Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection
One Winter Street Boston, MA 02108 • 617-292-5500

CERTIFICATION FOR GENERAL USE
Pursuant to Title 5, 310 CMR 15.000

Name and Address of Applicant:

Orenco System, Inc.
814 Airway Ave.
Sutherlin, OR 97479

Trade name of technology and models: Advantex Wastewater Treatment System Models AX20, AX20RT, AX25RT and AX100 (all hereinafter the "System" or the "Technology") for facilities with design flows less than 2,000 gallons per day (GPD). Schematic drawings illustrating each of the models and an Inspection Checklist are attached and are part of this Certification.

Transmittal Number: X280570
Date of Issuance: October 25, 2018; modified February 7, 2019 (numbering correction only)

Authority for Issuance

Pursuant to Title 5 of the State Environmental Code, 310 CMR 15.000, the Department of Environmental Protection (hereinafter "the Department") hereby issues this General Use Approval to: Orenco System, Inc., 814 Airway Ave., Sutherlin, OR 97479 (hereinafter "the Company"), approving the above referenced Advantex Wastewater Treatment System (herein after 'the Technology" or "System") for use in the Commonwealth of Massachusetts. Sale and use of the Technology are subject to compliance by the Company, the Designer, the System Installer, the Operator, and the System Owner with the terms and conditions herein. Any noncompliance with the terms or conditions of this Certification constitutes a violation of 310 CMR 15.000

/signed/
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Marybeth Chubb, Section Chief
Bureau of Water Resources
Wastewater Management Program

February 7, 2019
Date

I. Purpose

1. Subject to the conditions of this Approval and any other local requirements, the purpose of this Approval is to allow the use of the System in Massachusetts on a General Use basis. With the necessary permits and approvals required by 310 CMR 15.000, this Certification authorizes the installation and use of the System in Massachusetts.

2. The System may be installed for residential facilities with design flow less than 2,000 GPD where a system in compliance with 310 CMR 15.000 exists on-site or could be built and for which a site evaluation in compliance with 310 CMR 15.000 has been approved by the Local Approving Authority (LAA); or by the Department if Department approval is required by 310 CMR 15.000. This Approval allows for the use of the System on facilities for nitrogen reduction in a Department designated nitrogen sensitive or limited area as defined in 310 CMR 15.214 and 15.215.

   Non-residential facilities are not allowed under this approval. Non-residential facilities include properties with businesses and/or commercial establishments.

3. The System is approved for use at facilities with a maximum design flow of less than 2,000 GPD and shall meet or exceed the following effluent discharge requirements:

   - Effluent Total Nitrogen (TN) concentration of 19mg/L (for 660 gallons per day per acre (gpda) loading) or 25 mg/L (for 550 gpda loading).
   - Effluent PH range shall be 6.0 to 9.0

4. The System Owner or the designated System Operator (or 'Operator') has responsibility for oversight and sampling of the System if the property served was allowed to increase the discharge rate per acre above 440 gpda in an area subject to Nitrogen Loading Limitations.

   The System Owner will be required to repair, replace, modify or take any other actions as required by the Department or the LAA, if the Department or the LAA determine that the System is not capable of meeting the required reduction in nitrogen in the effluent.

   The Company is responsible for the approved technology as described below.

II. General Description of the Technology

1. The System is installed between the building sewer and the soil absorption system (SAS) of a standard Title 5 system in a manner which neither intrudes on, replaces a component of, or adversely affects the operation of a Title 5 system constructed in accordance with 310 CMR 15.000, subject to the provisions of this Approval.

2. Advantex Wastewater Treatment System is an aerobic wastewater treatment system, the series models as described below:

   a) <u>AdvanTex AX-RT Series (AX20-RT and AX25-RT)</u>

      The AX-RT series consists of an 800 gallon two-chamber fiberglass reinforced polyester (FRP) recirculating treatment tank, preceded by a separate septic tank with effluent filter. The engineered textile media is suspended from the top of the treatment tank over the first chamber (the recirc/blend chamber). The remainder of

media is positioned over the second chamber (the recirc/filtrate chamber) from which filtrate (treated effluent) is discharged. The two chambers are separated by a baffle wall. A recirculating pump draws water from the first chamber of the recirculating tank, and sprays it onto the top surface of the textile media at regular timed intervals to achieve a recirculation ratio of between 3:1 to 5:1. Filtrate drains from the textile media into the two chambers. Timer settings can be adjusted if actual flows vary significantly from projected flows.

The baffle wall between the chambers is fitted with a recirc-return valve for equalization during low-flow periods. Under low daily flow conditions, the valve allows 100% of the filtrate to be returned to the recirc/blend chamber for continued recirculation. The recirc-return valve is similar to a check valve in that it allows preferential flow in one direction only – in this case, from the recirc/filtrate chamber to the recirc/blend chamber.

The recirc-return valve closes when the liquid head on the recirc/blend side is equal to or greater than the liquid head on the recirc/filtrate side. When the liquid head on the recirc/filtrate side is higher, the pressure differential pushes the recirc return valve open for filtrate to pass back to the recirc/blend side of the baffle, thus providing for continued recirculation during periods of low or no inflow. Flow from the recirc/blend chamber can pass to the recirc/filtrate chamber only through the treatment media.

b) <u>AdvanTex AX20 and AX100</u>

The System is a multi-pass, packed bed aerobic wastewater treatment system. The System is comprised of a pre-assembled, UV-protected fiberglass reinforced plastic (FRP) module that contains a textile media filter, installed on top of a two chamber Processing Tank with a minimum capacity of 1500 gallons. The first chamber receives and separates the raw sewage into three zones: a scum zone, a sludge zone and a clear zone. A flow through port in the tank baffle wall allows effluent from the clear zone to the second chamber of the tank. A Biotube Pump Package installed in the second chamber of the Processing Tank pumps effluent to a pressure distribution manifold located on top of the textile media in the filter module. The effluent is applied at a preset recirculation ratio of between 3:1 to 5:1, controlled by a timer. Timer settings can be recalibrated if flows vary significantly from projected flows.

Effluent from the filter module flows in part or totally to the Processing Tank (where applicable) or to an external pump chamber or distribution box. During extended periods of low flow, all of the treated effluent is returned to the Processing Tank or external pump chamber. Filtrate from the System textile filter modules flows through a conveyance pipe/underdrain to a flow splitting valve and discharges back to the Processing Tank, or to a final effluent pump chamber for discharge by pressure distribution or to a distribution box for gravity discharge, to the soil absorption system (SAS). The filter modules are equipped with UV protected, removable FRP composite lids and contain one inch of insulation on the underside of the lid.

The Biotube Pump Package controls are equipped with high water level override and high water alarm. The alarm and control circuits are connected to an independent power source run from the main power source of the facility. The Biotube Pump

Package is designed to allow all piping to drain back to the Processing Tank. The Package is equipped with a removable filter cartridge that is equivalent to a Department approved septic tank effluent tee filter.

3. Systems designed for residential facilities in excess of six bedrooms, and any design using AX100 units, require installation of a separate septic tank constructed in accordance with 310 CMR 15.223 through 15.226, sized a minimum of 2.2 times the facility design flow and located prior to the filter module. These Systems also include a separate processing or recirculation tank sized equal to the facility design flow or a minimum of 1,000 gallons in accordance with the Company's design criteria. Single or multiple System units can be used in combination to serve various sized or multiple facilities.

4. The System can be equipped with a Vericomm or TCOM control panel (CP) which is attached to an Internet web based interface, or connected to a dedicated phone line, that provides continuous remote monitoring, maintenance information, management and control of each individual system. The CP provides the contracted operation and maintenance (O&M) provider with information to manage incoming alarms 24 hours per day through automatic notification, pre-established alarm protocol, a list of all active alarms, diagnostic data and input and review of alarm responses. The CP provides for site management through editable information, a tabular display of all operating data facilitating standard and custom reporting. The CP unit typically transmits report information to the O&M provider and the manufacturer of the System. If enabled, System information can be tracked using AdvanTexdealer.com, a web based program used to track and update site information, manage contact information, generate and print reports and audit checklists.

   The control panel including alarms are mounted in a location accessible to the operator (or Service Contractor) of the System.

5. All access ports and manhole covers shall be readily removable, of durable material and installed and maintained at grade to allow for maintenance of the System. No structures shall be located directly upon or above the access locations which could interfere with performance, access, inspection, pumping, or repair. Sufficient access for infrequent maintenance of the System treatment media and all other treatment works shall be evaluated, and addressed in the System design if necessary, by the designer.

6. <u>Wastewater Loading and Effluent Concentration Design Standards</u>

   For new residential construction in an area subject to the Nitrogen Loading Limitations of 310 CMR 15.214, and the facility does not meet with the Nitrogen Loading Limitations pursuant to the aggregation provision of 310 CMR 15.216, an increase in calculated loading per acre is allowed for facilities with design flow less than 2000 gpd with limitations as follows:

   - The design flow shall not exceed 660 gallons per day per acre (gpda) and the total nitrogen (TN) concentration in the effluent shall not exceed 19 mg/L; or
   - The design flow shall not exceed 550 gallons per day per acre (gpda) and the total nitrogen (TN) concentration in the effluent shall not exceed 25 mg/L.
   - TN is measured as the total of TKN (Total Kjeldhal Nitrogen), $N0_3$ –N (Nitrate Nitrogen) and $N0_2$-N (Nitrite nitrogen).

III. General Conditions

1. The provisions of 310 CMR 15.000 is applicable to the use and operation of this System, the System owner and the Company, except those that specifically have been varied by the terms of this Certification.
2. The use of the Technology under this Approval requires:
    - Disclosure Notice in the Deed to the property;
    - Certifications by the Company, the Designer, and the Installer;
    - System Owner Acknowledgement of Responsibilities;
    - A certified operator under contract for periodic inspection and maintenance;
    - Periodic sampling;
    - Recordkeeping and reporting; and
    - An external power supply.
3. Any required operation and maintenance, monitoring and testing shall be performed in accordance with a Department approved plan. Any required sample analysis shall be conducted by an independent U.S. EPA or DEP approved testing laboratory, or a DEP approved independent university laboratory, unless otherwise provided in the Department's written approval. It shall be a violation of this Certification to falsify any data collected pursuant to an approved testing plan, to omit any required data or to fail to submit any report required by such plan.
4. The facility served by the System and the System itself, shall be open to inspection and sampling by the Department and the LAA at all reasonable times.
5. In accordance with applicable law, the Department and the LAA may require the System owner to cease operation of the system and/or to take any other action as it deems necessary to protect public health, safety, welfare or the environment.
6. The Department has not determined that the performance of the System will provide a level of protection to public health and safety and the environment that is at least equivalent to that of a sanitary sewer system. Accordingly, no System shall be upgraded or expanded, if it is feasible to connect the facility to a sanitary sewer, unless as allowed by 310 CMR 15.004.
7. Design, installation, and use of the System shall be in strict conformance with the Company's DEP approved plans and specifications and 310 CMR 15.000, subject to this Certification.
8. An authorized agent of the Company must certify to the Approving Authority in writing that the installation was done by a qualified Installer approved by the Company and the installation conforms to this Approval. The authorized agent of the Company responsible for the inspection of the installation shall have received technical training in the Company’s products.

IV. Conditions Applicable to the System Owner

1. The System owner shall at all times have the System properly operated and maintained by a Company approved Operator in accordance with this Certification, the designer's operation and maintenance requirements and the Company's approved procedures.
2. The System is certified only in connection with the discharge of sanitary wastewater from residential facilities with a design flow of less than 2000 gpd. Any non-sanitary wastewater generated and/or used at the facility served by the System shall not be introduced into the System and shall be lawfully disposed of.
3. The System Owner shall provide access to the site for the System Operator to perform inspections, maintenance, repairs, responding to alarm events, field testing, and sampling as may be required by the Approval.

Operation and Monitoring Requirements

4. System effluent total nitrogen (TN) concentrations shall not exceed 19 or 25 mg/L and effluent pH shall not be less than 6.0 or more than 9.0. Field test observations of dissolved oxygen (DO) shall equal or exceed 2 mg/L and for Turbidity shall be equal or less than 40 NTU.
5. All samples shall be taken at a flowing discharge point, i.e. distribution box, pipe entering a pump chamber or other Department approved location from the treatment unit.
6. Inspection, operation and maintenance (O&M), sampling, and field testing of the System required by the Approval shall be performed by a Company approved Operator who has been certified at a minimum of Grade Level 4 (four) by the Board of Registration of Operators of Wastewater Treatment Facilities, in accordance with Massachusetts regulations 257 CMR 2.00, and is an approved Title 5 System Inspector in accordance with 310 CMR 15.340.
7. Prior to commencement of construction of the System, the System Owner shall provide to the LAA a copy of a signed O&M Agreement that meets the requirements of Section IV, paragraph (8).
8. The System Owner shall maintain, at all times, an O&M Agreement with a qualified System Operator approved by the Company. The Agreement shall be at least for one year and include the following provisions:
    a) The name of a System Operator who is an approved System Inspector accordance with 310 CMR 15.340 and who meets any additional qualification requirements specified in the Approval:
    b) The System Operator must inspect the Alternative System as required by Section IV, paragraph (9) and (12);
    c) The System Operator shall be responsible for submitting the monitoring results to the System Owner in accordance with Section IV, paragraph (13) and to the LAA in accordance with Section IV, paragraph (14); and

d) In the case of a System failure, alarm event, components not functioning as designed, or violations of the Approval, procedures and responsibilities of the System Operator and System Owner shall be clearly defined for corrective measures to be taken immediately. The System Operator shall agree to provide written notification within five days, describing corrective measures taken, to the System Owner and the local board of health.

9. The System Owner shall comply with the following monitoring requirements if the System is subject to a TN concentration limit in accordance with Section II, paragraph (6):

a) Properties occupied at least 6 months per year are considered year-round properties, shall be inspected and have effluent sampled for at least the TN parameter quarterly for the first year, then a minimum of twice/year thereafter, at least 5 months apart and with at least one sample taken between December 1 and March 1 of each year. Field testing shall be completed per Section IV, paragraph (11) below and as determined by the System Operator. See DEP Testing Protocol at *https://www.mass.gov/files/documents/2016/08/wp/testsamp.pdf*. Wastewater flow shall be recorded at each inspection, see 'Flow Metering' Section IV, paragraph (10).

b) Properties occupied less than 6 months per year are considered seasonal properties, shall be inspected and have effluent sampled for at least the TN parameter a minimum of twice/year. At least one sample must be taken 30 to 60 days after each seasonal occupancy begins. A second must be taken no less than 2 months after the first sample. Field testing shall be completed per Section IV, paragraph (11) below and as determined by the System Operator. Wastewater flow shall be recorded at each inspection, see 'Flow Metering' Section IV, paragraph (10).

c) Systems in operation prior to issuance of this Approval, which have received approval of sampling reduction from the Department may continue with that System monitoring frequency.

TN is measured as the total of TKN (Total Kjeldhal Nitrogen), NO_3-N (Nitrate nitrogen) and NO_2-N (Nitrite nitrogen).

10. Flow Metering: Reporting of residential System water use is not required, however it is recommended the Operator record water meter readings if available at all inspections, or otherwise estimate System flow, to assist in addressing possible operational problems or issues. Flow measurement when recorded shall be based on:

a) Actual metering data of wastewater flow to the System or actual water meter data of flow to fixtures that discharge to the wastewater system; or

b) Actual water meter data for the total facility with either actual meter data or estimated flows for non-wastewater usage subtracted from the total facility water usage. If estimating the wastewater portion of metered water usage, the System Operator shall provide a best estimate of wastewater discharged to the System with method of estimating, such as pump run times, occupancy rates, adjustment due to seasonal outdoor watering use, etc.; or

c) For Systems installed under a prior Approval that did not include a wastewater flow data reporting requirement, if no floe meters are available, the System Operator shall

provide a best estimate of wastewater discharged to the System with the method of estimating, such pump run times, occupancy rate, etc.; and

11. Field Testing: Temperature, Turbidity, pH and DO shall be measured and recorded in the field whenever the effluent is sampled for TN. See applicable sections of the Department's Field Testing Protocol at *http://www.mass.gov/files/documents/2016/08/wp/testsamp.pdf*.

12. At minimum, the System Operator shall inspect the System:

    a) Quarterly for the first year then two times per year thereafter;

    b) In accordance with the approved O&M manual, the Designer's operation and maintenance requirements, and the requirements of the LAA; and

    c) Any time there is an alarm event, equipment failure, or system failure.

Recordkeeping and Reporting

13. Within 60 days of any site visit, the System Operator shall submit an O&M report and inspection checklist to the System Owner and the Company. It is recommended the System Owner and Company maintain copies of these items for possible Department audit. The O&M report shall include, at a minimum:

    a) For a System failing, any corrective actions taken;

    b) Wastewater analyses, wastewater flow data, field testing results and inspection checklists;

    c) Any violations of the Approval;

    d) Any determinations that the System or its components are not functioning as designed or in accordance with the Company specifications; and

    e) Any other corrective actions taken or recommended.

14. By February 15th of each year the System Owner or the System Operator if designated by the owner, shall submit to the LAA all monitoring results with all O&M reports and inspection checklists completed by the System Operator during the previous 12 months.

15. Upon determining that the System has failed, as defined in 310 CMR 15.303, the System Operator shall notify the System Owner immediately.

16. Upon determining that the System has failed, as defined in 310 CMR 15.303, the System Owner and the System Operator shall be responsible for the notification of the LAA within 24 hours of such determination.

17. The System Owner shall notify the Approving Authority and the Company in writing within seven days of any cancellation, expiration or any other change in the terms and/or conditions of the O&M Agreement required by Section IV, paragraph (8).

18. Violations of the TN concentration in the System effluent shall not constitute a failure of the System for the purposes of 24-hour notification or 5-day written reporting as required in Section IV, paragraph (8)d and (16).

19. The System owner shall provide a copy of this Approval, prior to the signing of a purchase and sale agreement for the facility served by the System or any portion thereof, to the proposed new owner.

20. The System owner shall furnish the Department any information that the Department requests regarding the System, within 21 days of the date of receipt of the request.

21. Prior to issuance of a Certificate of Compliance of the System, and after recording and/or registering the Notice required by 310 CMR 15.287(10) the System Owner shall provide to the LAA a copy of: (i) a certified Registry copy of the Notice bearing the book and page/or document number: and (ii) if the property is unregistered land, a Registry copy of the System Owner's deed to the property, bearing a marginal reference on the System Owner's deed to the property. The Notice to be recorded shall be in the form of the Notice provided by the Department.

22. Prior to signing any agreement to transfer any or all interest in the property served by the System, or any portion of the property, including any possessory interest, the System Owner shall provide written notice of all conditions contained in the Approval to the transferee(s). Any and all instruments of transfer and any leases or rental agreements shall include as an exhibit attached thereto and made a part of thereof a copy of the Approval for the System. The System Owner shall send a copy of such written notification(s) to the LAA within 10 days of giving such notice to the transferee(s).

V. Conditions Applicable to the Company

1. The Company shall notify the Director of the Wastewater Management Program at least 30 days in advance of the proposed transfer of ownership of the technology for which this Certification is issued. Said notification shall include the name and address of the proposed new owner and a written agreement between existing and proposed new owner containing a specific date for transfer of ownership, responsibility, coverage and liability between them. All provisions of this Certification applicable to the Company shall be applicable to successors and assigns of the Company, unless the Department determines otherwise.

2. The Company shall develop, maintain and update as necessary the following:

    - Minimum installation requirements;
    - An operating manual, including information on substances that should not be discharged to the System;
    - A maintenance checklist; and
    - A recommended schedule for maintenance of the System consistent with the Department's requirements essential to consistent successful performance of the installed Systems.

3. The Company shall institute and maintain a program of operator training and continuing education. The Company shall maintain and annually update, and make available the list of qualified operators by February 15th and make the list known to local approving authorities, the Department and to users of the technology.

4. The Company shall furnish the Department any information that the Department requests regarding the System, within 21 days of the date of receipt of that request.

5. The Company shall include copies of this Certification and the procedures described in Section V, paragraph (3) with each System that is sold. In any contract executed by the

Company for distribution or re-sale of the System, the Company shall require the distributor or re-seller to provide each purchaser of the System with copies of this Certification and the procedures described in Section V, paragraph (3).

6. A copy of the wastewater analyses, wastewater flow data, field testing results, and System Operator O&M reports and inspection checklists from each installed System shall be maintained by the Company or its designee for possible Department audit.

VI. Conditions Applicable to the System Designer

1. Upon submission of an application for a DSCP, the Designer shall provide to the LAA:
   a) A certification, signed by the owner of record for the property to be served by the System, stating that the property owner:
      i. has been provided a copy of the Approval, the Owner's Manual, and the Operation and Maintenance Manual, if applicable, and the owner agrees to comply with all terms and conditions;
      ii. has been informed of all the owner's costs associated with the operation, including, when applicable: power consumption, maintenance, sampling, recordkeeping, reporting, and equipment replacement;
      iii. understands the requirement for a service contract;
      iv. agrees to fulfill his responsibilities to provide a Deed Notice as required by 310 CMR 15.287(10) and the Approval;
      v. agrees to fulfill his responsibilities to provide written notification of the Approval to any new owner, as required by 310 CMR 15.287(5);
      vi. if the design does not provide for the use of garbage grinders, the restriction is understood and accepted;
      vii. if the design is for an upgrade of failed or nonconforming system, the System Owner has been provided a copy of the evaluation of the existing system;
      viii. whether or not covered by a warranty, the System Owner understands the requirement to repair, replace, modify or take any other action as required by the Department or the LAA, if the Department or the LAA determines that the Alternative System is not capable of meeting the performance standards; and
   b) A certification, signed by the Designer that the design conforms to the Approval with Conditions and 310 CMR 15.000.

VII. Reporting

1. All notices and documents required to be submitted to the Department by this Certification shall be submitted to:

Director
Wastewater Management Program
Department of Environmental Protection
One Winter Street - 5th floor
Boston, Massachusetts 02108

VIII. Rights of the Department

1. The Department may suspend, modify or revoke this Certification for cause, including, but not limited to, non-compliance with the terms of this Certification, non-payment of any annual compliance assurance fee, for obtaining the Certification by misrepresentation or failure to disclose fully all relevant facts or any change in or discovery of conditions that would constitute grounds for discontinuance of the Certification, or as necessary for the protection of public health, safety, welfare, or the environment, and as authorized by applicable law. The Department reserves its rights to take any enforcement action authorized by law with respect to this Certification and/or the System against the Owner or operator of the System and and/or the Company.