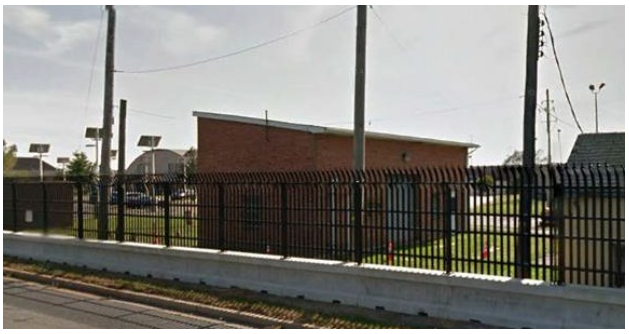
Drinking Water Case History:
Fe Removal

Background

A water utility in the state of Delaware has potable groundwater wells with high levels of Fe (15 ppm peeks) with a combined flow rate of 1 MGD. The existing biological filter needed replacement due to extensive fouling, cost and excessive liquid waste structure. The well location is at a National Guard Air Force base. The iron needs to be removed in a cost effective manner, with minimal waste generation.



A pilot verification test program was conducted using Purifics' Cuf (Ceramic Ultra-Filtration) M platform. The client and its operators received training during setup and subsequently ran the pilot over several months with the sustained results.

Parameter	Influent	Effluent
Fe (ppm)	15	<0.15

Full Scale Installation

A Cuf M36 System for the purification of groundwater of Fe, installed 2015, supplies drinking water to the community at 600 gpm from 3 wells. The Cuf platform is the complete plant. This 1 MGD Cuf platform is the entire plant, is ANSI 61 certified and fits into the small building shown.

Plant Operations

The Cuf system currently runs at about 600 gpm drawing water from 3 wells in varying ratios. The incoming water has a pH of 6.7 with incoming Fe levels of nominally 8 ppm. The Fe is removed below the detection limit (<0.15 ppm) and blowdown of the Fe rich concentrate is less than 1% of flow. Permeate is discharged directly to the clear well. Sustained flux is 825 GFD (1400 LMH) at a typical TMP of 12 psi (0.82 bar).

TMP rinse occurs weekly and is performed automatically by the Cuf system. This involves the membrane module and TMP pump being automatically isolated and a small amount of acid is injected to lower the pH. In about 30 minutes the process is completed and the system is returned to service.

Benefits

Cuf technology is the ideal solution for Iron removal in a packaged unit.

The benefits include:

- No oxidizing agents
- Eliminates high chlorine doses
- Eliminates elevated THM potential
- Energy 0.1 kWh/m^3
- System complexity reduction
- Drastically reduced footprint when compared to existing technology
- No backwash, minimized liquid waste
- Ease of operation, integrated and fully automated
- Certified NSF 61

Reference Documents

- DOC3019 Cuf Ceramic Ultra Filtration
- DOC2029 On-Site Pilot Testing

Purifics **340 Sovereign Road, London, ON, Canada, N6M 1A8**
Ph: 519.473.5788, info@Purifics.com, www.Purifics.com

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