

HARMSCO®

Solutions for Small Community Water Supply

Town of Shenandoah, Virginia

Problem

The **Township of Shenandoah, Virginia** was forced to comply with new regulations being enforced by the United States EPA concerning the removal of Cryptosporidium and Giardia Cysts from surface waters. Previously, no filtration was required.

Application

Ground water under the influence of surface water.

Site Characteristics

Turbidity	0.5 NTU
Existing Filtration	None
Flow Rate	450 GPM

Alternatives Considered

The Township of Shenandoah considered the following three alternatives:

1. Standard water treatment plant (\$500,000 total equipment cost).
2. Reverse osmosis (cost was undisclosed but considered too expensive).
3. Six Harmsco HUR-850-ASME filters...three with 5-micron cartridges and three with 0.35 micron cartridges (costs were a fraction of the costs associated with a conventional water treatment plant).

The Harmsco Advantage

- ▶ Low capital costs
- ▶ Filter housings meet ASME design requirements and come with “U” stamp.
- ▶ 5-micron cartridges used for pre-filtration are cleanable and reusable.
- ▶ 0.35-micron cartridges used for final filtration meet 3 log (99.9%) removal requirements described in EPA requirements.
- ▶ Compact design requiring a smaller building, compared to conventional equipment.
- ▶ Easy installation compared to conventional equipment.

Note: 0.35 micron cartridges used, prior to introduction of Poly-Pleat™ cartridges.

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Results

Pilot Test

William F. Wise, P.E. was employed by the township to complete pilot testing using two Harmsco® Hurricane® HUR-850-ASME filter housings, installed in series. Five Harmsco® HC-170-5 (5 micron nominal) cartridges were installed in the first housing and five Harmsco® HC-170-0.35 (0.35 micron nominal) cartridges were installed in the final filter housing.

Pilot Test Results

Flow rate	150 gph
Influent NTU	0.5
Effluent NTU	0.4
Gallons filtered to reach 20 PSID	52,950,000
Duration to reach 20 PSID	10 months
Cartridge costs per 1,000 gallons	\$0.125 (at list prices)

Challenge Tests (conducted by independent laboratory)

Test Results

Cryptosporidium removal	3.3 log (> 99.9%)
Giardia cyst removal	3.5 log (> 99.9%)

Note: Tests conducted by Clancy Environmental Consultants, Inc. using live cysts.

Final Results

At the conclusion of the pilot tests, the Township of Shenandoah, Virginia purchased four additional Harmsco® Hurricane® HUR-850-ASME filters. They are now using Harmsco® equipment to filter the entire township's water requirements.

For Additional Information

Please contact Harmsco Filtration Products and ask for a copy of the Shenandoah project and test results from Clancy Environmental Consultants, Inc.

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