



GEMI[®]

Collecting the Drops:

**A Water
Sustainability
Planner**

Case Example

Abbott Laboratories: Conserving for Over a Decade at an Arizona Plant

Abbott, which manufactures and sells pharmaceutical and medical products, including diagnostics, medical devices and nutritional products, continually identifies instances where its manufacturing facilities can pursue water reuse and recycling opportunities. Among its U.S. facilities, an Arizona plant has benefited for over a decade from a mid-1990s decision to augment the plant's ingredient water treatment system with an additional reverse osmosis recovery unit.

Abbott's Arizona nutritional products plant obtains all its water needs from an aquifer supply operated by the local water company. Conserving water through water reclamation and reuse is a continuing aim for the facility. One such example involves reclaiming reject water from the facility's reverse osmosis units. The volume of purchased water this practice saves each day is considerable. The water savings translates into significantly reduced operating costs – relating to both the cost of fresh water and cost for wastewater disposal.

In particular, the facility's water needs fall into two general categories:

- High purity ingredient water for product manufacturing and boiler feed water
- Balance-of-plant water uses including rinse water, cooling tower make-up and sanitary needs.

The plant employs a multi-step treatment process to produce the high purity ingredient water. This treatment process involves multimedia filtration and activated carbon filtration, followed by dual micro-filtration steps with anti-scalant addition, de-chlorination utilizing bisulfide and two-stage reverse osmosis (RO) treatment. The RO system consists of four two-stage arrays; each array is capable of producing 150 gallons per minute of both ingredient and rinse water. The permeate from the first stage of the two stage arrays is ingredient water. The concentrate from the first stage is sent to the second stage of the array. The second stage permeate is rinse water. The concentrate from the second stage of the RO system would have been discarded with other plant waste streams to either a land application field or the local sanitary district. This volume amounted to about 256,700 gallons per day.

To conserve water and reduce wastewater volumes, the plant, when installing the original RO system in 1994, installed an additional reverse osmosis skid to supply its balance-of-plant water needs by recovering RO reject water from its primary or high purity ingredient water RO system. The recovered RO reject water now furnishes 11 percent of the balance-of-plant water needs. The addition of the recovery skid enabled the plant to conserve approximately 89,000 gallons per day of purchased water and reduce wastewater discharges by 66,700 gallons per day.