
Central Valley Regional Water Quality Control Board

TO: Wendy Wyels
Supervisor, Compliance and Enforcement Section

FROM: Nichole Morgan, P.E.
Senior Water Resource Control Engineer

Lucio Orellana, E.I.T.
Water Resource Control Engineer
NPDES COMPLIANCE AND ENFORCEMENT UNIT

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SUBJECT: YOUNG WO PUMPING STATION CAPACITY ANALYSIS

On 30 November 2012, the City of Folsom (City) submitted the *Young Wo Pump Station (Young Wo PS) Capacity Analysis* prepared by Jim Crowley, P.E. (J. Crowley Group). The capacity analysis was triggered by a complaint by a nearby resident, stating that the Young Wo pump station does not have adequate capacity for the five small corporation yard pump stations, Folsom Veterans Hall, and contributing residential homes. The analysis included dry weather and wet weather design flows based on the City's Design and Procedures Manual and Improvement Standards (22 May 2003). The Young Wo PS force main discharges into gravity systems on Forrest Street and Fong Street, ultimately discharging to the 27-inch interceptor in Folsom Blvd. The wet well at the Young Wo PS has a storage volume of approximately 4,887 gallons. The emergency storage volume above the high water level alarm (8 feet) is approx. 3,000 gallons.

Flow projections for the Corporation Yard, Folsom Veterans Hall, and residential homes were properly calculated using estimated dry weather flows and appropriate peaking factors for determining wet weather flows. The analysis utilized a conservative approach investigating the Lake Natoma Shores service area's projected wastewater flows and the system capacity. Thus, providing the highest reasonably expected flows and the lowest reasonably expected capacities within the City's design guidelines. The analysis presents a reasonably expected worst-case scenario to demonstrate the system's full capacity. Specific assumptions and actual data are listed below.

- The estimated peak wet weather flow is 117,900 gpd. Actual daily peak wet weather flow over the last two winters (2010/11 and 2011/12) was only 21,000 gpd.
- The pump capacity analysis assumes a higher friction loss coefficient at worst-case scenario, which results in a capacity of 100 gpm. Actual flow meter records indicate an average current capacity of approximately 150 gpm.
- Flow projections assume high wet weather flow peaking factors of 3.7-4.0. The City's 2008 Sewer Capacity Study indicates an actual lower peaking factor of 3.0 for the Young Wo PS area.

- Flow projections assume maximum use of Corporation Yard bathrooms and shower facilities coinciding with the largest allowable event at the Folsom Veterans Hall, and a maximum flow from every residential customer, all during a large rainstorm.
- The analysis assumes one of the two pumps has failed and is not available.
- None of the emergency storage in the Young Wo PS wetwell is utilized in the analysis.

Table 1 below compares the actual operational data over the past two winters (2010/11 and 2011/10) to the worst case design flows for the Young Wo PS.

Table 1. Young Wo PS Inflow and Pumps

Element	Actual Historic Value	Worst Case Design Flows
Maximum Daily Flow	21,000 gpd (15 gpm)	117,900 gpd (82 gpm)
Pump Output Capacity	150 gpm	100 gpm/pump*

* Assumes only one of the two pumps are operational. The wet well also includes an emergency storage volume of approximately 3,000 gallons.

Table 2 below compares the design capacities and the worst case design flows for the pump station and downstream gravity system.

Table 2. Capacity Comparison

Element	Design Capacity	Worst Case Design Flows
Young Wo PS	100 gpm	82 gpm
Forrest St 6-inch sewer	160 gpm	109 gpm
Fong St 6-inch sewer	160 gpm	114 gpm
Fong St/Folsom Blvd 8-inch sewer	330 gpm	153 gpm

In conclusion, the analysis shows that the Young Wo PS and contributing gravity systems has sufficient capacity to handle worst case flow scenarios. The system's actual flows from historical operations data are significantly less than worst-case scenario design flows, including emergency precautions.