MEMORANDUM

TO: Environmental Health Managers
District Health Directors
Office of Environmental Health Services staff
AOSE/PEs and other stakeholders

FROM: Karen Remley, M.D., M.B.A.
State Health Commissioner

DATE: April 9, 2008

RE: Rescind Guidance Memoranda and Policies (GMP) #114;
Issue GMP #114.A

GMP #114.A updates the approval for the Advantex® system. It includes a description of the system, the parameters of its approval, and how it may be installed and operated to treat and disperse effluent.[1] The revised policy is intended to eliminate historical elements of confusion about this product approval, which have developed over the past few years. The revised policy is more specific about the waivers or variances granted from the 2000 *Sewage Handling and Disposal Regulations* (the 2000 *Regulations*). If a specific waiver to the 2000 *Regulations* cannot be found in the revised policy, then stakeholders and designers are expected to follow the prescriptive regulatory mandates. By understanding the specific variances or waivers that have been granted for this system, designers can expect more consistency in permitting and decision-making across the Commonwealth.

While every attempt has been made to eliminate the historical elements of confusion about the waivers and variances granted to this proprietary product, new questions or concerns may arise over time. Stakeholders are advised to contact, Donald J. Alexander, Director, Division of Onsite Sewage and Water Services (DOSWS) at 109 Governor Street, 5th Floor, Richmond Virginia 23219, (804) 864-7452 to discuss any additional points of confusion about the revised policy.

[1] Orenco Systems, Inc. manufacturers the Advantex® system. In 2001, Dr. E. Anne Peterson, former State Health Commissioner issued a provisional approval for the Advantex system in soil texture groups I, II, III, and IV. On October 23, 2006, Dr. Robert. B. Stroube, former State Health Commissioner granted general approval for the Advantex® system when used in soil texture groups II, III, and IV.

AdvanTex® Treatment and Dispersal System
GMP #114A
April 9, 2008

I. System Description

The AdvanTex® Treatment and Dispersal System for which this approval has been granted, consists of the key components described in general below and described in detail in Appendix I and II. Except where a specific waiver to the *Sewage Handling and Disposal Regulations* (hereinafter the *Regulations*) has been granted, the site criteria, design, installation, inspection, and operation of the components comprising the AdvanTex® Treatment System shall comply with the intent, objectives and requirements of the *Regulations.* The substitution of equivalent components is specifically prohibited.

A. Building Sewer. The building sewer used in conjunction with an AdvanTex® Treatment and Dispersal System shall comply with Part IV, Article 2 of the *Regulations.*

B. Processing Tank. The AdvanTex® Processing Tank is a two-compartment tank with a first (primary) compartment that is 2/3 the total volume of the tank and a second (recirculation) compartment that is 1/3 the total volume of the tank. The recirculation compartment houses the Biotube Pump Vault containing the recirculation pump that doses effluent to the AdvanTex® module.

C. Treatment System. The AdvanTex® modules are made of pre-assembled, UV-protected fiberglass reinforced plastic material. Contained within the fiberglass module is an engineered non-biodegradable textile media. Only AX20 modules may be used for residential treatment systems in Virginia.

Single or multiple AdvanTex® modules may be used in accordance with Table 1, based on the number of bedrooms or the equivalent flow. When more than one module is used, each module is installed at the same elevation with effluent flow uniformly split between both modules.

Table 1

Number of Bedrooms	Minimum Single Processing Tank Size (gals.)	Processing Tank split into separate Primary and Recirculating Tanks[1]	Number of AX Modules
2	1,500	NA	1-AX20
3	1,500	NA	1-AX20
4	1,500	NA	1-AX20
5	2,500	1,500 gallon primary tank 1,000 gallon recirculation tank	2-AX20
6	3,000	2,000 gallon primary tank 1,000 gallon recirculation tank	2-AX20

[1] Larger tank sizes may be used.

3. Pads and trenches may not be used together in a single system.
4. Pads shall be limited to sites with slopes of 10% or less.

C. Minimum Installation Depth. 12 VAC 5-610-596 C.1, which limits the installation of trenches shallower than 12 inches to Texture Group I and II soils is waived for slopes up to 15%[2]. The infiltrative surface (i.e., the bottom of the pad or trench) shall be installed at grade or deeper on naturally occurring undisturbed soil. No fill material shall occur beneath the infiltrative surface. On sloping sites the installation depth shall be measured on the downhill side of the trench or pad.

D. Minimum Cross Section Dimensions 12 VAC 5-610-950.E.1 is waived. This section establishes how sidewall depth is measured and requires increases in the installation depth of trenches as the slope of the site increases. By waiving §950.E.1 absorption systems designed under this policy may be installed at grade even on steeper slopes. No distinction is made between pads and trenches. Section 12 VAC 5-610-950.F, which increases the lateral separation distance between trenches as the slope of the site increases, is not waived.

Designers are encouraged to use a conservative approach when designing shallow placed systems on sloping sites to prevent effluent from breaking out at the contact between the original soil surface and the fill interface.

E. Loading rates. Table 5.4 of the *Regulations* and 12 VAC 5-610-950 D, which establish loading rates for subsurface soil absorption systems, are waived. Systems designed pursuant to this policy shall use Table 3 contained herein to determine the maximum acceptable loading rates. Designers are authorized to use lower loading rates.

F. Pump system designs.

1. Pumps Integral to Treatment Systems. Pumps integral to the treatment system are pumps that move sewage or effluent from the house or pretreatment system to the treatment system and/or pumps that move effluent within the treatment system. The *Regulations* do not specifically address pumps used for purposes other than conveying effluent to a dispersal system. 12 VAC 5-610-880 is waived in its entirety for pumps, pump chambers, and appurtenances integral to treatment systems.

2. Conveyance Pumps. The pump requirements contained in 12 VAC 5-610-880 subsections A.1, B.1, B.6, and B.7 are waived. Pump systems designed in accordance with these sections of the *Regulations* are not appropriate for systems dispersing treated effluent to a reduced size absorption area. Therefore, the use of the pump design criteria in subsections B.1, B.6 and B.7 in the *Regulations* is expressly prohibited except when the sizing criteria in Table 5.4 of the

[2] This means that for slopes up to 15% there are no soil texture group limitations for shallow placed systems.

sufficient to assure a system can be properly installed. In some instances where a complex system is encountered, formal plans and specifications may be required. This determination is left to the discretion of the District Health Department.

GMP #125 is intended to provide additional guidance and consistency when a professional engineer is required. Nothing contained herein is intended to contradict GMP #125. Whether or not to require a professional engineer for timed dosing has been a point of confusion. Timed dosing to a gravity flow distribution box does not necessarily require a design prepared by a professional engineer when the conditions described in GMP #125 (and briefly described below) are met.

The design of pumping systems for the purpose of transporting the wastewater from the treatment device described by this policy, to the location of the soil based treatment system, does not necessarily require a design by a professional engineer provided:

1. The design involves elevations that are generally level or constantly ascending, and
2. The discharge end is open and not pressurized, and
3. The design does not involve pumping downhill, and
4. The design does not exceed 50 feet of static head and/or 500 feet of force main length.

Note: When timed dosing or enhanced flow is applied to a treatment device that is located directly above an absorption pad, the designer may assume that the effluent is delivered in the same manner to the pad that it was applied to the treatment device.

J. The depth of gravel specified in 12 VAC 5-610-930.E is not waived (nor has it ever been waived). All trenches and pads, which use aggregate, shall be designed using 6 inches of gravel (or other approved aggregate) under gravity percolation lines and 2 inches over the line. For LPD (low pressure distribution) systems 8.5" of aggregate is required under the pipe and 2" over the pipe.

III. Siting Criteria

This policy authorizes the use of sites that meets one of the following classifications:

1. Any site that fully complies with the criteria contained in the *Regulations*, including, but not limited to, absorption area, sizing percolation rate, landscape position, stand-off distances, and set-back distances. This includes sites that comply with the *Regulations*, whether or not secondary effluent is required.
2. Any site that does not fully comply with the criteria contained in the *Regulations* where a waiver to the non-conforming condition or conditions has been granted in this policy.
3. Repair permits that fully comply with this policy are considered to meet the intent of 12 VAC 5-610-280 C.2. Repair permits that do not fully comply with the

conflict exist between a manufacturer's design criteria and the *Regulations* or this policy, the Department's criteria shall take precedent.

The absorption area determined to be necessary under this policy may be achieved by use of either an absorption pad or absorption trenches, provided:

1. The minimum standoff distance to water table, or other limiting factor, is achieved under the entire absorption area. This assures that at least the minimum requirement for suitable soil exists between all parts of the infiltrative surface and the underlying limiting factor.
2. The absorption area, (either pads or trenches) is installed on contour. When a pad system is designed the longest dimension of the pad shall be along the contour. Contour means that the longitudinal axis of the pad follows the contour of the site within 4 inches (i.e., +/-2"). Pads are considered marginally sufficient to achieve hydraulic dispersal of the effluent. Every effort *should* be made to minimize the linear loading rate, particularly when using a pad design.
3. When a pad is utilized, the bottom pad area shall be installed level while maintaining at least the minimum required separation distances to all soil limiting factors.
4. No portion of the pad bottom area may be installed on fill material.
5. The system shall be designed to provide equal flow, within 10 percent, throughout all portions of the absorption area. Distribution of effluent by gravity or pressure dosing (before or after the treatment system) is acceptable.
6. When designing a drip dispersal system the designer may use the loading rate shown for either the two or the three foot wide trenches shown in Table 3. To determine the area needed, divide the daily peak wastewater flow in gallons by the loading rate (GPD/sq. ft.) selected from Table 3. Multiply this result by three to determine minimum footprint area in square feet. The drip dispersal design guidance in GMP #107 applies to the design of the drip field. Where slopes and/or restrictive horizons are a consideration, the Absorption Area Increase Table in GMP #107 shall be followed.
7. When a pad is proposed for use within 20' up slope or down slope from another proposed or actual absorption system, the Department shall require a professional engineer to certify that the upslope system will not adversely impact the down slope system.

B. Area Requirements and Calculations. The absorption area shall be sized in accordance with Table 3 of this document. A larger area may be specified by the designer.

1. The minimum absorption area shall be 320 square feet.

2. No additional area reduction shall be permitted for the use of water saving fixtures.

VI. Operation and Maintenance

Routine maintenance is essential for proper operation of the system. Failure to maintain a system ***will*** result in increased public health and environmental risks. After July 1, 2009 all systems permitted pursuant to this policy will be required to have operation and maintenance provided by a licensed wastewater system operator for the life of their system. Prior to July 1, 2009, VDH strongly urges all system owners to assure operation and maintenance is provided in accordance with the manufacturers recommendations.

All system owners shall be provided with written and oral instructions on the proper operation and maintenance of their system. Providing system owners with updates, revisions and other changes to this section is the responsibility of the manufacturer. Copies of changes shall be submitted to the VDH on an informational basis. Nothing in this approval is intended to prevent or restrict the development of instructional materials for public use. No prior approval of such literature is required provided the literature contains no endorsements, approvals, or suggestions that VDH in any manner promotes the use of one system above any other.

VII. Responsibilities and Permitting Procedures

A. Permitting shall be done by the local health department based on a satisfactory site evaluation and review of plans and specifications prepared in accordance with all applicable state regulations and policies and any relevant local ordinances.[5] Systems permitted under this policy are Type III systems (see 12 VAC 5-610-250.C); however, the process for issuing permits under this policy shall be handled in the manner described for Type II systems (see 12 VAC 5-610-250.B).

B. The local health department shall attach a copy of this policy to all construction permits granted pursuant to this policy.

C. Construction permits (i.e., not operation permits) are valid for a period of 18 months. Upon successful completion of the provisional protocol, unused construction permits will be treated as conventional construction permits and may be renewed upon expiration. In the event that the system fails the provisional protocol, unused permits will not be renewed. Permits shall note the provisional or experimental nature of the system and that they cannot be converted to a certification letter. Upon successful completion of the provisional protocol, the holder of a valid provisional permit may convert the same to either a conventional construction permit or a certification letter.

D. Permits issued for the system authorized by this policy prior to the effective date of this policy shall continue to be valid until such time as the permit is installed or expires 18 months after the date of issuance. Expired permits shall be reissued upon receipt of a proper application filed in accordance with the established requirements of VDH and shall conform with current policy to the greatest extent practical.

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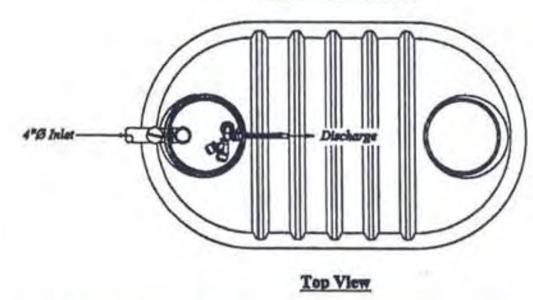
[5] Either a Level 1 or a Level 2 review of work submitted by an AOSE/PE shall constitute compliance with state regulations and policies.

Appendix I
Advantex® Treatment and Disposal Drawings

AdvanTex® AX20 - Virginia
Pump Discharge Options

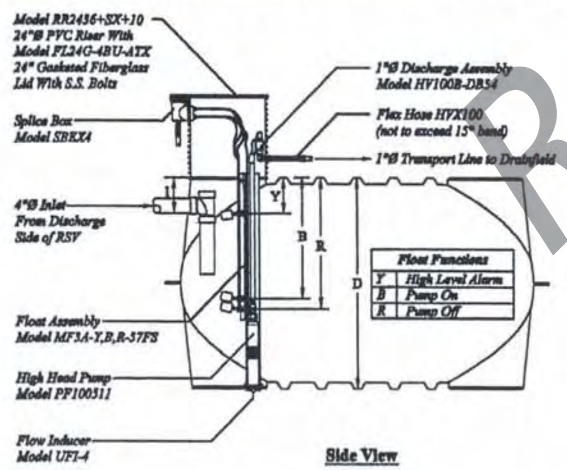
Pump Tank Discharge



Top View

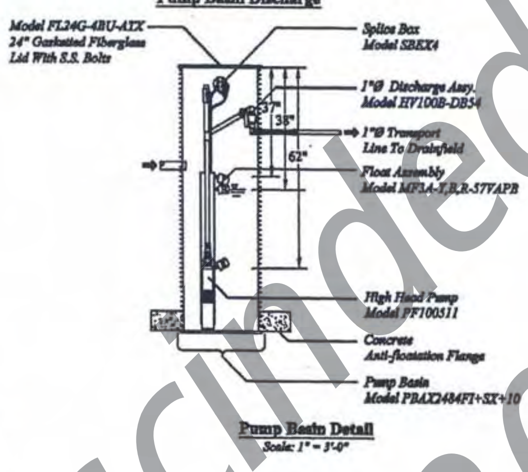
Note: Only discharge tanks from the manufacturers listed below shall be used.

Discharge Tank Manufacturer	Tank Size	I	D	Y (High Level)	B (Pump On)	R (Pump Off)
Orenco Fiberglass Tank	1000 Gal.	11"	65"	11"	38"	40"
Wrights Ready Mix	1000 Gal.	15"	65"	15"	42.5"	45"
Beasley Concrete	1000 Gal.	16"	66"	16"	43.5"	46"



Side View

Pump Basin Discharge

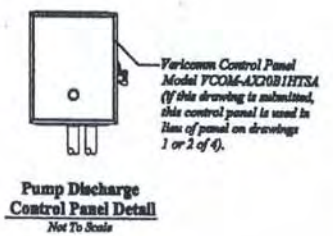


Pump Basin Detail
Scale: 1" = 3'-0"

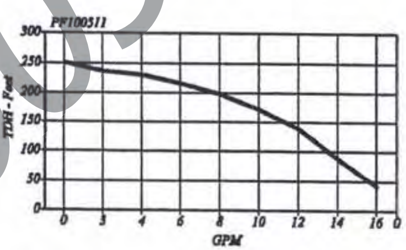
Note:
All Concrete tanks shall have PRTA24 cast into tank for acceptance of model RR24XX riser.

The Discharge conveyance system shown in these plans is acceptable for the following conditions. Less than 50 feet of static head and less than 500 feet of transport pipe. This system is acceptable regardless of the depth of the soil absorption system.

Tank Testing Specification:
Concrete tanks may be allowed 24 hours to absorb water prior to hydrostatic testing.
All Tanks shall be tested in the field by filling the tank with water to 2 (two) inches above the riser / tank seam. The water level shall be maintained 2 inches into the riser for a minimum of 2 hours. Any drop in the water level indicates leakage. The tank may be drained and the installer and tank manufacturer may make one attempt to repair the tank to make the tank watertight. The tank shall be retested according to the procedure specified above. If the tank leaks during the retest, it shall be removed from the site and replaced with a structurally sound watertight tank at no cost to the homeowner.



Pump Discharge Control Panel Detail
Not To Scale



Designed By: ENGINEERING	Drawn By: BEN SMITH	Title: AdvanTex® - AX20 Virginia	
Approved By:	Drawing: 3 OF 4	Drawing No. NDW-ATX-VA 5	
Date Approved:	Revision: A-09	Date: 7/30/2007	Scale: AS SHOWN

Orenco Systems® Incorporated

Description	Model Number
AX 20 Advantex Filter	Model AX20
2" Diameter Vent	Model AX-Vent
Approved Tanks (Processing, Septic, or Recirculating)	Orenco Approved Manufacturers: Central Virginia Concrete 1,500 gallon Winchester Building Supply 1,500 gallon Orenco Fiberglass Tank 1,500 gallon C.T. Jamison 1,500 gallon C.T. Jamison 2,000 gallon Rockingham Precast 1,500 gallon Allied Tank 1,500 gallon Hanover Precast (deep bury) 1500 gallon Wrights Ready Mix 1500 gallon C.S. Hines 1500 gallon Beasley Concrete 1500 gallon
Recirculating Splitter Valve (RSVQD) with Quick Disconnect	Model RSV3QD-VA
Control Panel	
Gravity Discharge	Model VCOM-AX20A1HTSA
Pump Discharge (controlled dosing)	Model VCOM-AX20B1HTSA
Pump Discharge (timed dosing)	Model VCOM-AX20B1/2PTHTSA
Biotube Pump Vault	Model PVU68-2425
High Head Pump	Model PF300511/PF500511 (for 2AX20 units)
Float Assembly	Model MF3A-Y,G,W-33FS
Diameter Discharge Assembly	Model HV100B-DB54/HV200B-DB54 (for 2 AX20 units)
Splice Box	Model SBEX4
24" PVC Recirculating Valve Riser with 24" Gasketed Fiberglass Lid with Stainless Steel Bolts	Model RRAX2436+RS3 Model FL24G-4BU-ATX
24" PVC Pump Riser with 24" Gasketed Fiberglass Lid with Stainless Steel Bolts	Model RR2436+SX+10/ RR2436+SX+20 (for 2 AX20 units) Model FL24G-4BU-ATX
Discharge Pump Basin	Model PBAX2484FI+SX+10
High Head Pump	Model PF100511
Float Assembly	Model MF3A-Y,B,R-57PB-VA
1" Diameter Discharge Assembly	Model HV100B-DB54
Splice Box	Model SBEX4 (optional model SB4)
24" Gasketed Fiberglass Lid with Stainless Steel Bolts	Model FL24G-4BU-ATX

Appendix III

System Status				
	Texture Group			
	I	II	III	IV
AdvanTex®	Provisional	General	General	General
Bio-COIR™	Experimental	Experimental	Experimental	Experimental
Ecoflo®	General	General	General	Provisional
Eco-Pure®	Experimental	Experimental	Experimental	Experimental
Puraflo®	General	General	General	General

Applicants interested in what the terms "experimental," "provisional," and "general" mean relative to a sewage system's status should review sections 12 VAC 5-610-441 through 12 VAC 5-610-444 of the *Regulations*.