

**California Surface Water Treatment Rule
Alternative Filtration Technology Summary – CCF/Pressure Filters/Bag and Cartridge Filters
SWRCB-DDW Water Treatment Committee – June 2018**

Manufacturer	Current Contact Information	Model or Product Designation	Clarifier Type	Pathogen log ₁₀ Removal Credit			Clarifier / Filter Loading Rate (gpm/ft ²)
				Virus	Giardia	Cryptosporidium	
Contact Clarification-Filtration Systems							
BWS, Inc. Municipal Water Group (formerly American Water Technology, Inc.)	Chris Beebe chris@bws-municipal.net (530) 722-4555	MB/WF series ^A	Pressurized Downflow garnet and coarse media	2/1 ^B	2.5/2 ^B	2	5 / 3 ^C
WesTech (formerly Culligan and Siemens)	www.westech-inc.com (801) 265-1000	Multi-Tech	Pressurized Downflow	2/1 ^B	2.5/2 ^B	2	3 / 3 ^C
AWC Water Solutions (formerly Pacific Keystone and Corix)	Michael Morris mikem@awcwater.com (360) 386-1396 www.awcwater.com	AC Clarifier	Upflow- nonbuoyant coarse sand	2/1 ^B	2.5/2 ^B	2	10 / 5 ^D
Pata Engineering	No information available on the company	PV-10 PV-20	Downflow	2/1 ^B	2.5/2 ^B	2	3-6 / 3 ^D
		PV-24	Upflow- nonbouyant media	2/1 ^B	2.5/2 ^B	2	5-10 / 6 ^D
Infilco Degremont	No information available on the company	Advent Package Water Treatment Plant		2/1 ^B	2.5/2 ^B	2	
WesTech (formerly Siemens Microfloc)	www.westech-inc.com (801) 265-1000	Trident; Tri-Mite	Upflow-buoyant media	2/1 ^B	2.5/2 ^B	2	10 / 5 ^D
		Trident HS	Tube settlers/upflow- buoyant media	2	2.5	2	5 / 10 / 5
Roberts Filter Co.	www.robertsfilter.com (610) 583-3131	Pacer II	Upflow- nonbouyant media	2/1 ^B	2.5/2 ^B	2	10 / 5 ^D
Pressure Filters							Filter Loading Rate
Serck Baker	No information available on the company	Hi-Rate Pressure Filtration	Inline, High rate	1	2	2	Up to 9 NTU ^E ; 12 gpm/ft ²
EPD Wearnes (USA) Inc	(866) 299-5929 www.epdusa.net	EPD Alternative Filtration	Inline, High rate, dual stage	1	2	2	Up to 6 NTU ^E ; 12 gpm/ft ²
							Up to 20 NTU ^E ; 5 gpm/ft ²

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Manufacturer	Current Contact Information	Model or Product Designation	Pathogen log ₁₀ Removal Credit			Turbidity Performance	Filter Loading Rate (gpm/bag)	Maximum Pressure Differential (psi)
			Virus	Giardia	Cryptosporidium			
Bag Filters								
Strainrite	Gregg Fischer Strainrite Companies Aqua-Rite DW Products (208) 336-6611 (208) 867-6384 (cell) gffilter@aol.com www.strainrite.com Mark MacKenzie Western Regional Sales Manager The Strainrite Companies Cell (562) 755-6477	<i>Prefilter:</i> HPM99-CC-2-SR <i>Final Filter:</i> HPM99-CCX-2SR; both in an AQ2-2 housing Or (old housing version no longer available for purchase) In a AQ2-2BSHD (350740) housing equipped with the AQC-1 compression device	0	2.5	2	0.3 NTU 95% of the time Not to exceed 1.0 NTU _G	20	25
Rosedale	Joe Bodle. Phone: 657-212-3147 jbodle@valin.com www.rosedaleproducts.com	<i>Prefilter:</i> GD-PO-523-2 <i>Final Filter:</i> GLR-PO-825-2 (Prefilter no longer approved for use)	0	2	1	0.3 NTU 95% of the time Not to exceed 1.0 NTU _G	10 (w/ prefilter) 3 (w/out prefilter)	10
		PS-520 PP-241 GLR-PO-825-2 (Both filters must be used in series)	0	2	2	0.3 NTU 95% of the time Not to exceed 1.0 NTU _G	13 (must be operated with both filters in series)	PS-520 PP-241: ΔP=20 GLR-PO-825-2: ΔP=2.5
Cartridge Filters								
Harmsco	Alfredo Rizo-Patron arizopatron@harmsco.com Cyndi Benson Product & Process Development Engineer Harmsco Filtration Products 561-848-9628 cbenson@harmsco.com	MUNI 40-MP Cartridge - HC40-LT2	0	2.5 ^F	2 ^F	0.3 NTU 95% of the time Not to exceed 1.0 NTU _G	30 (1 filter)	30
		MUNI 90-MP Cartridge – HC/90-LT2	0	2.5 ^F	2 ^F		60 (1 filter)	30
		MUNI-1-2FL-304 Cartridge – HC/170-LT2	0	2.5 ^F	2 ^F		100 (1 filter)	30
		MUNI-3-3FL-304 Cartridge – HC/170-LT2	0	2.5 ^F	2 ^F		300 (3 filters)	30

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	www.harmsco.com Gregg Fisher gfilter@aol.com 208-336-6611	MUNI-5-4FL-304 Cartridge – HC/170-LT2	0	2.5 ^E	2 ^E		500 (5 filters)	30
		MUNI-8-6FL-304 Cartridge – HC/170-LT2	0	2.5 ^E	2 ^E		800 (8 filters)	30

^A BWS, Inc. Municipal Water Group (formerly American Water Technology) offers multiple system sizes under the MB/WF treatment series. All systems held to the same maximum clarifier and filter loading rates are expected to have equivalent performance.

^B DDW generally considers CCF systems as equivalent to direct filtration (2.0-log giardia, 2.0-log cryptosporidium, and 1.0-log virus removal credits) when they are operated to meet the following performance requirements:

- 0.3 NTU in at least 95% of measurements per month of combined filtered effluent samples
- Maximum turbidity not to exceed 1.0 NTU

In order for a CCF system to be granted with equivalent conventional treatment credit (2.5-log giardia, 2.0-log cryptosporidium, and 2.0-log virus removal credits), the individual filter effluent or combined filter effluent must be monitored on a continuous basis (no grab sampling option) and the filter performance will be based on the evaluation of data that is collected at 15-minute intervals.

Conventional Treatment Credit AFT listing can be granted to any CCF system with solids reduction ahead of a filter that meets standard filter media design criteria and meets the 0.15 NTU 95% of the time criteria during a one year demonstration period.

Following successful demonstration, the performance requirement for the combined filtered effluent will be:

- 0.2 NTU, 95% of time, 15-minute measurements
- Maximum turbidity not to exceed 1.0 NTU

^C Multi-media pressure filter – maximum filter loading rate of 3.0 gpm/ft² allowed under the SWTR.

^D Multi-media gravity filter – maximum filter loading rate of 6.0 gpm/ft² allowed under the SWTR.

^E Source water maximum turbidity.

^F Removal credit is based on a single LT2 cartridge operation and additional 0.5 removal credit (Giardia and Crypto) is based on LT2 cartridges installed in series. Regardless of removal credit, each plant is required to provide a minimum of 0.5-log Giardia and 4-log virus inactivation.

^G Bag/Cartridge filters will be permitted with an initial turbidity standard of 0.3 NTU. Following one year of operation, an Alternative Filtration Technology One Year Report will be submitted to the DDW District office for review. Following the review, a final permitted turbidity standard will be set based on the local source water quality. The turbidity standard will be set between 0.2 NTU to 1.0 NTU. All existing permitted bag/cartridge filter systems' turbidity standard may remain as currently permitted.

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Disclaimer: This summary of accepted alternative filtration technologies has been extracted from the Division's Alternative Filtration Technology Report (June 2001 Draft) and individual acceptance letters. It is not intended to be used as a standalone document for persons planning, designing, or operating a water treatment plant. The summary does not contain all exceptions or qualifications for the individual filtration technologies. Please consult the Division's Alternative Filtration Technology report and the individual acceptance letters for additional details and recommendations.

Copies of the acceptance letters issued by the Division for the alternative filtration technology may be obtained from the Division's District offices. The Alternative Filtration Technology Report may be downloaded from the Division's website at:

http://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/Publications.shtml

Review and approval of an alternative filtration technology listed in this summary for use on a particular public water system source will be handled on a case-by-case basis via the permit process by the DDW District offices.