

Robert J. Huston, *Chairman*  
R. B. "Ralph" Marquez, *Commissioner*  
John M. Baker, *Commissioner*  
Jeffrey A. Saitas, *Executive Director*



## TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

*Protecting Texas by Reducing and Preventing Pollution*

October 19, 2001

Mr. John R. Roy  
President  
Aqualogic™  
14093 Bulverde Road  
San Antonio, Texas, 78247

Re: Aqualogic™ New Storm Water Filtration Technology  
Technical Guidance Manual Insert Language for  
"Computer Controlled Cartridge Filter Systems"  
as a Best Management Practice (BMP)

Dear Mr. Roy:

The Texas Natural Resource Conservation Commission (TNRCC) has completed its review of the additional Technical Guidance Manual language for the approved BMP duly named "**computer controlled cartridge filter system**" for insertion into the TNRCC's Technical Guidance Manual for the Edwards Aquifer Protection Program. The TNRCC agrees that the 90% removal efficiency of the filter cartridge as described in media properties should remain as worded in the insert approved on April 17, 2001. However, the TSS removal efficiency (%) of the cartridge controlled filter system as a BMP should be stated as 95%.

The TNRCC will now include the language you provided as an insert to the section of the Technical Guidance Manual under **Table 3.4 TSS Reduction of Selected BMPs**. We will insert this new BMP material into the Technical Guidance Manual when it is revised and reprinted. In the interim, the TNRCC will provide this insert page as an addendum whenever the Technical Guidance Manual is provided to the public or regulated community.

If you have any questions or require additional information, please contact Bobby Caldwell of the Edwards Aquifer Protection Program of the San Antonio Regional Office at 210/403-4020 .

Sincerely,

*Bobby D. Caldwell*  
for Jeffrey A. Saitas, P.E., Executive Director  
Texas Natural Resource Conservation Commission

JAS/bc

Enclosure: Insert material, page 3-29, Section 3.3.4 TSS Removal Efficiency

cc: Mr. Scott Halty, San Antonio Water System  
Mr. John Bohuslav, TXDOT San Antonio District  
Ms. Renee Green, Bexar County Public Works  
Mr. Tom Hornseth, Comal County  
Mr. Greg Ellis, Edwards Aquifer Authority

---

REPLY TO: REGION 13 • 14250 JUDSON RD. • SAN ANTONIO, TEXAS 78233-4480 • 210/490-3096 • FAX 210/545-4329

P.O. Box 13087 • Austin, Texas 78711-3087 • 512/239-1000 • Internet address: [www.tnrcc.state.tx.us](http://www.tnrcc.state.tx.us)

printed on recycled paper using soy-based ink

### 3.3.4 TSS Removal Efficiency

The available literature was reviewed to determine reported TSS removal rates in structural stormwater controls. The primary literature sources for this manual are Barrett et al. (1998b), Brown and Schueler (1997), Glick et al. (1998), and Young et al. (1996). The values shown in Table 3.4 represent percentage reduction in stormwater load for the runoff treated by the selected structural controls.

**Table 3.4 TSS Reduction of Selected BMPs**

| <b>BMP</b>                                      | <b>TSS Reduction (%)</b> |
|---|--------------------------|
| Retention/Irrigation                            | 100                      |
| Ext. Detention Basin                            | 75                       |
| Grassy Swales                                   | 70                       |
| Vegetated Filter Strips                         | 85                       |
| Sand Filters                                    | 89                       |
| Wet Basins                                      | 93                       |
| Constructed Wetlands                            | 93                       |
| Computer Controlled<br>Cartridge Filter Systems | 95                       |

### 3.3.5 Removal for BMPs in Series

BMPs can be located in series to achieve the total TSS reduction required. The efficiency of each subsequent control would be expected to be less since the sediment that is most easily removed is captured in the first control; consequently, Equation 3.7 will be used to calculate total efficiency of BMPs in series:

**Equation 3.7**       $E_{Tot} = [1 - ((1 - E_1) \times (1 - 0.8E_2) \times (1 - 0.3E_3))] \times 100$

Where:

- $E_{Tot}$  = Total TSS removal efficiency of BMPs in series (%)
- $E_1$  = Removal efficiency of first BMP (decimal fraction)
- $E_2$  = Removal efficiency of second BMP (decimal fraction)
- $E_3$  = Removal efficiency of third BMP (decimal fraction)