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16. Abstract The Stochastic Empirical Loading and Dilution Model (SELDM) is designed to be a tool that can be used to transform disparate and complex scientific data into meaningful information about the risk for adverse effects of runoff on receiving waters, the potential need for mitigation measures, and the potential effectiveness of such management measures for reducing these risks. SELDM is designed to help develop planning-level estimates of event mean concentrations, flows and loads from a highway site and an upstream or lake basin. Results are ranked and plotting positions are calculated to indicate the risk of exceeding water-quality goals for concentrations, flows, and loads by storm and by year. This information is needed to evaluate potential effects of highway runoff on receiving waters and, if necessary, to help guide potential mitigation strategies. SELDM uses information and data about a highway site, a receiving-water basin, precipitation events, stormflow, water-quality, and the performance of mitigation measures to produce a stochastic population of runoff-quality variables. SELDM uses Monte Carlo methods to produce the random combinations of input variable values needed to generate the stochastic population of values for each component variable. SELDM is a lumped parameter model because the highway site, the upstream basin, and the lake basin each are represented as single homogenous units, which are the average of component areas. Results from SELDM are calculated as point estimates at the site of interest. Use of the lumped parameter approach facilitates rapid specification of model parameters to develop planning-level models with available data. The lumped parameter approach also allows for flexibility in the use of the model. For example, the highway site definition also may be used to represent various land covers or land uses as long as representative water quality and impervious-fraction data are used.					
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