



CASE STUDY

PROJECT NAME

Nuclear Power Plant

DESIGN FLOW

70,000 Gallons Per Day

PROCESS USED

Extended Aeration

DEGREE OF TREATMENT

Primary Screening Headworks

Low Flow Storage

Sludge Chamber

Aeration Chamber

Clarifier Chamber

Chlorine Contact

WASTE TYPE

Domestic

LOCATION

Arizona



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Replacement of Undersized System Includes Extended Aeration Process with Low Storage Tanks for Reduced Flows

SUMMARY

The sanitary WWTP described was designed to process and treat the domestic wastewater generated by employees of a nuclear power plant facility. The unit was designed to replace an undersized existing system. The newly designed unit is based on a flow rate of 70,000/35,000 (50 percent of the design flow) gallons per day. The unit consists of an extended aeration process to include a low flow storage tank for reduced flows, two (2) 35,000 gallon aeration basins, two (2) dual hopper style clarifiers, chlorination system and a sludge storage basin. Headworks consist of a magnetic flow meter, mechanical bar screen with trash chute, and a manual screen to serve as back-up. The controls on this project had to integrate with the complex system already in place at the facility. The wastewater treatment plant is controlled by a MCC, Valve Control Panel, PLC Panel, Generator Termination Cabinet and the Screen and Washer Compactor Local Control Panel. The wastewater is pumped to the treatment system from a remote pump station and gravity flows through the treatment system, except during low flow periods when the low flow storage tanks submersible pumps pump up to the aeration basins, until it discharges into the effluent chamber where two self-priming pumps pump the final treated wastewater to another location. The electrical controls operate the inlet mechanical bar screen, aeration blowers, low flow submersible pumps and submersible mixers, progressive cavity pumps, decant submersible pumps, self-priming effluent pumps, and chlorine analyzer. This project was a 2+ year undertaking, working closely with project engineers, consultants, and contractors while maintaining strict protocol and regulations, given the sensitive nature of work the site.