

Project Name:

Design and Operation Optimization based
on Computer Modeling for Shanghai
Sewerage Phase 2 System

Client:

Shanghai Municipal Sewerage Company

Project Duration:

1998 - 1999

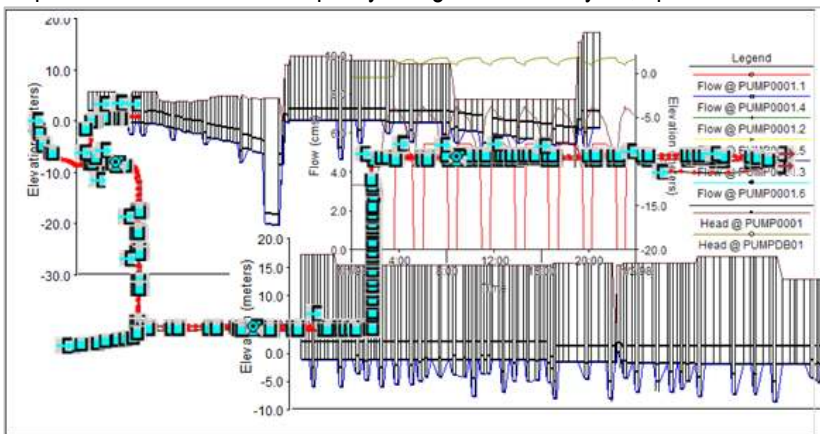
Project Cost:

\$250 Million



Senior Professional Staff: R. Prentice (Project Manager) Dr. S. Zhou (Major Design Reviewer)

The main purpose of this project is to simulate response to projected flows to assist in evaluating potential to improve the distribution of capacity along SSPII conveyors, optimize current SSPII system design, reduce



construction costs, and increase capacity by considering the interaction of different components in the system and dynamic influent flow.

The secondary intent is to evaluate the effectiveness of pipe sizes, bottom slopes and pipe layout used in main conveyor and major connecting pipe design,

based on the hydraulic modeling results with the loading condition of design storm.

The main scope of this project with both original and extended part is consisted of:

- SSPII model set up and testing runs to make sure the model can present the major hydraulics behavior of SSPII
- To optimize the current system design in terms of reducing construction cost and increasing capacity by considering the interaction of different components in the system and dynamic influent flow
- Simulations of preliminary operation strategies for pumping station that contains pumps with different sizes under the peak design flow
- Preliminary analysis of errors and disadvantage of conventional design method

Under the requirement of SMSC, the three design alternatives for pump stations in SSPII with related operation strategies has been presented and tested by using the hydraulics model. Only minor modifications are allowed in proposed design optimizations since the pump stations are currently under construction. One of major aspects of the project focused on the improvement of pump operation strategies.

