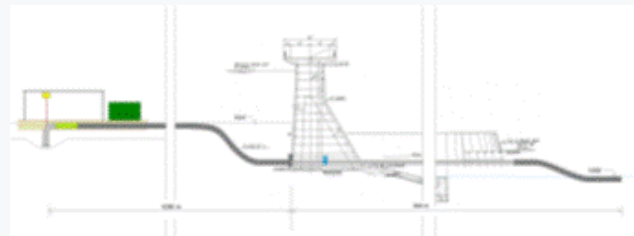


Hydrosuction Dredge Design Study

John Redmond Reservoir, USA

Challenge

John Redmond Reservoir receives approximately 0.92 million m³ of sediment annually, with deposits dominated by fine clay and silt. The reservoir has limited available head, water level variations exceeding 10 m and a long dredging distance, creating a demanding hydraulic design challenge. Kansas Water Office needed to evaluate whether a large-scale HydroSuction system could provide sufficient sediment removal capacity under these conditions.



Proposed Hydrosuction Dredge layout with 4.28 km operating range



John Redmond Reservoir and dam outlet structure

Solution

SediCon prepared a preliminary design and investment basis for a large-scale HydroSuction Dredge tailored to John Redmond Reservoir. The study included sediment assessment, hydraulic calculations, conceptual layout and key component design.

The proposed system uses gravity-driven HydroSuction through the dam outlet, a 1,000 mm HDPE dredging pipe, adjustable flotation and a jetting-assisted suction head designed for clay-rich sediments. The concept targets 700 t/h sediment capacity and a 4,280 m operating range.



Project Location

Project facts

Client: Kansas Water Office
Project: John Redmond Reservoir
Location: Kansas, USA
Technology: Design study
Sediment inflow: 0.92M m³/year
Design capacity: 700 t/h
Dredging range: 4.28 km

Results and benefits

- 700 t/h capacity assessed
- 4.28 km operating range
- Clay-rich sediments evaluated
- Low-head design evaluated
- Test dredge concept defined
- Investment basis established

For more than 30 years, SediCon has developed and supplied proprietary sediment handling technologies from Trondheim, Norway. Our solutions for reservoirs, intakes, desanders and tunnels have been successfully implemented in hydropower projects in more than 20 countries across five continents.