

# RENO REGIONAL HYDROLOGIC ANALYSIS

Reno, Nevada



## Client

City of Reno

## Scope of Services

Hydrology/Hydraulic Analysis

Parameter Calibration

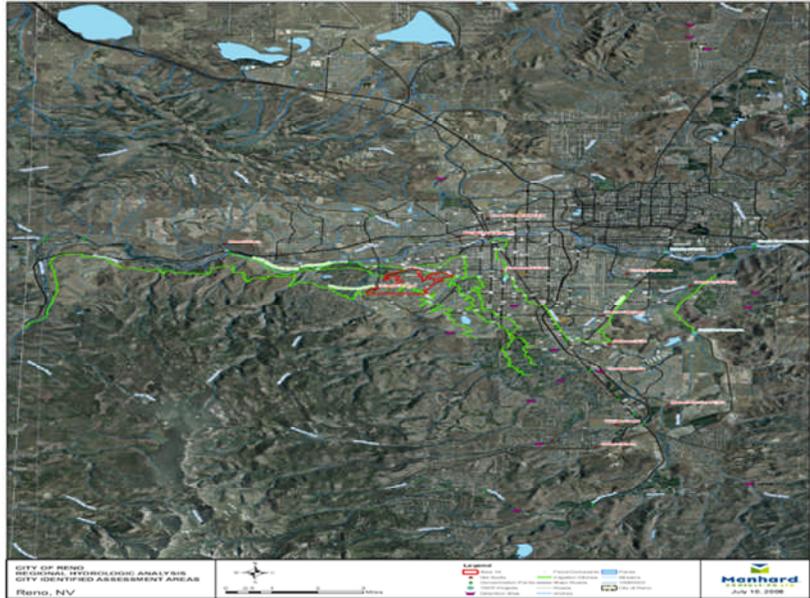
Model Optimization

Advanced GIS Analyses

Irrigation Ditch Analysis

Special Areas Analyses

Flood Mitigation Alternatives



The City of Reno is one of the primary sponsors of the Truckee River Flood Management Project (Flood Project.) The City wanted to understand the costs of improving drainage features to mitigate Reno's impact on the Flood Project and solve some of the drainage problems not associated with, or addressed by, the Flood Project. To achieve these goals, Manhard Consulting, Ltd. (Manhard) was retained to determine interior stormwater system infrastructure deficiencies/level of service and to develop interior flood mitigation conveyance and storage alternatives in conjunction with portions of the Flood Project, maintaining the critical flood pool and no adverse-impact development.

To evaluate City of Reno flood protection and interior drainage issues, Manhard was charged with the development of a comprehensive "planning-level" rainfall-to-runoff (hydrologic) model to evaluate hydrograph timing of the Truckee River and its tributary watersheds within the City of Reno. To achieve this, Manhard used large-scale drainage subbasins with hydrologic parameter optimization derived from calibrated and automated GIS modeling applications. The optimization and calibration techniques relied on the application of NEXRAD Doppler rainfall data and observed streamflow gage measurements from the following storm events: February 1986, December 1997, December 2005, and January 2008 to ensure that storm centering and spatial variability was intrinsic to the base and alternatives analysis models. Once the regional model was optimized and calibrated to the storm events of record, the City's concerns with the frequently flooded interior areas was evaluated and mitigating alternatives were defined. On top of the regional and local hydrologic features, the analysis included an examination of the stormwater conveyance characteristics of the existing irrigation ditches and canals that run within the Reno City limits.

In addition to the hydrologic and hydraulic modeling efforts, the scope of services for this project also included: collection and review of relevant hydrology studies and stormwater master planning documents; a complete stormwater infrastructure inventory within the study subbasins; modeling of potential regional and local detention facilities; and cost-benefit/levels of service analyses for all recommended flood mitigation solutions .