

Mission:

To protect, promote & improve the health of all people in Florida through integrated state, county & community efforts.



Rick Scott
Governor

Celeste Philip, MD, MPH
Surgeon General and Secretary

Vision: To be the **Healthiest State** in the Nation

MEMORANDUM

INFORMATION
DCEH 2018-009

DATE: July 30, 2018

TO: County Health Department Directors/Administrators
ATTN: Environmental Health and Engineering Directors

THROUGH: Kendra F. Goff, PhD, DABT, CPM, CEHP, State Toxicologist and Chief
Bureau of Environmental Health

FROM: Ed Barranco, MPH, CEHP, CPM, Environmental Administrator
Bureau of Environmental Health, Onsite Sewage Programs

SUBJECT: ANSI/NSF Standard 40, Class I, Aerobic Treatment Unit (new listing)

INFORMATION ONLY

The aerobic treatment unit (ATU) series Clearstream D has been certified as meeting all of the requirements of ANSI/NSF Standard 40 - Residential Wastewater Treatment Systems for Class I classification, based on test report SPE 179, and upscale report SPE181, both by Gulf Coast Testing, LLC. Review of drawings and treatment receptacles for models 500D, 500DST, 600D, 600DT, 600DC3, 750D, 750DT, 800D, 800DT, 1000D, 1000DT, and 1500D has shown that the requirements of Chapter 64E-6, Florida Administrative Code are met for these models. Other models may be added to the list as tank approvals are processed. Please add these to the listing of ATUs acceptable for use in the State of Florida. Note that while Florida Administrative Code, Rule 64E-6.012, does not officially recognize ANSI/NSF Standard 245 -Nitrogen Reduction, in addition to their NSF Standard 40 certification, the units listed above are also certified to NSF Standard 245.

Enclosed, you will find electronic copies of the performance testing and evaluation certification report conducted by Gulf Coast Testing, including the operation and maintenance manual, and the current listing of Florida-approved tanks to house Clearstream D ATUs.

Please direct any questions to Debby Tipton at 850-901-6944.

EB/dt
Enclosure
cc: Tom Bruusema, Water Tomorrow Consulting, LLC
Ty Hunter, Clearstream

Florida Department of Health

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4052 Bald Cypress Way, Bin A-08 • Tallahassee, FL 32399-1710
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Accredited Health Department
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CLEARSTREAM®

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**OWNER'S MANUAL • PARTS LIST • OPERATING MANUAL
FLOW DIAGRAM • INSTALLATION INSTRUCTIONS
DESIGN DRAWINGS AND SPECIFICATIONS
SERVICE POLICY • LIMITED WARRANTY**

MODEL 500D



CLASS I
NSF/ANSI 40, 245

INTRODUCTION

The Clearstream System is one of the finest aerobic wastewater systems available today. Our system converts the sewage from your residence or business into a clear, odorless liquid. This high degree of treatment is accomplished at a remarkable low operating cost per month. The system has been simplified over the years to make it as inexpensive to operate and as low in long term maintenance as possible. Homeowners who have lived with the nuisance of a septic odor lingering in their neighborhood will truly appreciate the pleasure of owning a Clearstream System. Clearstream Model D Systems comply with NSF/ANSI Standards 40 for Class I residential wastewater treatment systems and 245 for total nitrogen reduction.

PROCESS DESCRIPTION

The Clearstream Wastewater Treatment System operates in the extended aeration mode of the activated sludge process.

Wastewater enters the trash tank compartment through a 4" Sch. 40 PVC inlet pipe. This anaerobic chamber allows larger solids to settle before the wastewater enters the aeration chamber. Wastewater is then mixed throughout the aeration chamber by releasing compressed air near the bottom of the chamber utilizing fine bubble diffusion. The rising air bubbles transfer oxygen to the wastewater which allows aerobic organisms to thrive and ultimately decompose the incoming waste matter.

The turbulence caused by the rising air bubbles also creates a mixing pattern which keeps the sludge in suspension. As incoming wastewater enters the aeration chamber, existing "mixed liquor" from the aeration chamber is displaced into the bottom of the cone-shaped clarifier.

The clarifier chamber allows the water to still so that suspended solids in the "mixed liquor" can settle back into the aeration chamber for further biological breakdown.

The remaining clear water in the upper zone of the clarifier chamber is then discharged by gravity through the surge control weir and out the 4" Sch. 40 outlet pipe to the pump chamber. The final effluent is then discharged by submersible pump to the appropriate disposal system with a portion being returned to the pretreatment tank. When disinfection is required before final discharge appropriate disinfection options are available.

When properly loaded and maintained, the aforementioned process allows the Clearstream Wastewater Treatment System to provide years of satisfactory service for the consumer. Clearstream Model D systems met the performance requirements of NSF/ANSI Standard 245 with a 30 day average of <25mg/l CBOD, <30mg/l TSS and 50% total nitrogen reduction. Actual GCT test results used to determine if Clearstream met Standard 245 requirements averaged 4 mg/l BOD, 7 mg/l TSS and 52.9% total nitrogen reduction.

OPERATING MANUAL

In the event you experience a problem with your Clearstream Wastewater Treatment System or if service is required, you may reference the Clearstream Control Panel Cover for the name, address and phone number of a local service person that can provide service for your Clearstream Unit. After the expiration of your initial two year service policy provided by the system installer, you may obtain a continuing service policy on a yearly basis which will include terms comparable to the initial service policy from a local service person that is trained and certified by Clearstream.

In order for the Clearstream System to function at optimum performance levels, the system will require periodic service. The normally expected service that is associated with the system includes:

1. Repair or replace aerator	2 to 10 years
2. Clean filters on aerator	6 mos. to 2 years
3. Break up scum in clarifier	6 mos. to 2 years
4. Pump sludge from aeration tank	2 to 5 years*
5. Pump sludge from pretreatment tank	2 to 5 years*
6. Check aeration diffusers	annually
7. Check surge control weir	6 mos.
8. Check denite effluent return flow	6 mos.

* Any sludge removed from pretreatment tank or Clearstream Unit must be disposed of according to all state, local, and federal regulatory requirements.

To remove solids from pretreatment tank drop pump hose through access opening on top of tank all the way through to the bottom of the tank. Pump out the whole tank volume, then fill the tank back up with clean water immediately. To remove solids from aeration chamber, drop hose through access opening in tank all the way to the bottom of the tank. Pump only 1/2 of the total tank volume and fill tank back up with water immediately.

To determine if all system components are functioning properly, look and/or listen to see if the visual/audio alarm system is illuminated or making a buzzing sound. If the alarm is activated, then either the aerator has thrown its breaker or the high level float inside the clarifier is indicating a high water level condition. Verification of either condition can be made by visually monitoring the aerator circuit breaker to see if it has been thrown and opening the access opening to the treatment unit to see if the water level inside the clarifier is at alarm level. After inspection of the clarifier, be sure to securely fasten the access cover back in place and tighten the screws.

To determine if the system has the desirable "mixed liquor" and effluent characteristics, first remove the access cover. Monitor for odors coming from the tank. If the odor is a sweet or a musty smell, the system is operating in a desirable aerobic condition. If the odor is foul or smells like a rotten egg, then the system is operating in an undesirable anaerobic condition. Visually monitor the "mixed liquor" for color. If the color is a brownish color, then it is operating in a desirable aerobic condition. If it is grey or black in color, it is operating in an undesirable anaerobic condition. The system effluent should be clear with very few noticeable light brown solids suspended in the effluent. The effluent should not be dark or turbid in color or clear with great numbers of light brown suspended solids noticeable. After inspection of the system's interior, be sure to securely fasten the access cover back in place and tighten the screws.

In the event the visual alarm light and audio alarm are activated, call your local servicing dealer whose name, address, and phone number should be affixed to the face of the panel.

To collect effluent samples on system, samples may be collected from pump discharge line.

For the first two (2) years from the date of installation, your local servicing dealer (from whom you purchased your Clearstream System) will make periodic inspections of your system to make sure it is functioning properly. The dealer will perform necessary maintenance to the system at no charge unless the required maintenance is not warranty related. Pumping of the system is not included. After the first two (2) years, the dealer will offer a continuing service policy for a nominal annual fee. The two (2) year service policy (two service calls per year minimum) and the continuing service policy are minimum requirements of NSF/ANSI Standard 40, 245 and 350 certified wastewater treatment systems. If local service requirements are greater than those of these NSF/ANSI Standards or if the local regulations require others to perform the service on these units, Clearstream's limited warranty will still be honored.

For the Clearstream Wastewater Treatment Unit to function properly it must be used for the treatment of domestic wastewater from residences or other waste flows with similar loading characteristics. Typical domestic wastewater consists of the flow from toilets, lavatories, sinks, bathtubs/showers, and washing machines. To prevent malfunctions of your Clearstream Unit, the following guidelines should be followed:

1. Any sewage system, whether aerobic or septic, should not have inorganic materials (plastics, cigarette butts, disposable diapers, feminine napkins, condoms, etc.), that the bacteria cannot consume, discharged into the system.
2. Large amounts of harsh chemicals, oil, grease, high sudsing detergents, discharge from water softeners, disinfectants or any other chemical or substance that kills bacteria should not be discharged into the system.
3. Excessive use of water, over the design flow of the system, or organic overloading in excess of design parameters will cause the system not to perform to its fullest capabilities.
4. The proper operation of this or any other sewage treatment system depends upon the proper organic loading and the life of the micro-organisms inside the system. Clearstream is not responsible for the in-field operation of a system, other than the mechanical and structural workings of the system itself. Field abuse and overloading of the system can only be cured by the user of the system.

CLEARSTREAM INSTALLATION INSTRUCTIONS

Before installation of the Clearstream Treatment Tank, first install a pretreatment tank (septic tank) with a volume of not less than 50% of the gallon per day rating of the Clearstream Unit. Pretreatment tanks shall comply with minimum sizing specifications outlined in the Clearstream specifications section.

CLEARSTREAM TANK INSTALLATION

1. Prepare an excavation having minimum dimensions of at least one (1) foot larger than the dimensions of the tank. Make sure the depth of the excavation is deep enough to allow gravity flow to the inlet of the system and that the excavation bottom is level. Never install the Clearstream tank deeper than a depth that will require more than a maximum of 18 inches of riser depth. The access cover shall always be above final grade after tank installation. In applications where more than the maximum 18 inches of riser is required, install a lift pump upstream of the Clearstream tank in order to pump the pretreatment tank effluent to the Clearstream tank at normal grade. In these special applications where a lift pump is required, contact Clearstream for more details as to pump size, maximum dosages and maximum flow rates.
2. Set the Clearstream tank in a prepared excavation that has a solid, level bottom that will eliminate tank settling. The excavation bottom should have no rocks or sharp objects present.
3. When lowering a concrete tank into the prepared excavation use a spreader bar. Only spreader bars and other lifting devices, that have been designed and tested for lifting Clearstream concrete tanks, should be used. Never lift Clearstream tanks unless they are empty of all liquids.
4. Make sure the inlet 4" Sch. 40 PVC pipe is aligned properly to incoming sewage line.
5. For the Clearstream Unit to function properly, the tank must be level. To properly level the tank, lay a three (3) foot level across the tank in several directions. Shift the tank in the hole, as necessary, to make the tank level in all directions. The tank may be slightly out of level, but it should not be out of level enough to cause tank malfunctions. Check with the local or state regulatory agency for specific procedural requirements and maximum allowances they may have in setting the level of the tank.
6. Fill the tank with water, checking periodically to make sure the tank remains level.
7. Connect the 4" Sch. 40 PVC Clearstream inlet pipe to the incoming sewage line. Make sure the incoming sewage pipe is level with or higher than the inlet pipe to the Clearstream Unit. The Clearstream Unit should only be connected to a plumbing system from a wastewater source which has been properly trapped and vented in compliance with State and Local plumbing codes.
8. Back fill the excavation in layers with back fill material that will settle properly around the tank. Tamp the back fill material as each layer is placed around the tank. If necessary, use water to help settle the soil around the tank. Special care should be taken to either tamp soil under where inlet and outlet pipes are bridging the excavation or use some other method of supporting pipes across the excavation. Do not back fill with heavy clay or large rocks.
9. Before completing the back fill, be sure the electrical conduit from the tank to the Control Panel, air line from aerator to treatment unit, and the return line from flow restrictor, located

in pump tank, to pretreatment tank have been laid underground.

10. For below normal grade installations a riser may be used. In no case shall more than 18" maximum riser depth be used on a Clearstream Unit to bring the access covers above the final grade. All risers must be sealed with silicone, or other sealants as approved by the local or state regulatory agency, to prevent ground water intrusion before back fill is completed
11. Before leaving excavation site, be sure to securely fasten the Clearstream access covers in place with the tamper resistant bolt(s). Tighten screws firmly to keep unauthorized personnel from gaining access to the inside of tank.

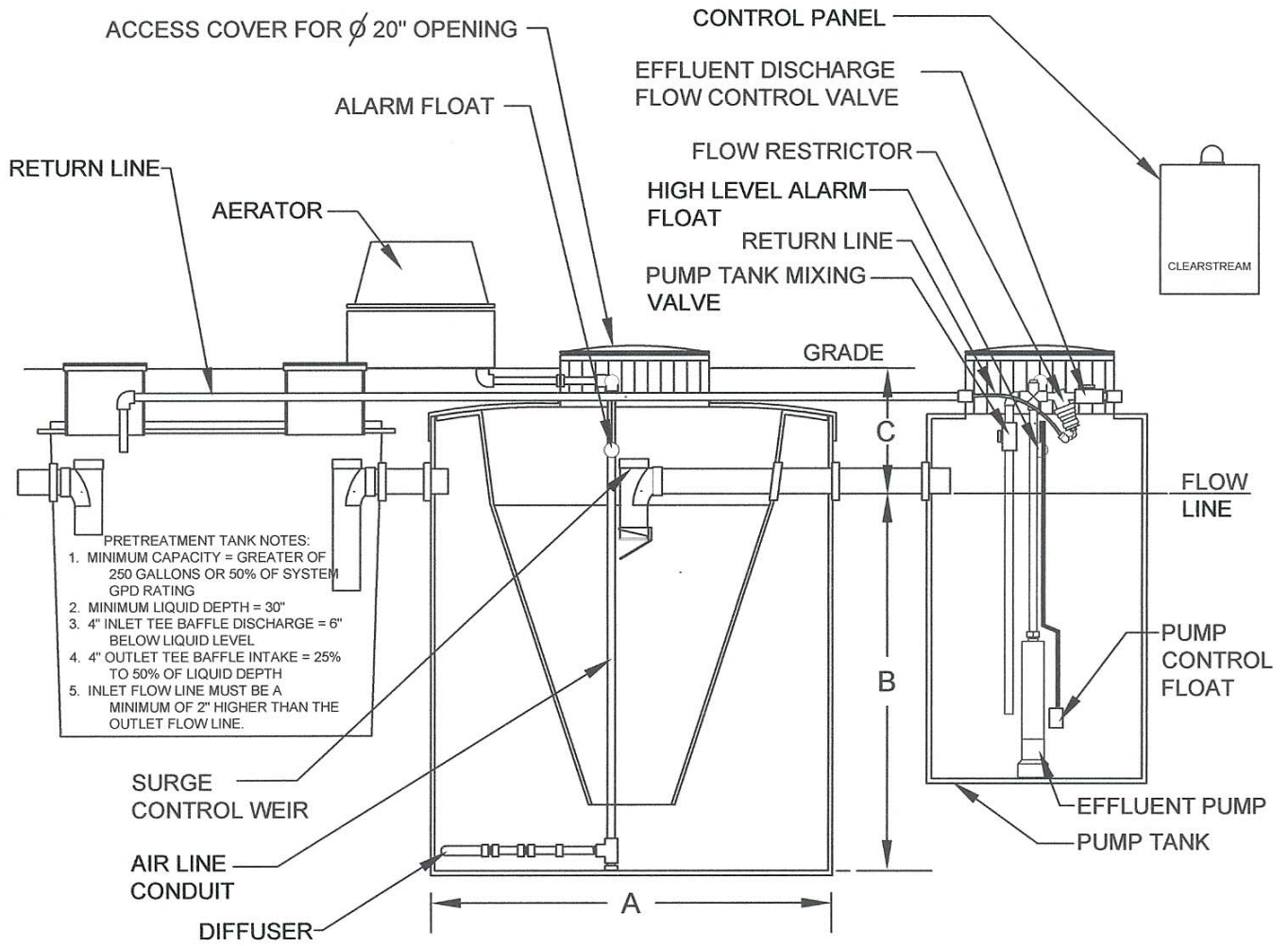
CLEARSTREAM AERATOR AND CONTROL PANEL INSTALLATION

1. Mount one of the Clearstream Control Panel Model series CS-118 in a location that can be easily noticed by the occupants.
2. Wire 115 Volt, 60Hz power from an electrical disconnect to Clearstream Control Panel. Wire from Control Panel to Clearstream Tank electrical junction box through conduit. Use wiring diagram provided for each version of the Clearstream Control Panel Model series. All electrical wiring should be installed by a qualified person in compliance with applicable section for the National Electrical Code or other more stringent local codes.
3. Install Aerator Model CS-103 as close as practical to the tank, but in no case greater than one hundred (100) feet away (50' on 1500 G.P.D. unit). Run ¾" Sch. 40 PVC air line from aerator connector to air line connection at Clearstream tank. Be careful to back fill underground air line in manner which will not cause air line to leak. Aerator must be installed in a location that is dry, non-dusty, and highly ventilated.
4. Turn power on at electrical disconnect and check for proper system operation.

COMPLIANCE WITH LAWS

The Clearstream Unit must never be installed without first obtaining all permits and approval from the local regulatory body. In areas that do not have local control over environmental activities, all applicable State and Federal environmental codes must be adhered to as well. Only properly licensed and trained individuals should install Clearstream equipment.

FIBERGLASS DESIGN DRAWING



Model 500D Design Drawing

DIMENSIONAL TABLE:

MODEL	A	B	C
500D	63"	63"	19"

PARTS LIST AND FLOW DIAGRAM

PART NAME

- 1. AIR SUPPLY LINE ASSEMBLY
- 2. ALARM FLOAT
- 3. AERATOR
- 4. AERATOR POLYETHYLENE HOUSING
- 5. NAMEPLATE
- 6. ACCESS COVER
- 7. TAMPER RESISTANT BOLT
- 8. FLOW CONTROL WEIR
- 9. TANK
- 10. DIFFUSER
- 11. ALARM PANEL
- 12. 20" DIA. EXTENSION RISER
- 13. FLOW CONTROL VALVE
- 14. PUMP TANK MIXING VALVE
- 15. FLOW RESTRICTOR

PART NUMBER

- CS-101
- CS-102
- CS-103EL
- CS-106
- CS-107
- CS-108
- CS-109
- CS-111
- CS-11
- CS-113
- CS-118
- CS-116A
- CS-130
- CS-131
- A-4551

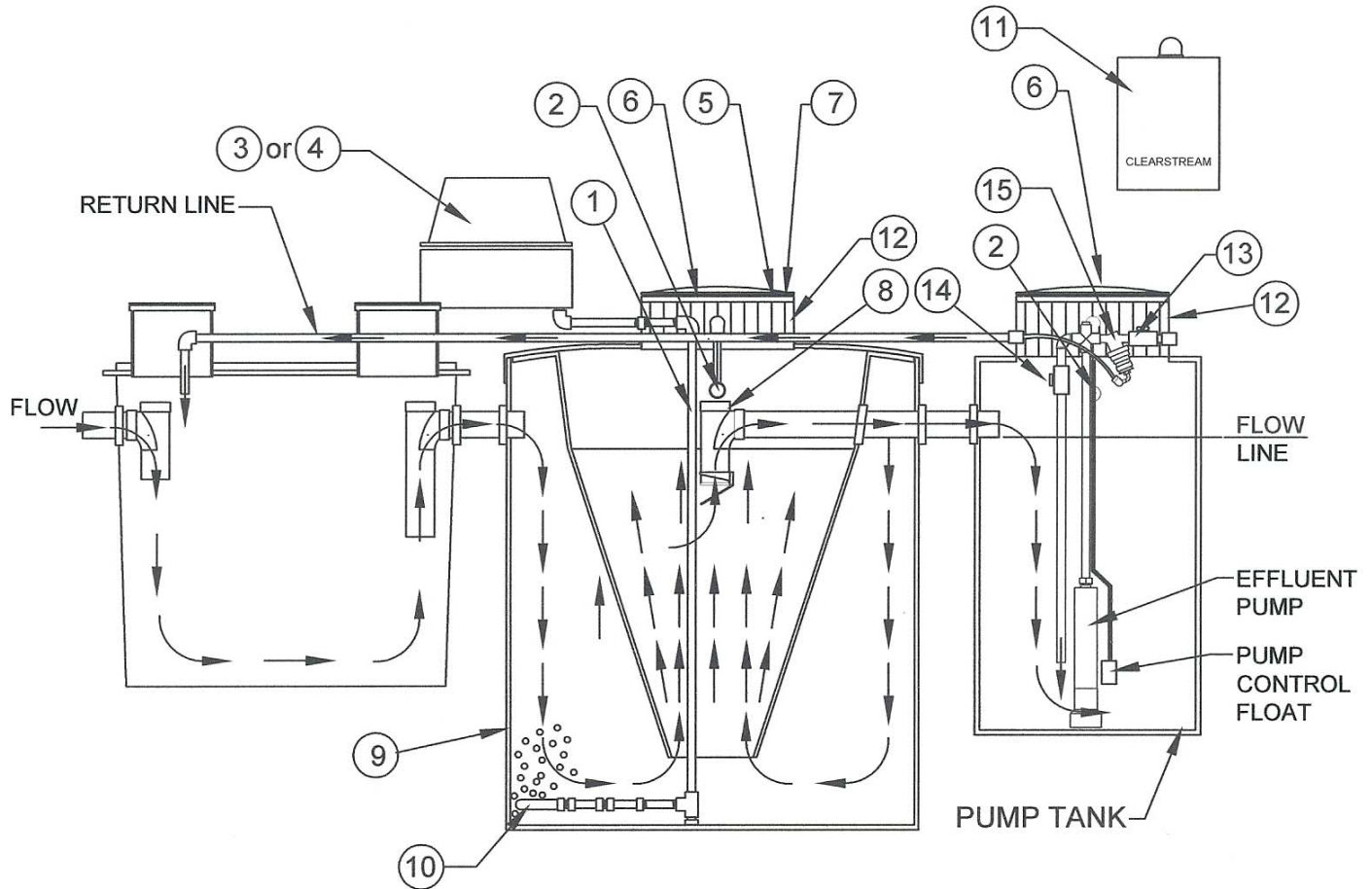
COMPONENT PARTS MAY BE OBTAINED FROM:
YOU LOCAL SERVICING DEALER

OR:



CLEARSTREAM
WASTEWATER SYSTEMS, INC.

P.O. Box 7568 Beaumont, Texas 77726 (409) 755-1500



SPECIFICATIONS

Model 500D	Treatment Capacity	500 G.P.D.
	BOD Loading	1.25 lbs. BOD
	Aerator CS-103 (Alternative CS-103EL)	2.4 scfm (2.8 scfm)
	Control Panel (Model CS-118AN)	Raintight
	Electrical	115v/60Hz

Pretreatment Tank:

Minimum Capacity	½ Plant Design Flow
Minimum Liquid Depth	30 Inches
Four Inch Inlet Tee Baffle Discharge level	6 inches below liquid
Four Inch Outlet Tee Baffle Intake level	25% to 50% of liquid
Inlet flow line must be a minimum of two inches higher than the outlet flow line	

LIMITED WARRANTY

Clearstream Wastewater Systems, Inc. warrants each Clearstream Aerobic Wastewater Treatment System to be free from defects in material and workmanship for a period of two (2) years from the date of sale to the original retail consumer when properly registered with Clearstream. Clearstream's sole obligation under this warranty is as follows: Clearstream shall fulfill this warranty by repairing or exchanging any component part, F.O.B. Factory, that shows evidence of defects, provided said component part, has been paid for, warrantee has notified Clearstream of the defect complained of and the component is returned through an authorized Purchaser, transportation prepaid. There is no informal dispute settlement available under this LIMITED WARRANTY.

No warranty is made as to the field performance of any system. This LIMITED WARRANTY applies only to the parts manufactured by Clearstream and does not include any portion of the plumbing, drainage, disposal system or installation of the systems. Site specific designs of treatment and disposal systems; including treatment plant and disposal system sizing is not the responsibility of Clearstream and is not covered by this LIMITED WARRANTY. Accessories supplied by Clearstream, but manufactured by others, are warranted only to the extent of and by the terms and conditions of the original manufacturer's warranty. In no event shall Clearstream be responsible for delay or damages of any kind or character resulting from, or caused directly or indirectly by, defective component or materials manufactured by others.

Recommendations for special applications will be based on the best available expertise of Clearstream and published industry information. Such recommendations do not constitute a warranty of satisfactory performance.

The LIMITED WARRANTY extends to the original retail consumer of the product. As herein, original retail consumer is defined as the purchaser who first has the plant installed, or in the case of a system designed for non-permanent installation, the purchaser who first uses the system. It is the purchaser's, or any sub-vendee's, obligation to make known to any other consumer the terms and conditions of this warranty.

This warranty is a LIMITED WARRANTY and no claim of any nature shall be made against Clearstream unless and until the original retail consumer, or his legal representative, notifies Clearstream in writing of the defect complained of and delivers the product and/or defective part(s), freight prepaid, to Clearstream or an authorized service station.

Clearstream reserves the right to revise, change, or modify the construction and design of the Clearstream Aerobic Treatment System, or any component part or parts thereof, without incurring any obligation to make such changes or modifications in equipment previously sold. Clearstream also reserves the right, in making replacements of component parts under this warranty, to furnish a component which, in its judgment is equivalent to the part replaced.

To the extent that the LIMITED WARRANTY statements herein are inconsistent with the locality where Purchaser used the Clearstream system, the warranties shall be deemed to be modified consistent with such local law. Under such local law, certain limitations may not apply. For example, some states in the United States and some jurisdictions outside the United States may: (i) preclude the disclaimers and limitations of these warranties from limiting the rights of a consumer; (ii) otherwise restrict the ability of a manufacturer to make such disclaimers or to impose such limitations; or (iii) grant the consumer additional legal rights, specify the duration of implied warranties which the manufacturer cannot disclaim, or prohibit limitations on how long an implied warranty lasts.

In no event and under no legal theory, including without limitation, tort, contract, or strict product liability, shall Clearstream or any of its suppliers be liable to the other party for any indirect, special, incidental, or consequential damages of any kind, including without limitation, damages for loss of goodwill, or any other kind of commercial damage, even if the other party has advised Clearstream of the possibility of such damages.

TWO YEAR INITIAL SERVICE POLICY

Date _____

Our firm, _____, will inspect and service your Clearstream System for the first two years from the date of installation. There will be _____ inspections made each year for this initial two year

period. Effluent quality inspection will include a visual inspection for color, turbidity, sludge build up, scum overflow, and odor. Mechanical and electrical inspection and service include: inspecting aerator, air filter, and alarm panel and replacing or repairing any component not found to be functioning correctly.

Upon expiration of this policy, our firm will offer a continuing service policy on a yearly basis to cover labor for normal maintenance and repairs on a year by year basis.

Violations of warranty include: shutting off the electric current to the system for more than 24 hours, disconnecting the alarm system, restricting ventilation to the aerator, overloading the system above its rated capacity, or introducing excessive amounts of harmful matter into the system, or any other form of unusual abuse.

**THIS POLICY DOES NOT INCLUDE PUMPING
SLUDGE FROM UNIT IF NECESSARY.**

Service Dealer:

Owner:

**CLEARSTREAM WASTEWATER
SYSTEMS, INC.**

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