

STATE OF COLORADO

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Dedicated to protecting and improving the health and environment of the people of Colorado

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Colorado Department
of Public Health
and Environment

May 15, 2012

Lloyd Johnson, P.E.
Vice President of Research and Development
Aqua-Aerobic Systems, Inc.
6306 North Alpine Road
Loves Park, IL 61111

Subject: Acceptance of the Aqua-Aerobic Systems AquaDisk® and Aqua MiniDisk® Filters as a New Technology for Use in Domestic Wastewater Treatment Works in Colorado

Dear Mr. Johnson:

The Water Quality Control Division (the Division) has received and reviewed information for the Aqua-Aerobic Systems AquaDisk® and Aqua MiniDisk® Filters in accordance with Section 1.6.1 of *Design Criteria Considered in the Review of Wastewater Treatment Facilities Policy 96-1* (Wastewater Design Criteria). The filter design is accepted for use as a New Technology subject to the design criteria in Table 1.

This acceptance addresses the following item:

- AquaDisk® and Aqua MiniDisk® Filters using one of the following accepted cloth fabric filter media: OptiFiber® PA2-13 woven nylon pile fabric (10 micron mesh), OptiFiber® PES-13 woven polyester fabric (10 micron mesh), and OptiFiber® PES-14 woven polyester fabric (5 micron mesh).

This acceptance applies only to the AquaDisk® and Aqua MiniDisk® Filters using one of the accepted cloth fabric filter media identified above and does not constitute construction approval for installation in domestic wastewater treatment facilities. **Review and approval for the design of any domestic wastewater facility proposing to use this technology will be further reviewed on a site-specific basis by the Division** as required by Section 22.11(1) of the *Site Location and Design Approval Regulations for Domestic Wastewater Treatment Works 5CCR 1002-22* (Regulation 22) and the Colorado Water Quality Control Act (Act), Section 25-8-702, C.R.S. which states in part that: "No person shall commence the construction of any domestic wastewater treatment works or the enlargement of the capacity of an existing domestic wastewater treatment works, unless the site location and the design for the construction or expansion have been approved by the division."

Any modifications to the physical attributes or characteristics of this treatment technology must be submitted to this office for review and acceptance by the Division prior to sale in Colorado. This condition includes changes made to the filter fabric or manufactured filter model (e.g., filter media, piping, mechanisms). The Division will review any additional third party verification reports and issue a revised acceptance letter, or denial, as appropriate.

Table 1. Aqua-Aerobic Systems AquaDisk® and Aqua MiniDisk® Filters Design Criteria:

Design Criteria	
1.	Design loading rate shall not exceed an instantaneous flow rate of 6 gpm/ft ² . Design loading shall be calculated with one installed disk out of service. Pretreatment shall be incorporated into the design, as required, to account for and minimize the impacts of periodic influent loadings from side-stream processes.
2.	Cloth media filters are primarily intended for filtering secondary clarifier quality effluent. Pretreatment processes shall be incorporated into the site-specific process train, as required, to ensure that the turbidity of the influent to the cloth media filter is not intended to exceed 10 NTU, approximately 27 mg/L TSS, more than five percent of the time within a 24-hour period and never exceeds 15 NTU, approximately 40 mg/L TSS.
3.	Design for existing facilities shall include testing or analysis (e.g., filter influent TSS, particle size analysis, anticipated loading, lab tests, bench tests, and/or pilot testing) performed to evaluate filter effectiveness and the need for pretreatment for the expected wastewater characteristics.
4.	For facilities where ambient temperatures can be below freezing, the filter unit design shall include adequate cold weather provisions such as heat trace lines, and/or installation in a temperature-controlled enclosure.
5.	The design must identify how the Aqua-Aerobic Systems alarm signal will notify operators of high level alarm activations, when the facility is attended and unattended.
6.	The design must indicate where and how both the backwash water and the emergency overflow is directed (e.g., to headworks, clarifier, by pipe, channel, pump).
7.	Design Redundancy: Filter installations shall have at least one installed extra disc as identified in item 1 above. Filter installations shall have at least two backwash pumps and drive motors capable of being interconnected to each disk filter (i.e., either installed or available at the site).
Additional Operations and Maintenance Criteria	
1.	An Operations and Maintenance (O&M) Manual will be provided for all installations. The document should be available for review by the Division during compliance inspections.
A.	Individual operations plans shall establish backwash procedures and durations to ensure solids removal from both 'in' and 'on' the cloth media.
B.	Individual operations plans shall include scheduled inspections and assessments of the cloth condition as an operational safeguard. This plan for scheduled inspections and assessments should include a routine visual inspection at least monthly, and a more detailed assessment of the cloth condition at least annually. Inspection frequencies may change with time as media condition changes and performance experience is gained.
C.	Individual operations plans shall establish procedures for sludge wasting to prevent excessive solids buildup in the filter vessel.
2.	Spare Parts: At least one (1) cloth filter disk (i.e., six segments) must be kept onsite, in addition to design redundancy noted above.

Lloyd Johnson, P.E.
Aqua-Aerobic Systems, Inc.
May 15, 2011
Page 3

Please be aware that any point source discharges of water from treatment facilities are potentially subject to a discharge permit under Colorado's State Discharge Permit System. Any point source discharges to state waters without a permit are subject to civil or criminal enforcement action.

As part of this review, the Division has evaluated the following documents:

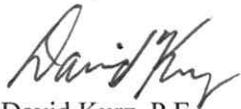
- May 3, 2012 Submittal from TST Inc. of Denver providing additional information for the new technology review for the AquaDisk® Filters.
- April 2012 Aqua-Aerobic Systems, Inc. Evaluation of Aqua-Aerobic Systems, Inc. OptiFiber® PES-14® Cloth Media.
- November 17, 2007 California Department of Public Health Conditional Acceptance of the Aqua-Aerobic Systems Cloth-Media Disk Filter Utilizing the PES-13 Woven Polyester Cloth Media to Comply with California Water Recycling Criteria.
- May 6, 2002 (corrected January 13, 2009) California Department of Health Services Conditional Acceptance of the Aqua-Aerobic Systems Cloth-Media Disk Filter Utilizing the PA-13 Nylon Pile Fabric to Comply with California Water Recycling Criteria.
- Design submittals received by the Division from 2003 to 2012.
- Various additional correspondences.

Please direct any further correspondence regarding this acceptance to:

David Kurz, P.E.
Colorado Department of Public Health and Environment
Water Quality Control Division
4300 Cherry Creek Drive South
Denver, CO 80246

If you have any questions or comments, please call David Kurz at 303-692-3552.

Sincerely,



David Kurz, P.E.
Lead Wastewater Engineer
Engineering Section
Water Quality Control Division

cc: CDPHE-WQCD-ES