

Section 5 Hydraulic Model

5-1 Hydraulic Model Geometry

The geometry for the City's model was provided by IEUA, entitled IEUA Recycled Water Program Strategies 11-15-10.mxd (InfoWater) and the "2012_AVG" scenario was utilized. Geometry was created for the City's Potential projects and was added to the IEUA base model.

5-2 Demands

Demands for existing other agencies came from IEUA's model and from IEUA's 2010 Urban Water Management Plan, see Table 3-13. The data for year 2035 was assumed to be the ultimate demands and therefore used in the model.

City Demands were developed using actual customer data and from the demand factors in Section 5. Demands were allocated to the nearest node.

5-3 Demand Categorization

The future other agency demands were separated into irrigation demands and agricultural demands. Table 6-9 of IEUA's 2005 Recycled Water Implementation Plan was used to determine the long term agricultural customer demand (Chino: 4,625 AFY, Chino Hills: 206 AFY, Fontana: 45 AFY). The remaining use was assumed to be irrigation.

The existing City demands for the OMC were assumed to be irrigation and industrial processes, based on existing use. For NMC Demands, the model was used to allocate the demands by acreage. The unit demand factors from Section 5 were utilized.

5-4 Peaking Factors and Patterns

Peaking factors shown in Table 6-2 of IEUA's 2005 Recycled Water Implementation Plan were originally used. The summer peaking factor is 2.6 for irrigation and agricultural users. The summer peak hour demand factor is 3.0 for irrigation users (8 hour use schedule) and 2.0 for agricultural users (12 hour use schedule). The resulting peak hour demand factor during the summer is 7.8 for irrigation users and 5.2 for agricultural users. Three scenarios were ultimately looked at:

Scenario 1: 7.8 peaking factor (2.6 x 3) for irrigation users and 5.2 peaking factor (2.6 x 2) for agricultural users

Scenario 2: 5.2 peaking factor (2.6 x 2) for irrigation users and 5.2 peaking factor (2.6 x 2) for agricultural users.

Scenario 3: 4.0 peaking for irrigation and 4.0 peaking for agricultural users
This assumes a summer peaking factor of 2.0 and a peak hour demand factor of 2.0 (12 hour irrigation schedule).

The Peaking factor of 4.0 is recommended which is based upon a 24 month study of average monthly use of existing customers.

5-5 Skeletonization and Boundary Controls

The IEUA base model was skeletonized to only include pipes in the Ontario area and boundary controls based upon the IEUA model were used. The pipes to the north, east, and west were deleted. Demands were added at select nodes to represent demands for other agencies. The RP-5 service area was not included because it is essentially independent from Ontario's service area. Pipe between 1299 zone and 1158 zone, adjacent RP-4 was closed; original model had the two zones interconnected.

Treatment plant pump stations were modeled as fixed head reservoirs to provide a constant downstream pressure.

Rp-1 Outfall Parallel is assumed to be constructed at buildout.

The model was then run and pipes and improvements were recommended based on a series of trials of the model.