

### Three Valleys MWD Chooses IMS Aqueous Ammonia Feed System with Air Conditioned Prefab Housing Enclosure for the Miramar WTP Wells No. 1 & 2 in Claremont, CA

Three Valleys Municipal Water District (Three Valleys) is one of 26 water agencies that comprise the Metropolitan Water District of Southern California (MWD). Three Valleys is the primary source of supplemental water for the Pomona, Walnut, and East San Gabriel Valleys. Three Valleys' Miramar Conventional Surface Water Treatment Plant (WTP) processes 25 MGD of water for sale to local agencies serving more than 500,000 people in an area spanning over 133 square miles. Three Valleys' mission is to supplement and enhance local water supplies to meet the region's needs reliably and cost-effectively. In keeping with its mission, Three Valleys is adding a second 450 gpm well to increase its processing capacity.

Currently, water from the existing Well No.1 is injected into the main water line following disinfection by chloramination at the WTP. When the WTP shuts down, however, well water cannot be processed because there is no secondary means for water disinfection. As part of the new well construction project, Three Valleys specified a complete and operational aqueous ammonia feed system, independent from the WTP, to meter ammonia into the well water for chloramination. Integrity Municipal Systems, LLC (IMS) was selected to supply the aqueous ammonia feed system from among several suppliers by Three Valleys, its consulting engineer, Civiltec, and its project contractor, Pascal Ludwig.

Disinfection chemicals are commonly added to raw water to make it safe to drink. Chlorine is one of the most common disin-



fectants. Chloramines, formed by the reaction of ammonia with chlorine, have been found to be effective and stable disinfectants with fewer disinfection by-products (DBPs) leading to increasing use by water utilities. Aqueous ammonia feed systems inject ammonia solution downstream of the chlorine feed points, forming chloramines for disinfection within the

treated water pipelines and distribution system.

IMS proposed its customized Aqueous Ammonia Feed System in an air-conditioned, temperature controlled FRP housing enclosure suitable for outdoor installation and operation near the well site. The temperature controlled environment of the system maintains appropriate storage conditions for the ammonia solution without excess energy consumption and maintenance requirements. The housing enclosure comes complete with lighting, ventilation fan, and breaker panel.

IMS' Aqueous Ammonia Feed System is a packaged system that is pre-piped, pre-wired, and pre-assembled for quick and straightforward installation with minimum time and cost. The system is factory tested prior to shipment for quality assurance. The packaged Aqueous Ammonia Feed System provides typical features, such as an aqueous ammonia storage tank, chemical peristaltic metering pumps and control panel while adding special features including built-in secondary containment -- to avoid any risk of ammonia solution spills and leaks outside of the system confines -- and a two-stage fume adsorber with dry media to prevent the release of ammonia fumes and odors to the atmosphere. The metering pumps can be operated in manual or automatic mode. In the manual mode, the metering pump can be operated by adjusting speed and stroke length to control the chemical feed rates. In the automatic mode, the metering pump can operate with a 4-20mA remote signal from the SCADA system.

IMS' Aqueous Ammonia Feed System has comparatively lower maintenance requirements and operating costs relative to alternative systems, while still meeting the primary objective of the project. Alternatives would have included systems with refrigeration/chiller systems and associated accessories (temperature probes, etc.) to keep the aqueous ammonia solution cool. These systems would have been noisier, more maintenance intensive, and had higher operating costs.

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Aqueous Ammonia Feed System Inside Air Conditioned Enclosure



Overall View of Installed Aqueous Ammonia Feed System  
in an Air Conditioned FRP Enclosure