



## Project Profile

### Arsenic Removal, Green Valley, Arizona

Co-precipitation with LayneOx™ Provides 2400 GPM of Potable Water



*Arsenic Filters (foreground) each contain nine cubic yards of LayneOx. A chemical feed of ferric chloride binds the arsenic and is then adsorbed to the filter media, and then purged during backwash to a settling tank (background).*

Located 20 miles south of Tucson, Arizona, the unincorporated active living community of Green Valley is home to over 22,000 residents. With few surface water alternatives, the community is entirely dependent on groundwater and, like many Southwestern communities; the available groundwater contains naturally occurring arsenic above the current regulated levels. Untreated, groundwater withdrawals would be non-compliant with the U.S. EPA's Maximum Contaminant Level of 10 ppb for arsenic in drinking water.

In 2005 Community Water Company contracted Layne Christensen Company to design and install arsenic treatment plants at four well sites, each utilizing co-precipitation, the Best Available Technology for arsenic removal. The systems were designed to use LayneOx™, a highly efficient granular catalytic filter media with a naturally high manganese dioxide content. This process removes iron, manganese, hydrogen sulfide and arsenic in one cost effective backwash process.

Disposal of concentrated contaminants is a common concern in water treatment. In the co-precipitation process waste disposal is easily accomplished as the arsenic combines with iron to form ferric arsenate, which typically can be disposed of as non-hazardous waste.

The largest of the four treatment systems are comprised of six 8.5-foot diameter pressure filters, each containing nine cubic yards of LayneOx™ manganese dioxide filter media. The plant's six pressure filters have a combined treatment capacity of 2400 GPM.

The arsenic treatment plants include a sodium hypochlorite pre-oxidant storage tank and injection system, a ferric chloride injection system, LayneOx™ filters, a settling tank, a decant and sludge pump skid, and a storage tank for final treated water. The system has been on-line since 2007 producing treated water with arsenic levels below the 10 ppb MCL.

Start Date: September, 2005

Completion Date: September, 2007

Owner: Community Water Company  
Green Valley, Arizona

General Contractor: Well / Pump,  
and Treatment System Engineer:  
Layne Christensen Company



Variable frequency drive (foreground)  
Well & pump control panel (background)



The forebay stores 300,000 gallons of treated water.



Sludge Densification Unit dewateres the arsenic sludge before disposal.

Layne Christensen Company

West ..... 800-336-5374  
Central ..... 800-407-4449  
East ..... 800-269-4590  
South ..... 800-356-3824

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