

AES (Advanced Enviro-Septic™) Owners' Manual



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Table of Contents

Technical support.....	2
Important Safety Information.....	2
Introduction	3
Functioning of the AES System.....	4
Diagram of the AES system.....	5
AES system components.....	5
Table: AES System Components.....	6
Operating the AES System	7
AES System Operating Instructions.....	7
AES System Maintenance	9
Owner’s Responsibilities.....	10
Maintenance Sheet.....	11
Appendix A- Presby Warranty	12

Advanced Enviro-Septic™ U.S. Brevet nos. 6,461,078; 5,954,451; 6,290,429; 6,899,359; 6,792,977; 7,270,532 and 5,606,786. Other patent pending.
Advanced Enviro-Septic™ is a trademark of Presby Environmental, Inc.
Bio-Accelerator is a trademark of Presby Environmental, Inc.

Technical support

Environment Technology provides technical support to all individuals and companies using AES and other Presby Environmental products. For questions about products or information in this manual please contact us at 03 9707 979, info@et.nz

Important Safety Information

- Please ensure that the cover/s of the septic tank, the pumping station and sampling device if installed, are always in place and that they remain accessible at all times for periodic inspections and interventions when necessary.
- Ensure you receive an accurate As-Built plan of your system from your installer. Pipes are buried near your septic installation. Please speak to your installer or consult the as-built plan prior to digging or excavating near your septic system.
- It can be dangerous even potentially deadly to open a septic tank, pumping station or any enclosed space that is part of a wastewater treatment system. The action of the bacteria on the organic matter present in the wastewater produces gases such as carbon dioxide (CO₂), methane (CH₄) and hydrogen sulphide (H₂S). The H₂S present in the septic tank or a pumping station can cause the death of an individual in a matter of minutes. A well-maintained ventilation system will reduce the risk of toxic gases build up, however work in this area must be carried out by competent personnel.

Introduction

Thank you for choosing the AES system for your septic installation. This system was developed to efficiently treat domestic wastewater. Instructions must be followed in order to maintain its treatment performance so that you can make use of it for many years. Carefully read through this entire document and retain it in your files for future reference.

The purpose of this document

This user guide explains the proper use, procedures and inspections required in order to ensure the proper operation of your AES system for residential wastewater treatment.

It is the owner's responsibility to ensure that the system is used properly and according to its treatment capacity. It is also their responsibility to respect the rules and regulations in effect regarding associated council and government regulations.

Designation of the AES System

Name: AES Wastewater System

Application Domain: Residential Wastewater (sewage).

Class and treatment type: The AES system meets all the performance criteria requirements of both the Australian/ New Zealand Standard AS/NZS 1546.3: 2008, and the Queensland Plumbing and Wastewater Code: 2011 (for both Secondary and Advanced Secondary treatment). In 2017 AES completed Trial 12 of the Onsite Effluent Treatment System (OSET) National Testing Facility in Rotorua which certified secondary treatment quality.

The system cannot be used to treat wastewater to make it consumable. It is made to treat residential wastewater, and some commercial wastewater to an acceptable level for it to be reintroduced into the environment.

Definition of the AES System

The AES system is composed primarily of two inseparable components: the rows of AES pipe and a layer of system sand.

The AES system must be preceded by a septic tank or equivalent primary treatment system. The treated water is generally drained directly into the soil beneath the treatment system through a soil absorption system.

What to do if a problem occurs?

If in the course of normal use of your septic system you notice any of the following problems:

- Abnormally wet soil, presence of persistent puddles or odours in the area of the septic tank or the AES system,
- Slow flushing toilets or other plumbing in the home,
- Presence of abnormally abundant vegetation on the surface or around the septic tank or the AES system installation,
- Flooding in the area where the AES system is installed,
- Erosion of the land fill on or around the AES system,
- Alarm from the pumping station if such a device is part of your installation.

Please contact your AES certified contractor or Environment Technology. There are often simple remedies.

Customer Service and Technical Support information

Please do not hesitate to contact us if you need further information.

Environment Technology can be contacted at:

Telephone: 03 970 7979

Email: info@et.nz, Website: www.et.nz

Address: 105 Pascoe Street, Nelson 7010

Certified Contractor	<p>The AES System must be installed by a licensed drainlayer with AES certification. Certification is obtained by successfully completing the online AES Certification Course. This course can be accessed at www.et.nz/secure</p> <p>Environment Technology can provide the name of drainlayers having the proper certification to install AES systems. This information is also available on our website http://www.et.nz/installers/</p>
AES System Capacity	<p>The capacity of the AES System depends on two elements:</p> <ul style="list-style-type: none"> • The number of AES Pipes • The capacity of the underlying soil to evacuate the treated water <p>The total volume of wastewater fed to the system must not be more than what is shown in the design. The design flow is generally a weekly average.</p> <p>The system may also be limited by the capacity of the underlying soil to permit the infiltration and evacuation of wastewater. This value is evaluated by the designer who created the plans and estimate for your septic installation. The design should take into account whether the capacity of the soil is a potential limiting factor.</p>
Warranty certificate	<p>AES comes with a standard manufacturer’s warranty presented in Appendix A (page 12).</p>

Functioning of the AES System

The AES system is a passive technology which facilitates the proliferation of the aerobic bacteria responsible for wastewater treatment. It is comprised mainly of two inseparable components: the rows of AES pipes and a layer of system sand.

The AES system must be preceded by a septic tank or equivalent primary treatment system.

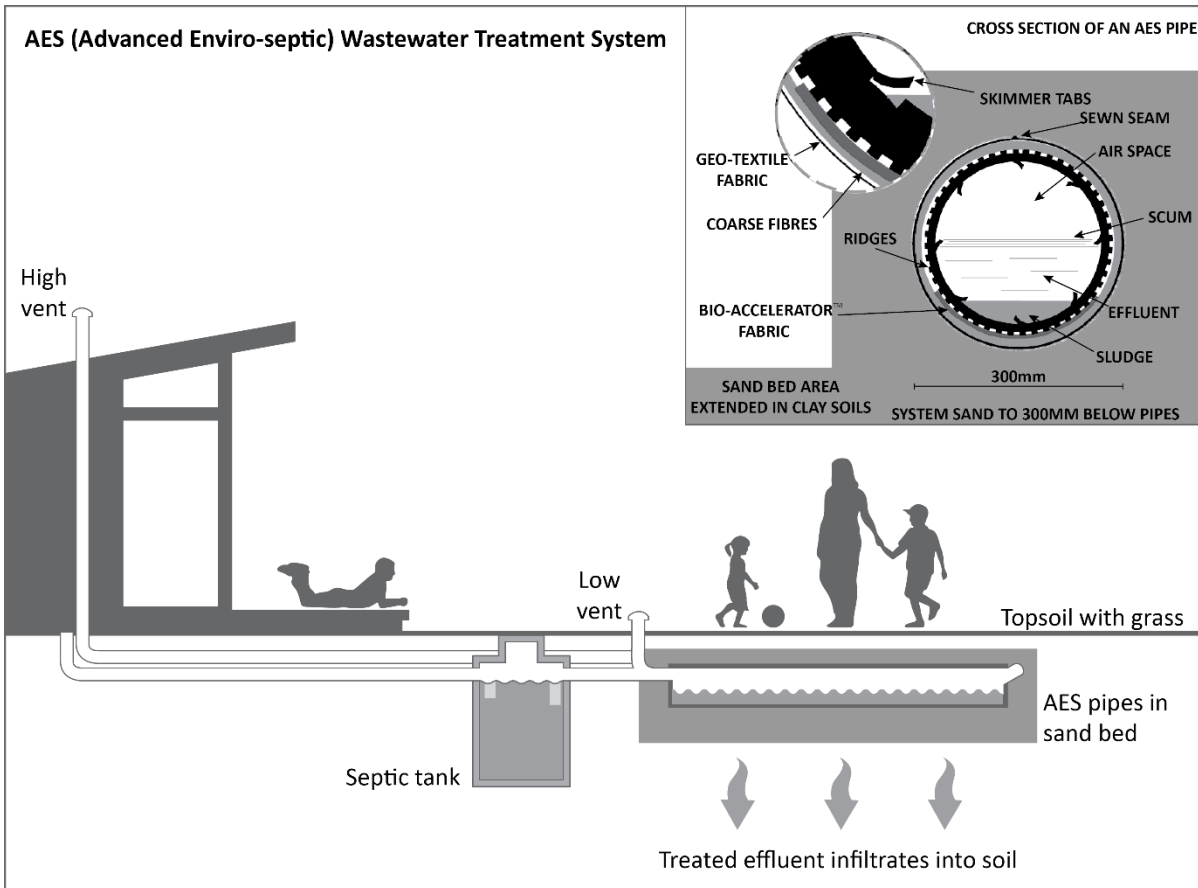
Treatment process of AES

The rows of AES pipes and system sand permit the treatment and distribution of wastewater on the surface of the receiving soil.

The pipes support, first of all, the separation of particles through flotation and decantation. The water is then evacuated through perforations situated around the pipes and through the pores of the two layers of synthetic media covering the pipes. These membranes facilitate the fixation of the microbial cultures which support wastewater treatment, as well as longitudinal distribution of the effluent.

The layer of sand continues the treatment process and helps to disperse the water before it infiltrates into the natural soil.

Diagram of the AES system



AES system components

Your septic installation includes several components. All of these components are parts of the chain of treatment of your installation. The following table presents a list of these elements. However, it should be noted that some of these are only used when site conditions require them. The table also presents a summary of inspections required for each component. More detailed information on this subject is presented in the sections that follow.



Table: AES System Components

Component of the septic system	Function	Follow-up needed	Frequency	Responsible for follow-up
Septic tank	Primary wastewater treatment	Periodic emptying	According to standards and regulations in effect	Owner is responsible to have work done by qualified person
Septic Tank Effluent Filter*	Retention of solids in low pressure pumped applications.	According to manufacturer's instructions.		
Distribution systems if required for larger dual bed systems. 3 options A) Gravity Distribution box and flow equalizers B) Pressure distribution (pump) system C) Automatic distributing valve	Distributes the septic tank effluent to the rows of AES	A) According to the water level in the inspection port	A) As needed	A) Owner
		B) According to the manufacturer's directions.		→
		C) According to the manufacturer's directions.		→
Rows of AES pipes	Treat and distribute effluent			
Sampling device	To verify the treatment performance of the AES System	Ensure that there is access to this device	Optional	Qualified person
Vent	To allow the circulation of air in the AES System	Ensure that the opening is not blocked	As needed	Owner
System sand	To complete the water treatment process and to improve the drainage	No		
Pumping station (optional)	Lift septic tank effluent to the AES System	According to supplier's specifications		

*The effluent filter is necessary whenever the septic tank is followed by a pump distribution system.

Operating the AES System

Initial Use	<p>At the time of installation the septic tank should be filled with clear water.</p> <p>If a pumping station is used, the contractor will verify that it is functioning properly at the time of installation. The home owner must make sure that there is adequate electricity to safely operate the equipment as well as the alarm component.</p> <p>The AES system is now ready for use.</p>
Intermittent Use or Prolonged Absences	<p>The AES system is a passive wastewater treatment system. When properly installed, it requires no particular attention even if you are away for periods of time.</p>

AES System Operating Instructions

The use and maintenance of AES Systems are relatively simple. In general, respecting the following rules will allow you use of your system without problems for years to come.

Wastewater Volume	<p>Excessive quantities of water that leave the house and enter the AES System in a short period of time could have a negative impact on the effectiveness of the treatment and the infiltration of wastewater causing agitation in the septic tank. A quantity of sludge or scum is likely to be put into suspension and be brought towards the system and the infiltration bed.</p> <p>After the installation, if changes are made to the residence (eg. addition of a bedroom), please contact the designer of the AES System. Make sure that the septic system is inspected by a qualified person to determine that it has the necessary capacity to treat and infiltrate the new daily design flow of wastewater being generated.</p>
In the bathroom	<p><u>Do:</u></p> <ul style="list-style-type: none">• Immediately repair any leaking tap or toilet,• Use a reasonable quantity of toilet paper.• Minimise or avoid bleach, antiseptic disinfectants, and ammonia acids in the system <p><u>Do not :</u></p> <ul style="list-style-type: none">• Use disinfectant in tablet (puck) form, whether it is placed in the basin or the tank,• Throw cigarettes, cigarette butts or medication in the toilet,• Throw paper towels, paper napkins or other personal hygiene products in the toilet.
In the kitchen	<p><u>Do:</u></p> <ul style="list-style-type: none">• Repair any leaking tap,• Use dish soap or dishwasher soap that is low in phosphate (0-5%),• Use the necessary quantity of soap to do the work. Take note that the necessary quantity is often less than suggested by the manufacturer.• Use biodegradable soap, low-phosphorus or phosphorus free detergents.

For the laundry	<p><u>Do not :</u></p> <ul style="list-style-type: none"> • Use a food waste disposal unit in your sink that is connected to your septic installation. If you do have a waste disposal unit, your septic tank may require more frequent pump out to remove sludge build up. • Dispose of vegetables, meats, fat, oil, coffee beans, citrus products or other products into the septic system. <p><u>Do:</u></p> <ul style="list-style-type: none"> • Use phosphate free detergent, preferably in liquid form. If it is not possible, use biodegradable powder detergent, • Use the necessary quantity of soap to do the work. Take note that the necessary quantity is often less than that suggested by the manufacturer, • Minimize the volume of water used for the laundry according to the quantity of clothing to wash, • If possible spread your loads of laundry throughout the week • Prevent harsh chemicals entering the system (e.g. paint, nappies)
Elsewhere in and around the house	<p><u>Do:</u></p> <ul style="list-style-type: none"> • Divert drainage and rain water away from the surface of the AES system. • Roof and surface water should be redirected away from absorption trenches. <p><u>Do not :</u></p> <ul style="list-style-type: none"> • Discharge water softener backwash into your septic system, • Discharge any water from swimming pool filters, spas or other appliances that discharge chlorinated water into your septic system. • Let water from sump pumps, gutters and drainage pipes discharge into the septic system, • Dispose of solvents, paints, antifreeze, engine oil or other chemicals in the septic installation. This includes water used to wash brushes or rollers that were used with latex paint (latex paint contains elements that are harmful to septic system), • Dispose of animal litter in the septic installation.
Chemicals for septic installation	<p>Your AES system does not require any starting chemical, cleaning or other additives. The bacteria that carry out the treatment are naturally present in raw domestic sewage. Any chemicals or additives added to the AES System could possibly kill these bacteria.</p>
Ventilation	<p>It is very important to ensure that good ventilation occurs so that the septic system functions correctly. The vent(s) installed at the ends of the septic system encourage this air circulation. It is important to make sure that the opening is not blocked and that air can circulate freely at all times. Air enters through the low vent, circulates through the rows of pipes and exits through the high vent.</p> <p>The owner must be sure to have a roof vent and to keep it clear at all times. When a pumping station is used, a bypass pipe or an extra vent must be used to ensure proper ventilation of the system.</p>
Heavy machinery & motorized vehicle traffic	<p>No vehicles or heavy machinery must be driven over a septic tank. Heavy machinery or motorized vehicle traffic on the soil around the AES bed closes the natural pores of the soil which reduces its permeability and allows for ponding and the accumulation of water.</p>

Vegetation

The surface of the AES system must be planted with grass or other vegetation that forms a thick turf. This will encourage surface water runoff from the bed surface. The vegetation must be cut regularly in order to encourage growth without the use of fertilisers. Vegetation cover contributes to the elimination of nitrogen and phosphorus.

It is important **not** to plant trees or other plants with invasive roots such as figs, willows, blackwood and many others within 3 metres of the AES system installation footprint.

AES System Maintenance

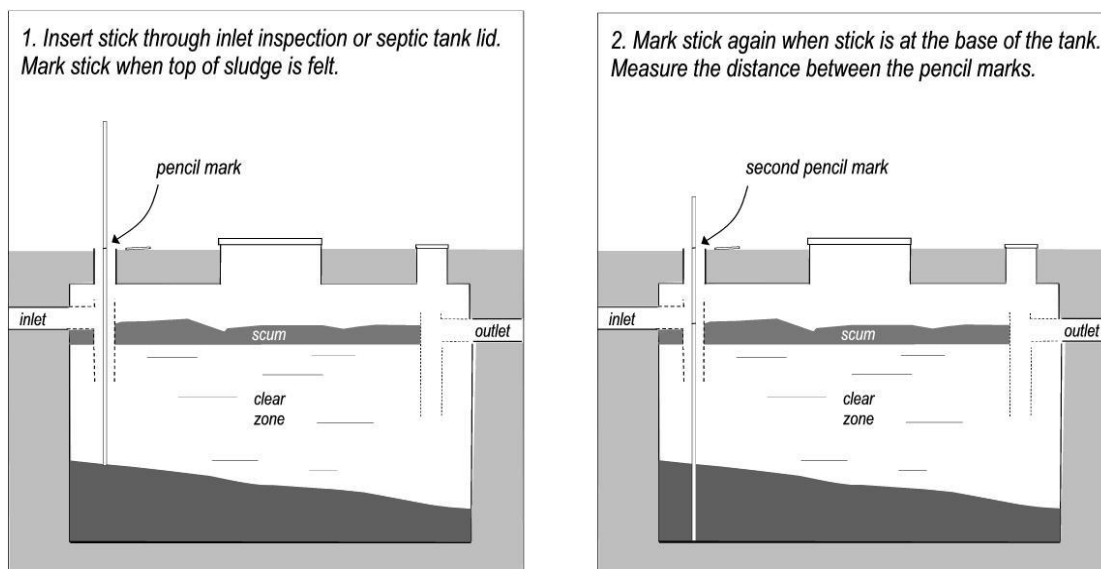
Septic Tank Maintenance

The septic tank preceding the AES System must be pumped out regularly (every 3-5 years for normal residential use or when sludge exceeds 1/3 of the tank volume).

If the septic tank is not emptied regularly, an increasing amount of solids and grease in suspension will leave the septic tank and end up in the treatment system and in time the performance of the AES System may be affected.

The owner must ensure their septic tank is pumped out according to council regulations, if any. This work should always be done by a qualified person.

Note: It is the home owner's responsibility to make sure that at all times the septic tank lids are in their proper position and securely fastened.



Septic tank outlet (effluent filter)

An outlet filter is not necessary at the exit of the septic tank in a gravity system. However it must be installed before a pump, for example when pumped effluent is between the septic tank and the AES pipes.

If installed the effluent filter must be cleaned according to the maintenance and inspection procedures provided by the manufacturer.

AES Pipe Rows

Under normal use, the rows of AES pipe do not require maintenance. It is normal to find fluctuation of the water level in the pipes. In many installations water level in the pipes can be measured by removing the low vent.

Vent	The owner must ensure that nothing prevents the circulation of air. There must also be a difference of at least 3 metres, at all times, between the entry vent situated at the extremity of the AES system and the high vent.
System Sand	There is no maintenance to be done on the system sand during normal use of the AES System.
Pumping station or low pressure distribution system	In certain cases, the site constraints require the use of a pumping station or a low-pressure distribution system to evenly dispose of the treated effluent. The owner is then responsible to comply with the manufacturer's scheduled maintenance requirements of this equipment.
Embankment surface above the AES System	The surface located above the AES system must be covered with herbaceous vegetation. A slight slope must be given to the surface in order to help the drainage of rainwater towards the outside of the system. The grass must also be cut regularly. Finally, any depression that could be created with time must be filled in order to avoid any accumulation of water above the system and to prevent erosion.

Owner's Responsibilities

Owner's Responsibilities	<p>The owner is responsible for:</p> <ul style="list-style-type: none"> • Using the AES System according to the instructions presented in this user guide • Pumping out the septic tank according to the regulations in effect • Maintaining the effluent filter (if present), the pumping station, the pressure distribution system or the automatic wastewater distributing valve according to manufacturer's specifications and recording the information if this equipment is part of the system • Ensuring that the vent openings are clear of any obstacle • Adhering to the requirements of the applicable rules and regulations
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Qualified Person	Any maintenance of an AES System must be undertaken by a person trained to carry out the inspections of the system, perform adjustments to the equalizers and/or carry out a rejuvenating procedure.
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To obtain the name of a qualified person in your area, contact:

Environment Technology
105 Pascoe Street, Nelson 7010
info@et.nz
03 970 7979

Information on installers is also available on our website
<http://www.et.nz/installers/>

For maintenance of the pumping station and the low-pressure distribution system, if installed, the owner must refer to the user guide specified by the manufacturer of these systems.

The pumping out of the septic tank must be performed by a company specializing in that field.

Maintenance Sheet

AES On-site Wastewater Treatment – Passive system

Address: _____ Date: _____

Name of AES qualified servicer: _____ Consent No: _____

Septic Tank

Ensure lids of the wastewater treatment system are readily accessible at all times

Measure depth of scum and solids in the septic tank:

Depth of scum: _____

Depth of solids: _____

Depth of tank: _____

Pumping out the septic tank is necessary if solids and scum layers combined are greater than one half the depth of the septic tank.

AES Bed Venting

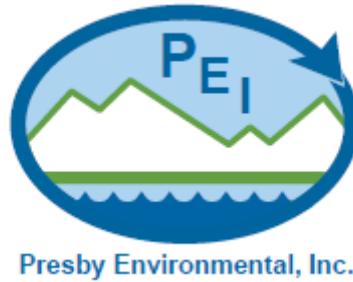
Ensure low vent and high vent are free of vegetation/ restrictions. Yes No

Notes

Overall condition of wastewater system, including disposal field:

This report shall be kept by the consent holder. In addition, the consent holder shall also keep written records of all repairs made to any part of the wastewater treatment and land application system.

Appendix A- Presby Standard Limited Warranty



PRESBY ENVIRONMENTAL INC. STANDARD LIMITED WARRANTY

- a) The structural integrity of each unit, endcap and other accessory manufactured by Presby Environmental Inc. (collectively referred to as “Units”), when installed and operated in an onsite wastewater system in accordance with Presby Environmental’s installation instructions, is warranted to the original purchaser (“Holder”) against defective materials and workmanship for one year from the date upon which a septic permit is issued for the septic system containing the Units; provided, however, that if a septic permit is not required for the septic system by applicable law, the one (1) year warranty period will begin upon the date that installation of the septic system commences. In order to exercise its warranty rights, Holder must notify Presby Environmental in writing at its corporate headquarters in Whitefield, New Hampshire within fifteen (15) days of the alleged defect. Presby Environmental will supply replacement Units for those Units determined by Presby Environmental to be defective and covered by this Limited Warranty. Presby Environmental’s liability specifically excludes the cost of removal and/or installation of the Units.
- b) THE LIMITED WARRANTY AND REMEDIES IN SUBPARAGRAPH (a) ARE EXCLUSIVE. THERE ARE NO OTHER WARRANTIES WITH RESPECT TO THE UNITS, INCLUDING NO IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.
- c) This Limited Warranty shall be void if any part of the Presby Environmental system (unit, endcap or other accessory) is manufactured by anyone other than Presby Environmental. The Limited Warranty does not extend to incidental, consequential, special or indirect damages. Presby Environmental shall not be liable for penalties or liquidated damages, including loss of production and profits, labor and materials, overhead costs, or other losses or expenses incurred by the Holder or any third party. Specifically excluded from Limited Warranty coverage are damage to the Units due to ordinary wear and tear, alteration, accident, misuse, abuse or neglect of the Units; the Units being subjected to vehicle traffic or other conditions which are not permitted by the installation instructions; failure to maintain the minimum ground covers set forth in the installation instructions; the placement of improper materials into the system containing the Units; failure of the Units or the septic system due to improper siting or improper sizing, excessive water usage, improper grease disposal, or improper operation; or any other event not caused by Presby Environmental. This Limited Warranty shall be void if the Holder fails to comply with all of the terms set forth in this Limited Warranty.
- Further, in no event shall Presby Environmental be responsible for any loss or damage to the Holder, the Units, or any third party resulting from installation or shipment, or from any product liability claims of Holder or any third party. For this Limited Warranty to apply, the Units must be installed in accordance with all site conditions required by state and local codes; all other applicable laws; and Presby Environmental’s installation instructions.
- (d) No representative of Presby Environmental has the authority to change this Limited Warranty in any manner whatsoever, or to extend this Limited Warranty. No warranty applies to any party other than the original Holder.

The above represents the standard Limited Warranty offered by Presby Environmental. A limited number of states and counties have different warranty requirements. Any purchaser of Units should contact Presby Environmental’s corporate headquarters in Whitefield, New Hampshire, prior to such purchase, to obtain a copy of the applicable warranty, and should carefully read that warranty prior to the purchase of Units

PRESBY ENVIRONMENTAL, INC.

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