American Water Resources Association
2009 ANNUAL WATER RESOURCES CONFERENCE
November 9-12, 2009
Seattle, WA

Wednesday, Nov. 11
8:30 AM – 10:00 AM
SESSION 38: Panel - Major Water Management Projects by Seattle Public Utilities in the Cedar River/Lake Washington Basin

Moderator – Michael Wert
AMEC Earth & Environmental, Bothell, WA

Panel Participants

Greg Harris, MWH Americas, Bellevue, WA
Clint Smith, MWH Americas, Bellevue, WA
Thomas Fox, Seattle Public Utilities, Seattle, WA
Gary Sprague, Seattle Public Utilities, Seattle, WA
Christopher Magirl, U.S. Geological Survey, Tacoma, WA

This panel will involve presentations of three major water management projects by Seattle Public Utilities (SPU). The projects address key challenges related to fish passage, drought management, and flooding. The panelists will describe three projects being implanted to maintain the beneficial uses of the City's water supply. **Landsburg Fish Passage Project:** Since the early 1900's, the Landsburg Diversion Dam has been a key component of Seattle's municipal water supply. The facility has been a barrier to salmon and steelhead passage for nearly a century. In 2000, Seattle began implementing the Cedar River Habitat Conservation Plan (HCP). Mitigating fish barriers at Landsburg was a key component of the HCP. Primary features of the Landsburg Mitigation Program involve upstream and downstream fish passage via fish ladder, sorting facility, and fish screens. In addition, the river bed downstream was re-constructed to bury a large-diameter pipeline that created a secondary downstream fish barrier due to creation of an elevated scour pool. As a result of this project, anadromous fish access is restored to nearly 20 miles of the upper Cedar River drainage. **Morse Lake Pump Plant:** Chester Morse Lake serves as the Seattle area's primary storage reservoir for drinking water supply. It also provides flows for the Cedar River's salmon and steelhead and other in-stream flow needs. Withdrawal of water from lowered levels of Morse Lake occurs only by way of temporary pumping plants. This requires use of barge-mounted pump plants powered by shore-based diesel generators. To avoid risks of diesel fuel and periodic need for the temporary pump plants, the City is planning to construct a permanent land-based pump plant with water intake in Morse Lake, a mile-long 72-inch diameter pipeline, and a discharge structure in Masonry Pool. These improvements will reduce risk to the environment by avoiding the need for diesel-fueled generators and other logistical requirements associated with periodic mobilization of the temporary pumping plants. **Development of an Adaptive Approach to Managing Peak Flows in the Cedar River, Washington:** The current Cedar River instream-flow management program is a key component of the Cedar River Watershed HCP. The program provides a relatively complex set of guaranteed base flows for each year, combined with limitations on municipal diversions and flexibility in the management of elevated flows that can frequently occur. Floodplain development and changes to the hydrologic regime from flow regulation have affected the riparian and aquatic habitat along the river corridor. Water-resource managers are seeking additional information to guide river-flow management during storm-driven peak-flow events. Concerns for protecting biological functions, such as intra-gravel incubation of salmon eggs, must be balanced with efforts to encourage natural geomorphic processes that maintain high-quality habitat and promote river health. These instream-resource objectives must be integrated with efforts to protect existing human development and occupation of the floodplain. Under the guidance of the interagency Cedar River Instream Flow Commission, SPU and U.S. Geological Survey are developing a Peak Flow Adaptive Management Project for the Cedar River. The project will build on the flexibility provided by the

current instream-flow management program. During the project, a conceptual model and associated monitoring program will be developed along with a numerical model and analysis of historical data to: provide an assessment of the current geomorphic state of the river; determine the magnitude of geomorphic resetting flood events; establish linkages between peak-flow characteristics and biological and geomorphic processes in the currently altered river channel; compare varying effects of peak-flow magnitude with peak-flow duration; and establish desired inter-annual target ranges for peak-flow magnitudes, durations, and frequencies.