
King County Watershed Modeling Services – Green River Water Quality Assessment, and Sammamish-Washington, Analysis and Modeling Program Watershed Modeling Calibration Report

In Progress



King County

Department of Natural Resources and Parks
Water and Land Resources Division

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Section 1-- Introduction

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1 INTRODUCTION

The King County Watershed Modeling calibration report is a document that describes the ability of HSPF to accurately simulate the hydrology of the multiple sub-watersheds draining to Greater Lake Washington including Lake Union and the Duwamish/Green River. As water quantity and water quality models are calibrated, they will be added as sections within this report. Model calibrations are subject to the data limitations of the individual watershed's, the ongoing analysis and review of its data, and the purposes of the model applications. The purposes of the model applications are described at length in the Watershed Modeling *Simulation Plan (currently in development)* and are only briefly summarized in this document.

1.1 OVERVIEW

The Watershed Modeling simulation plan presents a unified structure for the hydrologic and water quality modeling of the Green River WQA and SWAMP study areas. This calibration report is a working document. As models are developed, technical information that is subbasin specific will be added as sections to the calibration report (starting in Section 4). To minimize duplication of text, information pertaining to multiple drainage areas will be located within the preceding sections, sections 2 and 3. As is expected in development of watershed models, calibrated models may be re-evaluated and refined as we gain better understanding how landscape influences water quantity and water quality responses throughout the study areas. To accommodate these likely additions, addendums will be added to sections superseding previous documentation to maintain concurrency with model development and documentation.

1.2 OVERVIEW OF MODELING METHODOLOGY AND APPLICATION PROCESS

The modeling methodology is based on the use of the continuous simulation modeling approach described in detail in the technical memorandum *Watershed Modeling Needs Assessment, Modeling Strategy, and Model Recommendations for SWAMP and Green WQA Projects* (AQUA TERRA and King County, 2002b). The technical memorandum recommends the use of U.S. EPA HSPF (Hydrological Simulation Program Fortran) for the hydrologic and water quality modeling of the tributary watersheds and CE-QUAL-W2 for the Green River.

The modeling methodology makes use of the meteorologic, hydrologic, and water quality data collected in and near the watershed together with topography, land use and stream channel information to provide the user with long-term simulated streamflow and water quality data time series, under current conditions and alternate future scenarios for water quality management.

1.3 PURPOSE AND OBJECTIVES OF THE MODELING STUDY

The purpose of the SWAMP and Green WQA modeling studies are to provide hydrologic and water quality information on the watersheds for local and regional decision makers. Specific objectives of these studies are to:

1. quantify the hydrologic and water quality behavior of watersheds within the SWAMP and Green River basins and the relative contribution of pollutants sources under current conditions,
2. evaluate other potential changes in the watershed, including land treatment alternatives, land use changes, import and/or export of water, testing of best available technologies, etc., and,
3. develop HSPF to CE-QUAL-W2 linkage procedures that may also be used for direct linkages to CH3D-ICM Lake Washington models.