high number of shovelnose compared to pallid sturgeon in the river (Whiteman, Winders, Niswonger and Travnichek, 2012).

In 1993, the USFWS released the Pallid Sturgeon Recovery Plan (USFWS, 1993). The short-term recovery objective was to prevent species extinction by establishing three captive broodstock populations in separate hatcheries. The long-term objectives were to downlist and, eventually, delist the species through protection, habitat restoration, and propagation activities by 2040 (USFWS, 1993). The Pallid Sturgeon Recovery Plan identified six Recovery Priority Management Areas for implementation of recovery tasks based on the most recent pallid sturgeon records of occurrence and the potential of these areas to contribute to the recovery of the species. Recovery-Priority Management Area 4 is generally the Missouri River below Gavins Point Dam to its confluence with the Mississippi River and specifically the areas 20 miles upstream and downstream of the confluences of the Platte, Kansas, and Osage Rivers.

The USFWS Revised Recovery Plan for Pallid Sturgeon published in 2014, states that the status of the species is currently stable but that the pallid sturgeon continues to be affected by a range of threats. These threats were identified as habitat alteration, water quality, entrainment (Including suction-based dredging operation), climate change, overutilization, disease or predation, inadequacy of existing regulatory mechanisms, effects of new energy development, hybridization with shovelnose sturgeon and invasive species.

4. Topeka shiner: This fish species is generally associated with habitats found in small, headwater and low order streams in a prairie environment that have good water quality values, riffle-pool complexes and cool water temperatures. These streams generally exhibit intermittent flow during the summer; however, pools are maintained by springs or groundwater percolation. The substrates of these streams are most often clean gravel; however, bedrock and clay hardpan overlain by a thin silt layer are not uncommon. Topeka shiners most often occur in pool and run areas. They typically are found in higher number and spawn in deeper pools within these streams having cobble, gravel and sand bottoms. The Kansas River while consisting of mainly a sand bottom, does not readily contain many of the other preferred characteristics of the species and does not contain any critical habitat for the species.

The Kansas and Missouri Rivers are not considered suitable for Topeka shiner habitat. In Kansas, the Topeka shiner is known to occur in Mission Creek main stem in Shawnee County from where it crosses State Highway 4 (more than 8 miles from the Kansas River) upstream into Wabaunsee County, in Mill Creek and its tributaries in Wabaunsee County from where it crosses I-70 (more than 22 miles from the Kansas River) upstream to where it crosses State Highway 99, and in Deep Creek main stem in Riley County from where it crosses the Riley/Wabaunsee County line (1.5 miles from the Kansas River) upstream to I-70. Two feet of bed degradation on the Kansas River is not likely to cause headcutting up to these reaches of these streams.

5. Northern Long-eared Bat: The northern long-eared bat (*Myotis septentrionalis*) was listed as threatened species in Kansas on May 4, 2015. No critical habitat has been designated for this species. It is a medium-sized bat with a body length between 3 to 3.7 inches and a wingspan of up to 10 inches. Color can vary between medium to dark brown on the back and are normally a pale-brown on the underside. This bat is distinguished by its long ears, particularly as compared to other bats within the genus, *Myotis*. They emerge at dusk and fly through the understory of forested areas feeding on moths, flies and other insects which they can catch either while in flight using echolocation or by snatching resting insects from vegetation. The northern long-eared bat is found across much of the eastern and north central United States and all Canadian provinces from the Atlantic coast west to the southern Northwest Territories and eastern British Columbia (USFWS, 2015).

Northern long-eared bats begin breeding in late summer or early fall when males begin swarming near hibernacula (primarily caves). After copulation, females store sperm during hibernation until spring, when they emerge from their hibernacula, ovulate, and the stored sperm fertilizes an egg. This strategy is called delayed fertilization. After fertilization, pregnant females migrate to summer areas where they roost in small colonies and give birth to a single pup. The bats may roost singly or in colonies underneath bark, in cavities, or in crevices of both live and dead trees (USFWS, 2015). Males and non-reproductive females may also roost in cooler places, like caves and mines. This bat seems opportunistic in selecting roosts, using tree species based on suitability to retain bark or provide cavities or crevices. It has also been found, albeit rarely, roosting in structures like barns and sheds. Adult northern long-eared bats can live up to 19 years (USFWS, 2015).

The most immediate threat to this species is the disease, white-nose syndrome. If this disease had not emerged, it is unlikely the northern long-eared bat would be experiencing such a dramatic population decline. Symptoms were first observed in New York in 2006 and the disease has spread rapidly throughout the northern long-eared bat's most common historical range. A recent estimated number of northern long-eared bats obtained from hibernacula counts show a population decline of up to 99 percent in the Northeastern United States. Although there is uncertainty about the rate that white-nose syndrome disease will spread, it is expected to stretch throughout the species' range (USFWS, 2015).

D. Environmental Baseline

1. Interior Least Tern: This species population was historically restricted to areas along major rivers located from the gulf areas of Texas to Montana. The species migrated north during the spring and nesting on sandbars and shorelines adjacent to these rivers. After breeding, nesting and fledging young, the species migrated south in the fall wintering in the gulf and southeastern coast of the U.S. The species generally nests in colonies of several separate breeding pairs. Farming, recreational activities and the construction of reservoir systems and navigation modifications made to these river systems drastically changed the type and availability of habitat for nesting. There is no critical habitat for this species within the State of Kansas. Productivity on the Kansas River between the years of 2000 through 2005 was very minor with least tern nests comprising only 1.9% – 7.2% of all nests within the larger Missouri River basin. The number of fledglings within the basin during this period comprised 1.4% for terns. In 1996, the interior least tern was discovered nesting on several recently scoured sand bars in the Kansas River, in

Wabaunsee County, between the cities of Manhattan and Wamego. This was the first documented account of least terns nesting on the Kansas River. Nesting on the Kansas River between 1996 and 2005 primarily occurred upstream of RM 110 well upstream of all the proposed dredging areas. Two nests during that time period were documented below Topeka on the river but no nesting activity has been documented on the Kansas River since 2009 for the interior least tern. In 1994, a population of least terns were discovered nesting on fly-ash spoil piles located at the Jeffrey Energy Center located in Pottawatomie County Kansas. This site is located approximately 6 miles north of the Kansas River near RM 120 near Belvue, Kansas.

The closest documented nesting activity by this species on the River occurred approximately 20 miles from the nearest proposed dredging site. No nesting by interior least tern has been observed on the Kansas River since 2009. No nesting disturbances or loss related to the proposed work has been documented on the Kansas River.

2. Piping Plover: Piping plovers are summer migrants within the State of Kansas. Plovers may utilize bare sandy substrate or sparsely vegetated similar habitats found primarily in central and western counties of the state for foraging and nesting. The species migrates into the state during the spring and nesting usually occurs on sandbars and shorelines adjacent to larger riverine systems. After breeding, nesting and fledging young, the species migrate south in the fall wintering in the gulf and southeastern coast of the U.S. Farming, recreational activities and the construction of reservoir systems and navigation modifications made to these river systems drastically changed the type and availability of habitat for nesting. Nesting on the Kansas River and adjacent floodplain may include sandbars, shorelines of impoundments, saline flats and other similar areas providing suitable habitat. The first documented nesting of this species occurred on sandbars along the Kansas River in 1996. The following counties contain potential habitat for piping plover: Douglas, Geary, Jefferson, Johnson, Leavenworth, Pottawatomie, Riley, Shawnee, Wabaunsee, and Wyandotte. Productivity for plover on the river from 2000 through 2005 was very minor with nests comprising between 0.4 – 0.9 % of all nests within the larger Missouri River basin. The number of fledglings within the basin during this period comprised 0.2% of the basin total. All nesting during that time frame occurred well upstream of all the proposed dredging areas, including those near Topeka, Kansas.

The closest documented nesting activity by this species on the River occurred approximately 20 miles from the nearest proposed dredging site. No nesting by piping plover has been observed on the Kansas River since 2006. No nesting disturbances or loss related to the proposed work has been documented on the Kansas River.

3. Pallid Sturgeon: The construction of flood control dams within the Kansas River basin and the resulting regulation of flows on the Kansas River have dramatically changed the hydro-period and habitat available to this species. Industrial and commercial development on the lower portion of the river and the construction of Bowersock Dam near Lawrence, Kansas in 1874 as well as the construction of several weirs on the river between the cities of Topeka and Kansas City, Kansas have blocked further natural migration of the species within the Kansas River. The Revised Recovery Plan for Pallid Sturgeon published in 2014, states that the status of the species is currently stable but that the pallid sturgeon continues to be affected by a range of threats. These threats were identified as habitat alteration, water quality, entrainment (Including suction-based

dredging operations), climate change, overutilization, disease or predation, inadequacy of existing regulatory mechanisms, effects of new energy development, hybridization with shovelnose sturgeon and invasive species.

Pallid sturgeon populations within the State of Kansas includes only the Missouri River and Kansas River. The species has been documented in recent surveys within the Kansas River and below the Johnson County WaterOne weir located at approximately RM 15. The Missouri Department of Conservation (MDC) has annually sampled both below and above the weir since 2006. A total of 18 captures were recorded through the 2015 sampling season. All fish were found in the lower extent of the river below the Johnson County WaterOne weir and the majority were captured within ½ mile of the confluence with the Missouri River. The following table from the 2015 Annual Report BO (citation) for the Missouri River shows captures for the species through 2014 using both standard and non-standard methods. Segment 11 represents the Kansas River.

Table 17. Total number of pallid sturgeon captured through standard and non-standard sampling by year through the PSPAP

	Year												
Segment	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Total
2				14	22	16	35	43	71	166	101	123	591
3				49	92	130	190	180	215	253	260	166	1535
4			30	25	27	99	148	721	235	318	340	439	2382
5	41	22	25	15	40	14	49	61	60	42	53	18	440
6	10	6	19	35	67	88	128	89	19	54	93	48	656
7			1	9	83	69	48	198	123	347	184	82	1144
8			15	17	34	104	123	83	83	61	86	96	702
9	3	11	13	31	32	235	314	251	288	171	249	328	1926
10			4	11	10	47	109	56	43	46	49	97	472
*** 11					1		4	7	3	1		1	17
13	4	18	26	7	38	79	68	41	70	35	44	32	462
14	3	4	12	9	19	22	34	23	28	36	19	19	228
Total	61	61	145	222	465	903	1250	1753	1238	1530	1478	1449	10555

Based on existing information, there appears to be no basis for concluding that disturbances from noise or turbidity resulting from commercial sand and gravel dredging have an effect upon pallid sturgeon. There is little evidence of avoidance of dredging operations by pallid sturgeon (e.g., due to disturbance, noise, or turbidity), and there is little indication of effects of commercial dredging operations on spawning movements or on spawning habitats. The effects of dredging on pallid sturgeon foraging would likely be limited and temporary, given that the proportion of the total foraging area of the river bottom dredged would be low, and the probability that alteration of the bottom substrates may produce equally productive fish and invertebrate habitats and greater substrate diversity.

4. Topeka shiner: In Kansas, this fish species historically occurred in small headwater streams

located within the watersheds of the Kansas, Big Blue, Saline, Republican, Arkansas and Cottonwood Rivers. A recovery plan (Kansas Plan) for the species was developed by the Kansas Department of Wildlife and Parks (KDWP) through the Kansas Nongame and Endangered Species Conservation Act of 1975. In 1999, the agency listed the species as threatened and designated State critical habitat. A total of 68 stream segments containing 650 stream miles were designated by KDWP. Due to the management actions of the State of Kansas in protecting and working towards the recovery of the species through management plans, the USFWS excluded from the critical habitat listing all areas of known or suitable habitat for the shiner within the State of Kansas in accordance with section 4(b)(2) of the Endangered Species Act. The primary characteristics for the species include stream habitats containing permanent or intermittent flow, side channel pools and oxbow areas and low turbidity and good water quality parameters. Spawning areas typically include stream pools and runs having water velocities of less than 0.5 meters/second and depths ranging from 0.1 to 2 meters. Critical habitat for the species was designated in 2004 (*Federal Register Vol. 69, No. 143, July 27, 2004)* and included 83 stream segments within a total of 836 stream miles located at 57 sites in Minnesota, 25 in Iowa and 1 in Nebraska. Major threats to the species include sedimentation caused by agricultural practices and road construction activities. Suggested measures to reduce adverse effects to the species include the installation of grassed waterways, protection of riparian buffer areas and best management practices to control erosion and sedimentation in stream channels resulting from those activities at construction sites and from ditch maintenance. No dredging is proposed near tributaries historically providing habitat or the presence of this species.

5. Northern Long-eared Bat: This bat species can be found within 39 states including Kansas and Missouri. The most immediate threat to this species is the disease, white-nose syndrome. If this disease had not emerged, it is unlikely the northern long-eared bat would be experiencing such a dramatic population decline. Symptoms were first observed in New York in 2006 and the disease has spread rapidly throughout the northern long-eared bat's most common historical range. The State of Kansas contains potential habitat for summer roosting and maternity of the species but currently these sites are known to exist in only a few locations. Studies done in association with preparation of the Kansas Mammal Atlas project indicate the presence of this species within Ellis, Graham, Leavenworth, Marshall, Osborne, Phillips, Rooks, Russell and Washington counties in Kansas. All upland processing sites are either currently in use or formerly used areas that do not contain suitable habitat for the species

E. Effects of the Action: Include discussion of direct and indirect effects relative to all species.

1. Direct Effects - Those effects caused by the proposed action and occur at the same time.

Interior Least Tern: Potential direct effects to the interior least tern could occur as a result of visual or noise disturbances to active nests or the removal of active nesting and foraging habitat located on sandbars within the Kansas River. The closest documented nesting activity by this species on the River occurred approximately 20 miles from the nearest proposed dredging site. No nesting by the Interior Least Tern has been observed on the Kansas River since 2009. No nesting disturbances or loss related to the proposed work has been documented on the Kansas River. Direct effects to this species would be avoided by special condition of all permits issued regarding endangered species. Future nesting by this species within one-mile of dredging operations would require re-initiation of consultation under Section 7 of the Endangered Species

Act and a special condition of the permits would require this to take place if nesting occurred within 1 mile of an operational dredge.

Piping Plover: Potential direct effects to the piping plover could occur as a result of visual or noise disturbances to active nests or the removal of active nesting and foraging habitat located on sandbars within the Kansas River. The closest documented nesting activity by this species on the River occurred approximately 20 miles from the nearest proposed dredging site. No nesting by piping plover has been observed on the Kansas River since 2006. No nesting disturbances or loss related to the proposed work has been documented on the Kansas River. Direct effects to this species would be avoided by special condition of all permits issued regarding endangered species. Future nesting by this species within one-mile of dredging operations would require re-initiation of consultation under Section 7 of the Endangered Species Act and a special condition of the permits would require this to take place if nesting occurred within 1 mile of an operational dredge.

The USACE recognizes the importance of protecting endangered species and does not expect that the proposed work or alternatives are likely to adversely impact either of these two species based upon productivity data gathered from 1998 through 2015. The closest proposed dredge site is a distance of approximately 21 RM downstream of historical nesting sites and as such would not indicate that any adverse direct impact is likely to occur as a result of the proposed work.

Pallid Sturgeon:

i. Entrainment

During dredging, the dredging head (with or without a cutter head) and a suction line are mounted on a boom (called a ladder) that is lowered to the river bed. The dredging head is plunged in into the sediment and covered almost entirely. Sediment is removed from the river bottom until the suction head comes into contact with hard materials (such as bedrock, large rock substrates, or consolidated sediment layers) or cannot be extended further—at which time the suction head does not advance further into the river bottom, and the amount of bottom sediments sucked into the suction head is greatly reduced. The dredge boom is then raised, the dredge is relocated, and excavation recommences.

Few answers and much uncertainty are present about the entrainment rate of pallid sturgeon (USFWS 2005) and the potential population-level effects of entrainment. In regard to the entrainment rate, most studies and the life history of pallid sturgeon suggest that larval and early juvenile would be the life stages most susceptible to entrainment (Peters and Parham 2008). This is because they have less swimming ability and swimming endurance, and because they drift somewhat passively over long distances as they develop and increase their swimming ability (Hoover et al. 2005).

Entrainment studies conducted by Hoover et al. (2005) found that many pelagic, free-swimming fish with an escape speed equal to or greater than the intake velocity and those that are able to orient themselves with the flow would have a higher likelihood of escape, compared to slow-moving fish that cannot orient themselves toward the dredge flow field.

A study that evaluated entrainment of white sturgeon found that similar variables dictated the rate of escape for different life history stages of that species (Boyson and Hoover 2009). Boyson and Hoover (2009) also found that smaller fish as a group, compared to larger juveniles and adults, had less endurance and slower swimming speeds, which increased their risk of entrainment.

While larvae and young juvenile pallid sturgeon in the lower Missouri River (LOMR) may be susceptible to entrainment, and that entrainment may occur at some level, the entrainment rate and total number entrained in the LOMR cannot be estimated with accuracy due to lack of data. Some of the information needed to provide estimates of entrainment includes spawning locations, density of drifting larvae at various points within the water column, drift distance, diurnal drift patterns, and efficiency of dredge pumps in entraining water from various locations in the water column. Reine and Clark (1998) concluded that studies to date illustrate the difficulties in determining precise estimates of absolute entrainment rates and have seldom been able to determine population-level consequences with any degree of confidence.

In 2011 the USACE, with the help of Holliday Sand and Gravel Company LLC. (Holliday), investigated the low likelihood of dredging entrainment resulting from commercial dredging operations on the Missouri River (USACE 2011). This was estimated by comparing the amount of water within the dredging slurry versus the normal discharge rates in the Missouri River. Water intake rates are predicated upon pumping rates and pump sizes. Holliday uses a Thomas P46 Dredge Pump capable of pumping 10,000 gallons per minute at 85 feet of total discharge head. The desired slurry for this setup is approximately 80% water by volume. Converting this value to cubic feet per second (cfs), the intake rate of Holliday's pump is 17.8 cfs. A typical Kansas River discharge near the WaterOne Weir, where pallid sturgeon are believed to occur, is approximately 8,000 cfs. Thus, the intake rates from Holliday's pump and dredge represent 0.2 % of the entire Kansas River flow moving past the dredge at a given point in time. There is no substantial difference in pump sizes used amongst the Kansas River dredgers for the proposed action; these intake rates are an example of a pump running at optimal performance, continuously, which seldom occurs. The water being processed while dredging is underway represents a fraction of the water in the Missouri River system making the likelihood of dredging entrainment improbably low for the proposed action, thus minor and discountable.

Topeka shiner: No direct effect to Topeka shiner are expected to occur as a result of the proposed action because the scope of the work will occur outside areas where the species is known to occur.

Northern Long-eared Bat: No direct effects to the Northern long-eared bat are expected to occur as a result of the proposed action because the species is terrestrial in nature and the proposed dredging operations would not impact suitable roosting habitat or foraging areas.

2. Indirect Effects – Effects resulting from the proposed action that are later in time, but are still reasonably certain to occur.

Interior Least Tern: Potential indirect effects to the interior least tern and piping plover are primarily related to the loss of habitat due to bed degradation, the expansion or construction of public roads and other supporting infrastructure in adjacent floodplain areas. Minor bed degradation could reduce sandbar stability and abundance in the river channel. In turn, impacts to shallow water habitat, nesting and foraging areas associated with sandbars in some areas of the river could potentially occur as a result of the proposed work.

The Kansas River, especially the reaches above Topeka, Kansas contain an abundance of exposed bare sandbar substrate each year that could provide potential habitat for the species. The proposed work is not expected to measurably influence or impact the presence or abundance of this potential nesting or foraging habitat.

The closest documented nesting activity by this species on the River occurred approximately 20 miles from the nearest proposed dredging site. No nesting by the species has been observed on the Kansas River since 2009. No nesting disturbances or loss related to the proposed work has been documented on the Kansas River. Future nesting by this species within one-mile of a dredging operation would require re-initiation of consultation under Section 7 of the Endangered Species Act and a special condition of the permits would require this to take place if nesting occurred within 1 mile of an operational dredge.

Piping Plover: Potential indirect effects to the interior least tern and piping plover are primarily related to the loss of habitat due to bed degradation and the expansion or construction of public roads and other supporting infrastructure in adjacent floodplain areas. Minor bed degradation could reduce sandbar stability and abundance in the river channel. In turn, impacts to shallow water habitat, nesting and foraging areas associated with sandbars in some areas of the river could potentially occur as a result of the proposed work.

The Kansas River, especially the reaches above Topeka, Kansas contain an abundance of exposed bare sandbar substrate each year that could provide potential habitat for the species. The proposed work is not expected to measurably influence or impact the presence or abundance of this potential nesting or foraging habitat.

The closest documented nesting activity by this species on the River occurred approximately 20 miles from the nearest proposed dredging site. No nesting by the species has been observed on the Kansas River since 2009. No nesting disturbances or loss related to the proposed work has been documented on the Kansas River. Future nesting by this species within one-mile of a dredging operation would require re-initiation of consultation under Section 7 of the Endangered Species Act and a special condition of the permits would require this to take place if nesting occurred within 1 mile of an operational dredge.

The USACE recognizes the importance of protecting endangered species and does not expect that the proposed work or alternatives are likely to adversely impact either of these two species based upon productivity data gathered from 1998 through 2015. The closest proposed dredge site is a distance of approximately 21 RM downstream of historical nesting sites and as such would not indicate that any adverse indirect impact is likely to occur as a result of the work for these two

species.

Pallid Sturgeon:

i. Sound and Noise

Fish are capable of producing and detecting sounds, and these sounds affect and are used in a wide variety of fish behaviors (Zelick et al. 1999). Fish detect and respond to sound, using its cues to hunt for prey, to avoid predators, and for social interaction. Sound production has been recently discovered in several species of sturgeon (Johnston and Phillips 2003). Pallid and shovelnose sturgeon produce sounds during the breeding season. In a naturally turbid environment such as the Missouri River, sound cues may play a significant role in communication.

Underwater human-caused noise has also been documented to influence fish behavior in general (Nightingale and Simenstad 2001). Exposure to sound includes a measure of both the received level and the duration of the signal. For example, the received noise level can be expressed in terms of acoustic pressure, particle velocity, or intensity (energy flux), which all vary with time over the duration of the signal. Most noise effects on fishes have been observed in situations of intense energy flux, such as construction-related pile driving or explosions, or propeller and engine noise from high-speed boats.

Dredging operations generally produce lower levels of sound energy over prolonged periods (Nightingale and Simenstad 2001). Nightingale and Simenstad (2001) conducted a literature review of potential dredging-related noise effects on several fish species. The authors concluded that further research into the effects of noises specific to dredging are required to determine the potential effects of dredging noise on fishes. However, noise from the operation of dredges is expected to result in avoidance of the dredging area by fish species sensitive to noise over the duration of the activity.

Sturgeon have been reported to hear sound frequencies in the range of sounds produced by dredging operations (J. J. Hoover, unpublished data as cited in Boyson and Hoover 2009); and it has been reported that dredging sounds could attract, disperse, or cause sturgeon to rise in the water column (Boyson and Hoover 2009). However, using radio telemetry, adult pallid sturgeon have been observed near dredging boats, which suggests that this species may not be particularly sensitive to dredging noise (DeLonay pers. comm.).

Based on the existing information, there appears to be no basis for concluding that noise from commercial sand and gravel dredging would affect pallid sturgeon.

ii. Suspended Sediment and Turbidity

Native aquatic species, such as pallid sturgeon, evolved in the Missouri and Kansas River under historically turbid conditions. USACE sampling below a cutter-head dredge in the Missouri River near the confluence of the Kansas and Missouri Rivers demonstrated that suspended solid concentrations typically returned to background concentrations within

approximately 1,300 feet (USACE 1990). The size of the elevated suspended sediment plume downstream of the dredge depends on a variety of factors, including the hydrodynamic conditions at the dredging site, the type of dredge used, operational methods, and sediment type. Dredging results in localized elevation of suspended sediment at and downstream of the dredges. However, the change in turbidity is anticipated to be short term and not substantially different from normally occurring levels under current conditions in the Kansas River. Studies conducted by the USACE found that most organisms evaluated were relatively insensitive to the effects of sediment suspensions in the water and that, in general, dredging-induced turbidity is probably not of major environmental concern in most cases (USACE 1978).

Increased suspended sediment plumes downstream of the dredges would be expected under the proposed action, although they are expected to be localized as described above. Pallid sturgeon are adapted to highly turbid waters and use turbidity as a cover habitat element.

iii. Habitat

Based on the current understanding of pallid sturgeon spawning habitats, commercial dredging is very unlikely to result in disturbance of spawning habitats. Commercial dredging occurs predominantly in the thalweg areas—in areas with sandy bottoms. Spawning is thought to occur over hard substrates of gravel or cobble with moderate flow.

Removal of substrate and benthic organisms at the dredging sites by entrainment would result in immediate localized effects on the benthic community (USACE 1998a, Harvey and Lisle 1998), but recovery of macroinvertebrates after such disturbances are typically rapid. This potential effect on pallid sturgeon would be confined primarily to the mid-channel areas where dredging would be allowed and to the area within the dredge suction field. The effects on pallid sturgeon foraging would likely be limited and temporary, given the fact that the proportion of the total foraging area of the river bottom dredged would be low, and the probability that alterations of the bottom substrates may produce equally productive fish and invertebrate habitats and greater substrate diversity.

River bed degradation could affect the long-term stability and functioning of shallow water habitat (SWH), but the relationship between bed degradation and sediment transport rates and SWH formation is only poorly understood. Despite ongoing research and studies, there are no data or studies that address the relationship between the SWH and reach-scale changes in bed elevation, or to general or bed elevation changes (either aggradation or degradation). This paucity of information makes it difficult to assess the potential impacts of degradation or channel change on SWH. For the purposes of the effects analysis, it was assumed that river bed degradation, in conjunction with the local (reach-scale) removal of sand and gravel, could affect the quantity, connectivity, and distribution of SWH in the Kansas River.

Because the linkage between river bed degradation, sediment availability, and the quantity of SWH has not been quantified, levels of potential river bed degradation have been used in the past (USACE 2011) as a proxy for the potential for changes in the quantities of SWH.

Under the proposed action, dredging would be kept to levels that would result in bed degradation averages of less than two feet in dredging reaches. Bed changes of this magnitude are believed to be in line with the natural variability of a large riverine system (USACE 2011) and are not expected to negatively affect species adept to living in these variable environments. In addition, the Kansas River is not believed to offer suitable habitat for spawning and thus not likely to have the presence of larval or juvenile pallid sturgeon or the presence of rearing or refugia habitat.

Topeka shiner: No indirect effects to Topeka shiner are expected to occur as a result of the proposed action.

Northern Long-eared Bat: No indirect effects to the Northern long-eared bat are expected to occur as a result of the proposed action.

3. Cumulative Effects

Cumulative effects include the effects of future state, tribal, local or private actions that are reasonably certain to occur in the Action Area, and are considered in the biological assessment. Future federal actions that are unrelated to the proposed action are not considered in this section because they are subject to separate consultation(s) under Section 7 of the Act. The USACE is unaware of any additional significant state, tribal, local or private actions that are reasonably certain to occur in the action area producing cumulative effects beyond those ongoing effects already considered herein.

F. Determination of Effect

Interior Least Tern:

Direct and indirect effects associated with the proposed work or the potential loss of habitat associated with the work to the interior least tern are not anticipated to be appreciable. The proposed work would be subject to a comprehensive Regulatory Plan and special condition of the permits to control bed degradation and limit visual and noise disturbances from the work. The closest documented nesting activity by this species on the River occurred approximately 20 miles from the nearest proposed dredging site. No nesting by the Interior Least Tern has been observed on the Kansas River since 2009. No nesting disturbances or loss related to the proposed work has been documented on the Kansas River. Existing dredging permits require notification and re-initiation of informal consultation for this species if nesting activity occurs within three miles of a dredging operation. This buffer is proposed to be lowered to a distance of one mile based upon a lack of nesting activity by the species on the Kansas River in over 10 years and our understanding of nest site selection, disturbance and abandonment by the species from current literature and survey and monitoring work on the Central Platte River in Nebraska and the Missouri River. We conclude that Kansas River dredging may affect, but is not likely to adversely affect the interior least tern.

Piping Plover:

Direct and indirect effects associated with the proposed work or the potential loss of habitat associated with the work to the piping plover are not anticipated to be appreciable. The proposed work would be subject to a comprehensive Regulatory Plan and special condition of the permits to control bed degradation and limit visual and noise disturbances from the work. The closest

documented nesting activity by this species on the River occurred approximately 20 miles from the nearest proposed dredging site. No nesting by piping plover has been observed on the Kansas River since 2006. No nesting disturbance or losses attributable to the proposed work have been documented on the Kansas River. Existing dredging permits require notification and re-initiation of informal consultation for this species if nesting activity occurs within three miles of a dredging operation. This buffer is proposed to be lowered to a distance of one mile based upon a lack of nesting activity by the species on the Kansas River in over 10 years and our understanding of nest site selection, disturbance and abandonment by the species from current literature and past survey and monitoring work on the Central Platte River in Nebraska and the Missouri River. We conclude that Kansas River dredging may affect, but is not likely to adversely affect the piping plover.

Pallid Sturgeon:

Throughout their range, pallid sturgeon are affected by numerous environmental factors. For example, pallid sturgeon survival and reproduction are affected by water temperature, predation, illegal harvest, contaminants, invasive species, sediment reductions, habitat availability, and magnitude of seasonal floods, among other factors (Wildhaber et al. 2007). The relative importance of each factor and how their importance rankings may change over time are not adequately understood. Intensive management of the Missouri and Mississippi Rivers, source populations for the Kansas River, has resulted in dramatic physical changes to these rivers. Changes in flow, channel morphology, water quality, and biota have been implicated as causative agents in the dramatic declines in native river fishes and their resource base in general, and with the decline of pallid sturgeon in particular.

When combined with the past and present effects, along with those anticipated as a result of future non-federal actions within the Action Area, the proposed action may affect, but is not likely to adversely affect pallid sturgeon. Based on the best available information reported in the literature and the specific factors on the Kansas River, the potential for entrainment of adult pallid sturgeon due to dredging and related mortality would be extremely low and improbable and thus judged to be minor and discountable. These conclusions are supported by studies where sturgeon entrainment was found to be low, as well as by other studies that found no entrainment of pallid sturgeon.

Dredging's effects on SWH are estimated to be minor and insignificant. Under the proposed action, dredging operations would be suspended if degradation greater than two feet occurs within a permitted dredging reach. Changes of this magnitude are not expected to result in any substantial impacts on the abundance of SWH over and above natural year-to-year variations in the abundance of SWH.

Of the other potential effects of the proposed action, all were judged to be minor and discountable. These include:

- Based on the existing information, there appears to be no basis for concluding that noise from commercial sand and gravel dredging would adversely affect pallid sturgeon.

- There is little evidence of avoidance of dredging operations by pallid sturgeon (e.g., due to disturbance, noise, or turbidity), and there is little indication of effects of commercial dredging operations on spawning movements.

- Based on the current understanding of pallid sturgeon spawning habitats, commercial dredging is very unlikely to result in direct disturbance of known and suspected pallid sturgeon spawning habitats.

- Increased elevated suspended sediment would have little effect on pallid sturgeon, a species adapted to high levels of turbidity; and plumes downstream of dredging activities may result in a slight temporary beneficial increase to no change in cover habitat to pallid sturgeon that are located downstream of dredging activities.

- The effects of dredging on pallid sturgeon foraging would likely be limited and temporary, given that the proportion of the total foraging area of the river bottom dredged would be low, and the probability that alteration of the bottom substrates may produce equally productive fish and invertebrate habitats and greater substrate diversity.

- The proposed action would not affect the flow regime of the Kansas River.

Therefore, overall we conclude that that proposed action, commercial dredging in the Kansas River, may affect, but is not likely to adversely affect the pallid sturgeon and their habitat.

Topeka Shiner:
No direct or indirect affects to the Topeka shiner are expected to occur as a result of the proposed action. No dredging is proposed near tributaries historically providing habitat or the presence of this species. Special conditions of the permitted work will require buffers around tributary confluences with the Kansas River and strict monitoring and limits on bed degradation as compared to the 1992 baseline elevation.

Northern Long-eared Bat:
No direct or indirect affects to the Northern long-eared bat are expected to occur as a result of the proposed action because the species is terrestrial in nature and the dredging operations would not impact suitable habitat. All upland processing sites are either currently in use or formerly used areas that do not contain suitable habitat for the species.

G. References

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