

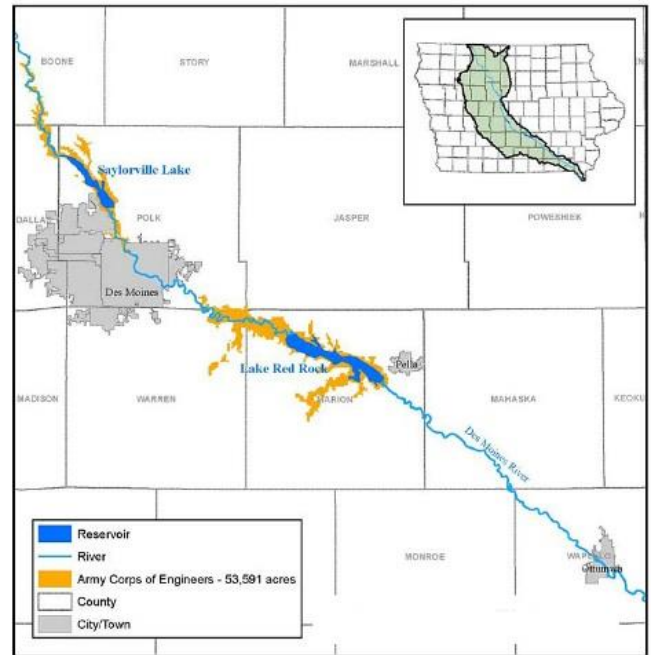


Description

In this RSM project, MVR will evaluate the impact of past and future reservoir sedimentation on flood damage reduction benefits and the reservoirs' reliability to meet conservation (low-flow augmentation) and water supply releases. In addition, the District will evaluate the potential for an economically viable use of sediment dredged from the Des Moines River reservoirs.

Issue/Challenge To Address

Ongoing sedimentation at the Corps' existing reservoir projects poses some of the greatest threats to future project performance. With many of the Corps' reservoirs exceeding 50 years of operation, the Corps has already been forced to respond to ongoing sedimentation at many of our projects. On the Des Moines River, Lake Red Rock has undergone multiple pool raises to reacquire conservation storage (lost to reservoir sedimentation) at the expense of flood control storage. Conservation storage (used to provide minimum environmental/conservation flows during drought periods) is the area of the reservoirs that is being most affected by ongoing sedimentation. Currently, Saylorville Lake has less conservation storage than originally designed for, reducing the projects reliability to meet future water demands during periods of drought (including contracted water supply to the State of Iowa). This study effort will lead to a better understanding of the economic implications that reservoir sedimentation has had, and will continue to have, on flood risk management and conservation/water supply benefits provided by the project, and will seek to identify opportunities to increase the long-term sustainability of the reservoir through exploring potential commercial uses of dredged reservoir sediments. Removal of sediment through mechanical means is very costly. In order for this to be a viable alternative, a local commercial use of the dredged sediments would need to be identified. Section 1115 of WRDA 2016 (which amends Section 215 of WRDA 2000) provides authority for a non-federal interest or commercial entity to remove sediment from the reservoirs and allows them to retain, use, recycle, sell, or otherwise dispose of the removed sediment without providing compensation to the Government.



Successes Lessons Learned

Lessons learned will be compiled during the duration of this study and shared with the RSM community and the MVR Des Moines River Water Control Plan Update PDT.



US Army Corps
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Development Center

National Regional Sediment Management Program Rock Island District (MVR):



Evaluation of the Impact of Reservoir Sedimentation on Project Benefits and Opportunities for Commercial Use of Dredged Materials, Des Moines River, Saylorville Lake and Lake Red Rock

Expected Products

- Projected Future Reservoir Storage Curves
- Quantification of Impacts of Reservoir Sedimentation on Project Benefits
- Characterization of Reservoir Sediments and their Potential Commercial Uses
- Technical Note and Presentation at the RSM-EWN IPR

Stakeholders/Users

Stakeholders include the Rock Island District, the State of Iowa, and the City of Des Moines Water Works.

Projected Benefits Value Added

Results of this study effort will help inform USACE and stakeholders regarding the impacts of past and future reservoir sedimentation on project benefits, as well as an evaluation of the potential commercial opportunities for use of dredged materials from the reservoir. The ability to quantify the value of reservoir storage lost due to sedimentation (as well as the value of reservoir storage restored or preserved through a particular management action) is critical to evaluating and justifying management actions to address ongoing reservoir sedimentation and to improve the long-term sustainability of the reservoir projects.

Leveraging Opportunities

This RSM project leverages work already accomplished or that is currently ongoing under other authorities:

- From approximately (record lengths vary) 1968 to 2011, daily suspended sediment samples were collected at 9 stream gage locations along the Des Moines River and its tributaries using annual O&M appropriations. The sampling locations include locations upstream and downstream of the reservoir system, as well as stations on each of the major tributaries entering the Des Moines River in this reach.
- New LIDAR data and bathymetric surveys were obtained for Lake Red Rock and Saylorville Lake in 2010 and 2014, respectively. The surveys provide updated storage curves for the reservoirs, as well as updated sedimentation rate estimates.
- In 2015, the initial phase of a reservoir re-regulation study was initiated for the Des Moines River. The initial phase consisted of engaging local, county, and federal emergency management officials to evaluate critical regulation constraints and to evaluate an initial set of potential alternative water control plans. This effort was used to scope the study for permanent changes to the water control plans for Saylorville Lake and Lake Red Rock.
- In 2015, updated CWMS models were developed for the Des Moines River Basin as part of the national modernization effort. This effort resulted in updated HEC-ResSim and HEC-FIA models that can be used to directly support this effort.
- In 2017, the study to permanently update the water control plans for Saylorville Lake and Lake Red Rock was initiated. The study is scheduled to be completed in December 2018.

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