



Regional Sediment Management Program Kansas City District (NWK): Environmental Benefits of Turbidity in the Kansas River



Description

NWK will identify environmental benefits of increasing turbidity in the Kansas River, which is the receiving body for discharge from seven USACE reservoirs, including Tuttle Creek and Milford Lakes. This work will bolster efforts to allow discharge of reservoir sediments to the downstream channel, rather than dredging with upland placement.

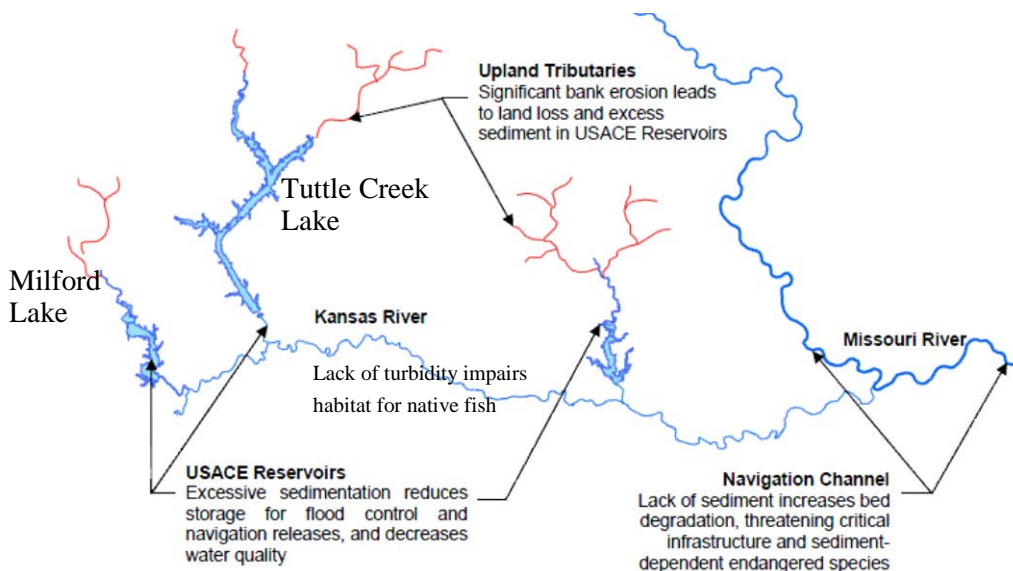


Figure 1. Kansas River Basin

Issue/Challenge To Address

Reservoir sedimentation problems are severe in reservoirs on the Kansas River, including Tuttle Creek Lake and Milford Lake, where expanding water demand due to population increases coincides with accelerated reservoir sedimentation. Correspondingly, downstream channels are degrading and sediment-dependent aquatic species are suffering for a lack of sediment. Restoring sediment continuity to the system would benefit both the reservoir and the downstream channel.

Options such as dredging with upland disposal of the dredged material address only the sediment accumulation problem, not the sediment starvation problems downstream. In addition, dredging with upland disposal is generally prohibitively expensive in large reservoirs due to the expense of dewatering, handling, and storing the dredged sediments. Engineering With Nature and Regional Sediment Management principles suggest that the sediment remain in the fluvial system to benefit multiple project and environmental objectives.

A major impediment to re-introducing sediment to the downstream fluvial system as part of a reservoir sediment management strategy is that mindset that “sediment is a pollutant.” While the above statement is true in some water bodies, in historically-turbid rivers such as the Kansas River, high sediment loads are a natural phenomenon, essential for the survival of native, aquatic species.



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A scientifically-defensible assessment of the environmental effects of turbidity in the Kansas River will help decrease resistance to re-introducing sediment to the fluvial system downstream of Tuttle Creek Lake and Milford Lake. A summary of the environmental benefits of maintaining depth in Tuttle Creek Lake and Milford Lake will also be included. Sediment that is passed to the downstream channel does not accumulate in the reservoir, thus preserving storage space for navigation support, water supply, and water quality needs into the future.

Successes Lessons Learned

The project also includes documentation of state and federal objections to sediment re-charge projects. NWK will meet with state and federal permitting and other natural resources agencies to document potential concerns and data gaps for these types of projects.

Expected Products

- White paper documenting environmental benefits of increasing turbidity in the Kansas River and of maintaining depth in Tuttle Creek and Milford Lakes.
- White paper documenting concerns of state and federal permitting agencies

Stakeholders/Users

Stakeholders include the Kansas Water Office.

Projected Benefits

Tuttle Creek Lake and Milford Lake are two of seven large Corps of Engineers reservoirs in the Kansas River basin, all of which are experiencing significant sediment accumulation. Establishing the environmental benefits of sediment in the Kansas River and of maintaining depth in Tuttle Creek Lake and Milford Lake in a separate tech note will lay the ground work for future sediment management efforts in these and other Kansas River reservoirs. In addition, it will serve a blueprint for similar analyses that will need to be done in coming years in other watersheds.

Leveraging Opportunities

The environmental analysis proposed in this RSM project fits into a larger effort for sediment management in Tuttle Creek Lake. Technical and economic analysis and modeling of reservoir sediment management opportunities for Tuttle Creek Lake will be accomplished under a Section 204 feasibility study. This effort is in support of the State of Kansas Reservoir Sustainability Initiative.

Points of Contact

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Participating Partners

Kansas Water Office