

May 13, 1997

GMP #88

To: District Environmental Health Managers
District Health Directors
OEHS Staff

Through: Donald J. Alexander, Director
Division of Onsite Sewage and Water Services

From: Anish R. Jantrania, Ph.D., P.E.
Technical Services Engineer

Subject: Approval of Whitewater® Filter/Drip System
Drip Disposal System
Onsite - Product Approval - Drip Disposal

The Department has completed a review of the Whitewater® Filter/Drip System. This GMP is intended to provide guidance on how to process applications for the Whitewater® Filter/Drip System. The site criteria are contained in the **Conditions of Approval** document and will be covered in greater detail during training. Briefly however, the request was intended to allow the use of the Whitewater® Filter/Drip System on sites that meet the soil and site requirements for low pressure distribution systems as found in the Regulations including but not limited to, depth to rock, water table percolation rates and setback distances. The installation depth of the dripper lines can be as shallow as 12 inches from the surface because pretreatment is used.

The Department's approval does not go beyond this request. This approval is only granted for the Whitewater® Filter/Drip System and is not transferable to any other product. Applications for products other than the Whitewater® Filter/Drip System, for sites that exceed the scope of this waiver, are subject to the provisions of §2.25.

The process to obtain a construction permit for drip disposal system begins with filing an application. Applications may be made to review a new site, to modify a previously issued permit, or to convert a 415 certification letter to a construction permit for a drip disposal system. The approval defines the Whitewater® Filter/Drip System as a Type II system and local health departments may require either formal or informal plans and specifications, as deemed appropriate for the proposed use and site conditions, prior to issuing a permit.

When a new application is made for a construction permit and it specifically requests a Whitewater® Filter/Drip System, an application fee shall be charged and the site shall be evaluated in the same manner as any application for a conventional septic system. If the site and soil conditions would be suitable for a low pressure distribution system, the site shall be deemed suitable for a Whitewater® Filter/Drip System. The applicant will then be advised to have plans and specifications prepared for the department's review. If adequate expertise exists within the local health department, the plans may be reviewed locally. Otherwise, Environmental Health Specialists shall follow GMP 17 for the review of plans.

Applications to convert a 415 certification letter to a Whitewater® Filter/Drip System shall follow the same general process, including collecting a fee; however, no soil evaluation is specifically required. A site evaluation (as opposed to soil evaluation) may be necessary to assure that conditions have not substantially changed since the letter was issued. If the site and soil conditions are unchanged and would be suitable for a low pressure distribution system, the site shall be deemed suitable for a Whitewater® Filter/Drip System. The applicant will then be advised to have plans and specifications prepared for the Department's review. The plan review process is identical to that described above.

When an application is made to convert an existing Type I or II permit to a Whitewater® Filter/Drip System, no application fee shall be charged as no site evaluation should be necessary. If the documented site and soil conditions indicate conditions are suitable for a low pressure distribution system, the site shall be deemed suitable for a Whitewater® Filter/Drip System. The applicant will then be advised to have plans and specifications prepared and the department will review them as previously describe.

System design, installation, and operation shall comply with the requirements described in the **Conditions of Approval**, Delta Environmental Products, Inc. catalog, the Sewage Handling and Disposal Regulations and standard engineering practices.

Attachment

GMP #88

Onsite - Product Approval - Drip Disposal

Conditions of Approval

Whitewater® Filter/Drip System Waiver of Experimental

I. System description.

The Whitewater® Filter/Drip disposal system shall consist of the following key components. This waiver is based on the specific components listed. Equivalent components may be used after receiving written approval from the Division of Onsite Sewage and Water Services.

A. Building Sewer. The building sewer used in conjunction with a Whitewater® Filter/Drip disposal system shall comply with Part IV, Article 2 of the Sewage Handling and Disposal Regulations (the regulations).

B. Pretreatment system. The minimum pretreatment system preceding a Whitewater® Filter/Drip disposal system shall be NSF International Standard 40, Class I listed Whitewater® Aerobic Treatment Plant.

C. Filtration. An automatic, self-flushing Arkal "disc" filter capable of removing solids larger than 115 microns is required prior to the drip field.

D. Conveyance system. Except as noted below, force mains shall comply with the requirements of Section 4.23 of the Sewage Handling and Disposal Regulations

E. Emitter tubing. Geoflow flexible polyethylene tubing, 0.5 inch diameter with uniformly spaced (2 feet o.c.) one GPH nominal turbulent non-pressure compensating emitters shall be used in the absorption field.

F. Central control unit. A Whitewater® Filter/Drip control unit shall be used which is capable of:

Monitoring the system to record cumulative flow using in-line flow meter;

Notifying the occupant of the dwelling by means of an audio visual alarm when a high water level condition in the pump tank exists;

Count and keep a cumulative log of high water level alarm events;

Count and keep a cumulative log of timer override events;

Automatic field flushing not less than once every 100 dosing cycles;

G. Soil absorption system. The soil absorption system for a Whitewater® Filter/Drip system shall be time dosed at a predetermined dosing interval.

II. Scope of Waiver.

This waiver is granted for facilities generating wastewater flows of 1,000 g.p.d. or less and of residential strength ($BOD_5 < 250$ mg/l). Larger flows may be permitted but shall comply with the requirements of §2.25 of Sewage Handling and Disposal Regulations.

III. Siting Criteria.

Whitewater® Filter/Drip disposal systems may be used on any site meeting the site and soil criteria found in the Sewage Handling and Disposal Regulations for low pressure distribution systems and conventional gravity drain field systems. These criteria are found in Part III and Part IV, Section 4.30 of the regulations.

IV. System sizing criteria.

Whitewater® Filter/Drip disposal systems shall be sized in accordance with the proposal made by Delta Environmental Products, Inc. catalog, Drip System Design section. Table 1 below contains specific hydraulic loading rates for various texture group soils as proposed to VDH.

The Department notes that Sandy Clay Loam is identified as a texture group III soil while the Sewage Handling and Disposal Regulations define it as a texture group II soil. In as much as this change reflects a somewhat more conservative design rate, we offer no objection to using this loading rate for design purposes.

V. Design Criteria.

Unless otherwise stated, the components of the Whitewater® Filter/Drip disposal system shall comply with the intent, objectives and requirements of the Sewage Handling and Disposal Regulations. All portions of the system shall be designed to provide wastewater treatment and disposal which is equal or superior to that which may be obtained with a low pressure distribution system. In general, the system must provide secondary treatment, supplemental solids filtration, and a fluid handling system designed to optimize effluent distribution and application to soils capable of providing sufficient additional

treatment to render the wastewater harmless to humans and the environment. Specific deviations from the design practices contained in the Sewage Handling and Disposal Regulations are described below.

Table I

Texture Group	Soil Group	U.S.D.A Textural Class	Hydraulic Loading Rate (g.p.d./ft ²)
I	Sands	Sand, Loamy Sand	0.4 - 0.3
II	Coarse Loams	Sandy Loam, Loam	0.3 - 0.15
III	Fine Loams	Sandy Clay Loam, Silt Loam, Clay Loam, Silty Clay Loam	0.15 - 0.10
IV	Clays	Sandy Clay, Silty Clay, Clay	< 0.10

- A. Dosing. The dosing system shall be designed for timed dose application. The pump chamber shall be sized to provide for adequate flow equalization in order to avoid demand dosing.
- B. Field Design. The field network shall utilize ½-inch nominal size, Geoflow flexible polyethylene dripper tubing containing one GPH nominal turbulent flow non-pressure compensating emitters on two foot centers designed to deliver 1.22 GPH per emitter between 20 and 15 PSI pressure. The pressure in the drip lines shall be maintained between 20 and 15 PSI by using pressure regulators prior to the drip field.
- C. Dripper lines shall be designed to be installed at a constant depth along the natural ground contour (+/- 6" per 100'). All joints shall be pressure rated and watertight. In general, connections shall be made using solvent welded and pressure rated barbed couplings; however, nothing shall prevent the use of other pressure rated fittings,

provided they are watertight.

- D. Hydraulic design. The hydraulic design shall be based on achieving the following conditions:

Separate zones may be dosed at different rates provided the loading rates reflect the infiltrative capacity of the soil occurring in that zone.

A velocity of at least 2 feet per second but not more than 8 feet per second in each supply manifold segment shall be maintained during field flushing flows.

Scour velocities of at least two feet per second shall be maintained in each dripper line during field flushing.

A minimum pressure of 10 pounds per square inch shall be maintained during flushing flows and a maximum of 60 pounds per square inch may occur during irrigation flows.

- E. Appurtenances. Appurtenances such as air release valves, isolation valves, cleanouts, pressure monitoring nipples, and solenoid valves shall be provided as required by Section 4.23 or as necessary. Said appurtenances shall be installed in recessed enclosures and protected against physical and frost damage.
- F. The installation depth shall be equal to or greater than 12" and will depend on soil and site characteristics. All minimum stand off distances as referenced by the Sewage Handling and Disposal Regulations shall be met. The actual installation depth shall be determined by the Department on a case-by-case basis. The drip lines installed at 12" will be protected against freezing and physical damage from vehicular traffic, cattle or other disturbances as may be deemed necessary by the local Health Department.

VI. Installation and Testing Procedures.

- A. Installers shall be trained by Delta Environmental Products, Inc. Or their authorized representatives, and be certified as having passed their minimum training qualifications prior to installing any systems in Virginia.
- B. Field laterals shall be staked out on contour by use of an engineer's level and tape to assure that they conform with natural contours and design requirements for sizing,

location, and separations.

- C. Dripper tubing shall be installed in accordance with the manufacturer's recommendations. A vibratory plow, static plow or trencher are most typically used and soil moisture must be dry enough so that compaction will not occur in the soil around the tubing (See Section 4.5 of the regulations).
- D. Care must be taken during system installation to assure no extraneous debris enters the tankage, supply lines, or dripper tubing network. When necessary, or if questions exist about the cleanliness, the supply lines and manifolds shall be flushed out prior to system startup.
- E. The manufacturer's recommendations shall be followed for system startup. All leaks from emitters and indications of wet spots during irrigation periods comparable to normal operating conditions and application rates shall be repaired. Irrigation and flushing flow rates and flushing pressures at the ends of the field supply and return manifolds shall be measured and determined in accordance with the design criteria.
- F. All mechanical components, pump(s), control, filters, back washing, high water alarm, and counter must be demonstrated to be fully operational in accordance with their design.

VII. Operation and monitoring.

Delta Environmental Products, Inc. or their authorized representatives shall perform quarterly field inspections on all the systems installed in accordance with this waiver for the first 75 installation for three years. Quarterly field inspections shall include manually dosing the system to determine flow variation, and keeping a log of all flow variations which deviate by 20% or more from the design flow. Said log shall include the following minimum information:

- System location (by tax map or owner's name and county);
- Percent flow variation observed;
- Cause of the flow variation;
- Duration of flow variation;
- Dose volume;
- High water alarm counts; and
- Timer override counts.

Said log shall be reported to VDH on a quarterly basis and shall be provided by the 15th of the month following the end of the

quarter. The log shall be available to VDH within 5 business days upon request.

VIII. Responsibilities and permitting procedures.

- A. This approval has been granted specifically for the process described in the application made by Delta Environmental Products, Inc. for the Whitewater® Filter/Drip disposal system. Any changes to the components used in this process must be reviewed and approved by VDH on a case by case basis prior to use.
- B. No contractor may install a Whitewater® Filter/Drip system unless they are first certified by Delta Environmental Products, Inc., or their authorized representative, as meeting their minimum competency standards for contractors.
- C. The Whitewater® Filter/Drip system shall be considered a Type II system.
- D. Permitting shall be done by the local health department based on their satisfactory site evaluation and review of plans and specifications prepared in accordance with the manufacturer's specifications and all applicable state regulations and policies and any relevant local ordinances.
- E. Delta Environmental Products, Inc. or their authorized representative shall be responsible for providing up to six classes (up to 50 students each) during the first 12 months after this approval is granted and two classes annually thereafter. The maximum class size shall be 50; however, the Department recommends class size of 25 or fewer students. Delta Environmental Products, Inc. can cancel a class for lack of attendens and still count the cancelled class towards the number of classes required under this GMP. Permitting may only occur where adequate numbers of trained VDH staff exists, as determined by the local Environmental Health Manager. The training shall include a manual covering proper siting, sizing, construction, installation and inspection processes for the Whitewater® Filter/Drip system. All training materials, the course syllabus and training locations shall be reviewed and approved by the Division prior to training occurring.
- F. Should the Whitewater® Filter/Drip disposal systems fail to perform to the satisfaction of the Department, the

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Department may rescind or modify this waiver. Prior to taking such action the Department shall notify Delta Environmental Products, Inc. of nature of the problem and of the action the Department intends to take.

4/21/99
Rescinded