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# Alternative Streamflow Augmentation Schemes Assessment for the Restoration of the Quinebaug River

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A decision support system (DSS) simulation model consisting of eight lakes and reservoirs is used to explore alternative streamflow augmentation policies being considered for the Quinebaug River. The DSS modeling effort is part of a multi-disciplinary Study exploring ways to enhance and restore the river habitat along the mainstem of this 175 square mile watershed, which is located in south-central Massachusetts and northeastern Connecticut. As part of the study, we developed and tested a novel pulse streamflow augmentation strategy. The pulse characteristics (magnitude, frequency and duration) were devised by constructing Continuous Under Threshold (CUT) curves (Capra et al., 1995). CUT curves are developed from the frequency and duration characteristics of habitat time series negative run lengths. The habitat time series were developed from site-specific, ungauged site streamflow daily time series constructed using the QPPQ Transform (Fennessey, 1999) and a Habitat Suitability Index (HSI) streamflow rating curve developed using MesoHABSIM techniques (Parasiewicz and Goettel, 2004). The efficacy of this stream flow augmentation policy is compared with the more typical New England fishery habitat recommendation that prescribed continuous releases be made to sustain target instream flows.