MEETING

Avoiding The Inevitable? Capacity Loss From Reservoir Sedimentation

Reservoir Sustainability Workshop; Lakewood, Colorado, 10–12 July 2012

The inexorable loss of capacity of the nation’s reservoirs—sooner or later threatening water supplies for municipal, agricultural, and industrial uses—is but one of a number of deleterious effects wrought by sediment deposition. Trapped sediments can also damage or bury dam outlets, water intakes, and related infrastructure. Downstream effects of sediment capture and retention by reservoirs can include channel and habitat degradation and biotic alterations.

Reduced storage—possibly coupled with climatically induced changes in the source, timing, and amount of runoff—and increased demand can limit water allocation options. In extreme cases, users may be compelled to seek rehabilitated or new sources of water, likely at substantially higher cost.

The Subcommittee on Sedimentation of the Federal Advisory Committee on Water Information and the U.S. Society on Dams organized and sponsored a 3-day workshop with the goal of developing and describing practical options for managing sediment for long-term U.S. reservoir sustainability.

Among the 20 organizations represented at the workshop were the U.S. Army Corps of Engineers, Bureau of Reclamation, and National Resources Conservation Service, the primary agencies responsible for sediment management and sustainability of federal reservoirs. The workshop consisted of a series of plenary sessions, with invited lectures from national and international experts, followed by concurrent thematic discussions. A final plenary session summarized workshop findings.

Participants noted that several categories of reservoir sustainability options exist. These include altered watershed management practices to reduce transport of sediments to reservoirs, sediment bypass around or through reservoirs, substantially altering the reservoir by adding height to the dam and volume to its reservoir, and flushing or mechanical removal of deposited sediments. Each management option has a range of applicability. Combinations of these and other management options may prove to be the most tractable and cost-effective sustainability options.

Additionally, a host of informational needs to address the reservoir sedimentation problem were identified at the workshop. These include (1) reservoir-specific plans for either long-term sustainability or decommissioning; (2) key economic factors that may drive management efforts; (3) guidelines for selection of best sediment management methods; (4) monitoring to produce reliable data on reservoir sedimentary characteristics and rates of reservoir capacity loss; (5) a publicly updatable and available reservoir sedimentation database; (6) reliable models to predict future flow and sediment deposition rates; and (7) coupled with monitoring data, evaluations of the effectiveness of applied sustainability options.

The group also noted that sediment deposition in reservoirs is an episodically continual process. Leaving issues unaddressed until problems become acute often leads to costly, rushed, and/or ineffective solutions. Seizing on this theme, the following initial steps were proposed: (1) formation of a National Reservoir Sedimentation Team, (2) implementation of a national training program on reservoir science and management, and (3) development of Web-based storage and retrieval protocols for high-density reservoir sedimentation data sets.

The presentations from the workshop are available at ftp://ftp.usbr.gov/tsc/mdelcau/ReservoirSustainabilityWorkshop/Presentations/.

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