

Integrated Watershed Management Plan

Working to create an integrated watershed management plan for the Cherry Creek Watershed Basin, Brown and Caldwell is incorporating available data on point and nonpoint sources into a comprehensive plan that focuses on phosphorous loads but extends to all aquatic resources.



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Brown and Caldwell is leading efforts to integrate nonpoint-source management into Cherry Creek's watershed master plan and establishing a standardized protocol to assess effectiveness of non-point-source best management practices.

THE SITUATION

To protect the City of Denver from flash floods, the U.S. Army Corps of Engineers built Cherry Creek Reservoir in 1950. The reservoir, a source of potable water for Denver-area communities, also serves as a recreational site for activities that include fishing, boating, swimming, and bird watching.

From 1981 to 1982, Cherry Creek Reservoir was studied under the U.S. EPA's Clean Lakes Program. In 1984 local entities, which today comprise the Cherry Creek Basin Water Quality Authority (CCBWQA), worked together to develop a total maximum daily load (TMDL) for phosphorus that was incorporated into a water quality management master plan for the watershed. The State of Colorado approved the plan in 1985.

The annual TMDL for phosphorus at Cherry Creek Reservoir was set at 14,270 pounds per year and a monitoring program was established to assess water quality in the reservoir and all inflows, including tributaries, groundwater and precipitation. This total was allocated among various sources, taking into consideration anticipated conditions at buildout. Point sources (including, for example, domestic wastewater) were allowed 2,310 pounds per year; nonpoint sources (such as agriculture, septic tanks, and recreation) were given 10,290 pounds per year; and the remainder was allocated among large septic systems, industrial sources, and background sources.

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These limits have significantly affected point-source management in the watershed and are beginning to affect nonpoint-source management as well. With no additional phosphorus allocations available for new development, potential projects are severely restricted.

Solutions

Brown and Caldwell is working with CCBWQA, the State of Colorado, and watershed stakeholders to create an integrated watershed management plan. We are incorporating available data on both point and nonpoint sources into a comprehensive plan that addresses not only phosphorus loads, but all aquatic resources. In addition, Brown and Caldwell is:

- Providing technical support for a watershed-based phosphorus-trading program.
- Coordinating review of development plans by land-use agencies to better maintain good water quality, healthy waterways, and responsible community growth.
- Leading efforts to integrate nonpoint-source management more completely into the master plan. This has required a thorough review of the original methodology and assumptions used to estimate nonpoint-source loads; better understanding of the hydraulics of Cherry Creek, the reservoir, and groundwater; and a standardized protocol to assess the effectiveness of nonpoint-source best management practices.

Details

- Drainage basin area: 245,900 acres
- Reservoir surface area: 840 acres
- Reservoir phosphorous standard: 35mg/L
- Planned algae chlorophyll level: 15mg/L
- Constituents of CCWQA: four cities, two counties, and seven water and sanitation districts



To better maintain water quality, healthy waterways, and responsible community growth at Cherry Creek Reservoir, Brown and Caldwell is reviewing development plans by land-use agencies.