Salt Lake County
Watershed Water Quality Model
Fact Sheet

Salt Lake County Engineering & Flood Control Division is developing a countywide watershed water quality model. The objective of the watershed model is to provide an ongoing stormwater, flood control and water quality planning and management tool. In addition, the model may be used for pollutant load estimation, waste load allocation and implementation strategy evaluation for current and future Total Maximum Daily Load (TMDL) water quality studies. The watershed model uses the Hydrologic Simulation Program–FORTRAN (HSPF) to simulate hydrologic and water quality processes on a watershed scale. It was built using Geographic Information System (GIS) data and tools within the EPA BASINS modeling platform. HSPF simulates the complex interaction between rainfall, snowmelt, nonpoint and point pollution sources, flow diversions and irrigation return flow throughout the Salt Lake Valley.

HSPF Capabilities:
Continuous, hourly time step
Meteorology data from multiple stations
Hydrology including snow accumulation and melt
Cumulative effect of wet/dry climate cycles
Pollution sources by land use and industry
Sediment washoff and transport
Fate and transport of water quality constituents

Water Quality Constituents:
Temperature
Sediment
Nitrogen and Phosphorus
Biochemical Oxygen Demand
Sediment Oxygen Demand
Algae
Dissolved Oxygen

Model Calibration and Validation: The HSPF model was calibrated and validated to 12 years of observed stream flow and water quality data (1995-2006). The calibration and validation was conducted in order to build confidence in using the model to evaluate management practices and pollutant loads. Future calibration of the model will occur as more data becomes available.

Future Applications: The watershed model will be used to evaluate the performance of best management practices (BMPs) applied to selected land uses throughout the watershed or within strategic subbasins. Potential BMPs include stormwater detention and treatment facilities, low impact development (LID) techniques, residential and agricultural irrigation practices, and flow management for maintaining instream flows. The model may also be used to optimize the implementation of the Jordan River TMDL. Other possible applications include assessing the potential impacts of climate change on snow pack, stream flow and water quality.

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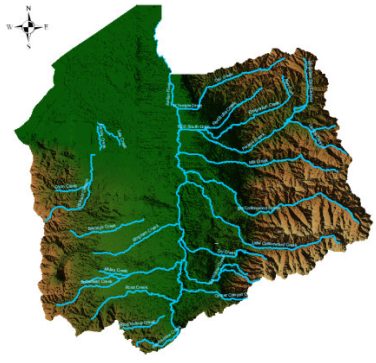
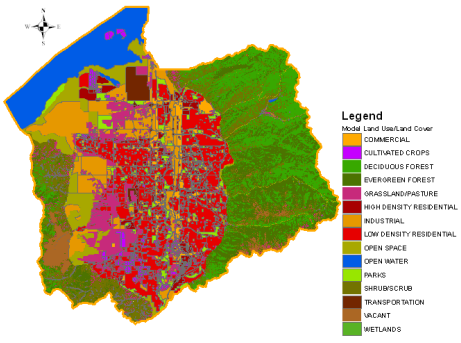


Topography



Land Use

Subbasins

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