

# CITY OF SAN BERNARDINO MUNICIPAL WATER DEPT. WRP COGENERATION PROJECT- DESIGN AND CONSTRUCTION MANAGEMENT SERVICES

The City of San Bernardino Municipal Water Department (Department) operates a Water Reclamation Plant (WRP) for the treatment of wastewater. The WRP treats 29 MGD and produces digester gas in its digesters. Historically digester gas was used to fuel boilers and engine-driven aeration blowers. The Department hired EES Consulting to perform preliminary design, final design and provide construction management services. The new cogeneration facility consists of two Waukesha VGF P48GLD 1800 RPM engines each driving 750 kW Leroy Somer alternators. The cogeneration project will produce 13,000,000 kWh.



EES Consulting staff were involved in all aspects of this project from the feasibility studies to start-up and testing. Don Jarrett was Project Manager, lead mechanical engineer and performed a feasibility study, and preliminary design including economic studies to determine the optimum engine-generator sizing based on available digester gas and expectations for future increases. The preliminary studies were followed by the development of a design criteria document that was used as the basis of design to establish capacity, and other parameters necessary for the design of the cogeneration system and supporting facilities. Preliminary design drawings were prepared to define project features and make estimates of construction costs. Final design services consisted of final calculations, and preparation of the contract drawings and specifications. EES Consulting staff prepared contract documents for the engine-generator package (including heat recovery equipment, controls, switchgear) and prepared contract documents for the installation and startup contract. Construction services included assistance with bidding and bid evaluation, submittal and shop drawing review. Factory inspections were made by EES Consulting staff during equipment manufacture and EES Consulting staff performed engine and generator testing and start-up. The cogeneration project entered operation in late 2005.

EES Consulting also assisted the Department with the electrical interconnection agreement with Southern California Edison and assisted the City with obtaining an \$800,000 grant from the State's Self Generation Incentive Program. EES Consulting also supported the Department's consultant in obtaining the air permit from the South Coast Air Quality Management District.