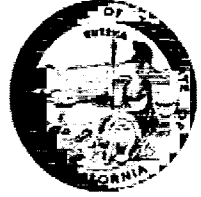




California
Department of
Health Services
DIANA M. BONTÁ, R.N., Dr. P.H.
Director

State of California—Health and Human Services Agency
Department of Health Services



GRAY DAVIS
Governor

February 24, 2003

Mr. Adrian Carolan
Vice President of Technology
Schreiber LLC
100 Schreiber Drive
Trussville, Alabama 35173

Subject: Use of Schreiber LLC's "Fuzzy Filter"® compressible media filtration technology to comply with the California Water Recycling Criteria

Dear Mr. Carolan:

By letter dated September 10, 2002, Schreiber LLC requested Departmental acceptance of the Fuzzy Filter® compressible media technology as an acceptable filtration technology for compliance with the California Water Recycling Criteria (Title 22). Supplemental information dated January 21, 2003 was submitted to address questions raised by the Department's Recycled Water Committee.

This request was based on findings outlined in the "Evaluation of the Fuzzy Filter for the Filtration of Secondary Effluent" conducted by U.C. Davis (September, 1996) and performance data from installations in, and outside of, California. The filtration performance data outlined in the report indicates the filter's ability to reliably meet the turbidity performance requirements outlined in Title 22 utilizing the fibrous compressible media as the filter medium.



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Division of Drinking Water and Environmental Management, Recycled Water Unit
1180 Eugenia Place, Suite 200, Carpinteria, California 93013
(805) 566-9767; (805) 745-8196 fax
Internet Address: www.dhs.ca.gov/ps/ddwem/

Based on a review of the materials submitted, the Department conditionally accepts the use of the Fuzzy Filter® compressible media technology filtration technology for use in compliance with the California Water Recycling Criteria, subject to the following special provisions:

1. Loading rates shall not exceed 30 gpm/ft².
2. Turbidity in the filtered water shall not exceed an average of 2 NTU within a 24-hour period, 5 NTU more than 5 percent of the time within a 24-hour period, and 10 NTU at any time.
3. Acceptance of this technology is contingent on it being complimented with a disinfection process, which is compliant with Section 60301.230 (Title 22).
4. Acceptance of this technology is for the 1.25" diameter spherical ball composed of a crimped polyvinylidene chloride synthetic fiber media, which was assessed in the report noted above. Other media materials and fabrication will require additional demonstration studies prior to individual acceptance by the Department.
5. Filtration units installed for Title 22 recycled water applications shall incorporate design changes outlined in your January 21, 2003 transmittal, which include:
 - a. Piping and process controls will be provided to use filtered water in lieu of unfiltered water for the wash cycle.
 - b. The wash water outlet is below the filtered water effluent line with an invert difference of 1.5 feet.
 - c. Process controls shall have the capability of confirming positions of filter effluent and wash water valving with alarm capability for malfunction.
6. Pretreatment processes should be designed and operated to ensure that the turbidity of the influent to the filter does not exceed 10 NTU more than five-percent of the time within a 24-hour period and never exceeds 15 NTU.
7. Individual operations plans shall provide for assurances that adequate backwash duration is practiced to ensure solids removal.

8. Individual operations plans shall include recommended operational configurations (i.e. percent compression and loading rate) based on site-specific pilot work and/or available performance data from systems with similar secondary effluent water quality characteristics.
9. Any proposed changes made in the manufacturing practices that may result in a change in the physical attributes or character of this filter shall be reviewed in advance by the Department to determine whether the modifications will require additional testing.

It is noted that the Department considers a properly filtered and disinfected recycled water meeting the turbidity performance and coliform requirements outlined in the criteria to be essentially pathogen free. Treatment requirements determined necessary to meet the disinfected tertiary - 2.2 criteria include media filtration to reduce turbidity to less than a daily average of 2 NTU and disinfection to ensure a minimum CT of 450 milligram-minutes per liter at all times. This treatment scheme is intended to remove solids (including some pathogens) and properly prepare the water for effective disinfection in order to achieve an approximately five-log reduction of virus.

However, the current turbidity performance standards are based on achievable turbidity performance in media filters and do not necessarily assure any specific minimum level of pathogen removal. This is a recognized issue in the regulations that we feel needs to be addressed by the Department and the water recycling industry.

It is recognized that biological treatment introduces additional variables into the picture, as the type of biological treatment can impact the particle size distribution and downstream filter and disinfection performance. However, the integration of these processes into a process train is not fully understood at this time and must be addressed by industry and regulators. Nevertheless, it remains the intent of the Department that an essentially pathogen free effluent be produced by maintaining a 5-log virus removal/inactivation barrier through filtration and disinfection.

The Department will continue to review all proposed water recycling projects on a case-by-case basis to ensure full compliance with all applicable treatment and reliability features required by the Water Recycling Criteria. This will

include the collective review of all treatment unit processes, operational controls (e.g. loading rates, backwash/rinse rates, frequency of backwash/rinse, 'O&M' procedures, etc).

If you have any questions concerning this letter, please contact the undersigned at (805) 566-9767.

Sincerely,

A handwritten signature in black ink, appearing to read "Jeffrey L. Stone". The signature is fluid and cursive, with the first name "Jeffrey" and last name "Stone" clearly legible.

Jeffrey L. Stone, Chief
Recycled Water Unit
Division of Drinking Water
and Environmental Management

cc: Recycled Water Committee