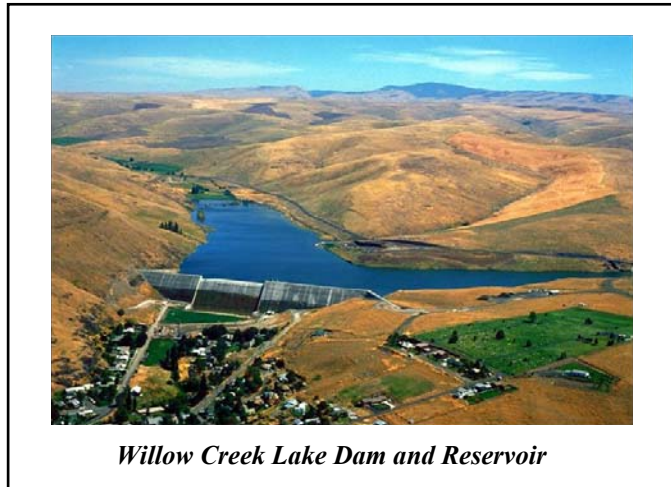




Willow Creek Lake - Technical Analysis and Update of the Water Control Manual

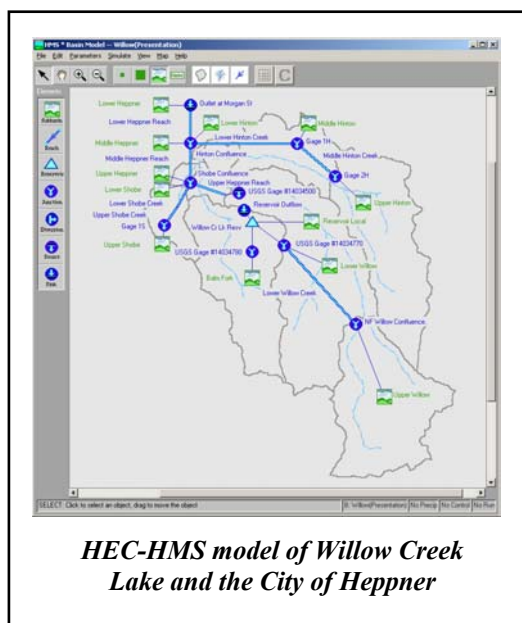
The Willow Creek Lake Project is operated by the Portland District Corps of Engineers for flood control. Recreation, fish and wildlife, sedimentation, water quality, and future irrigation are secondary uses of the storage pool. WEST Consultants, Inc., was tasked by the Portland District Corps of Engineers, under an existing IDIQ contract, to 1) construct an HEC-HMS model of the watersheds surrounding the Willow Creek Lake Dam and the downstream City of Heppner, and 2) review, revise, and update the Willow Creek Lake Water Control Manual. The project consists of three separate phases.



Willow Creek Lake Dam and Reservoir

WEST constructed an initial HEC-HMS model under phase one of this project. HEC-GeoHMS was used to assist in delineating subbasins and for creating the HMS model framework. WEST collected and analyzed precipitation and stream gage data for inclusion into the model.

In phase two, WEST drafted a new Water Control Manual. Portland District uses the existing Manual for all regulation purposes; however, significant operation changes have been implemented since the original manual was published. WEST reviewed the existing manual, collecting additional data and pertinent information when necessary, and updated chapters on climate, storms and floods, and runoff, channel, and floodplain characteristics. WEST also revised sections on project description and history, the Flood Warning System protecting the City, and water control management. WEST used the latest appropriate Corps Engineering Manuals (EM) and Engineering Reports (ER) for guidance while updating the Manual.



WEST calibrated the HEC-HMS model and finalized the Water Control Manual in phase three of this project. Rain-snow events were accounted for by using the U.S. Army Corps' Distributed Snow Process Model (DSPM). The calibrated HMS model was then used to determine peak flow frequency curves at various locations from gridded synthetic storm events.

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Completion Date:
March 2003

Contract Number:
DACW57-99-D-0003 Task Order #6