

**NORTH CAROLINA DEPARTMENT OF HEALTH AND HUMAN SERVICES
DIVISION OF PUBLIC HEALTH
ENVIRONMENTAL HEALTH SECTION
ON-SITE WATER PROTECTION BRANCH**

PROVISIONAL WASTEWATER SYSTEM APPROVAL

PROVISIONAL NO: PWWS-2016-01

Issued To: Fuji Clean USA, LLC
 41-2 Greenwood Road
 Brunswick, ME 04011
 207-406-2927
 207-406-2929
 www.fujicleanusa.com

Contact:

For: Fuji Clean USA Models CEN7 and CEN10 (Fuji Clean CEN7 and CEN10)

Approval Date: August 26, 2016

In accordance with General Statute 130A-343, 15A NCAC 18A .1969 and 1970, a proposal by Fuji Clean USA, LLC, (Fuji Clean USA) for approval of their wastewater system has been reviewed and found to meet the standards of a Provisional System when all of the following conditions have been met.

I. General

A. Scope of this Provisional Approval includes all of the following:

1. Design, installation, operation, and maintenance guidelines for Fuji Clean CEN7 and CEN10 systems to meet TS-I effluent quality standards in accordance with Rule .1970(a) Table VII.
2. Collection of field effluent quality standard data from Fuji Clean CEN7 and CEN10 systems designed to meet TS-II effluent quality standards in accordance with Rule .1970(a) Table VII.
3. Monitoring activities for Fuji Clean CEN7 and CEN10 wastewater systems to verify compliance with effluent quality standards.
4. Proposal for evaluation of this Provisional System.

B. This Provisional Approval is only applicable to Fuji Clean CEN7 and CEN10 systems receiving domestic strength (non-industrial process wastewater) influent, not exceeding the parameters in Rule .1970(b), and with a design daily flow less than or equal to 3,000 gallons per day.

C. Fuji Clean CEN7 and CEN10 systems may be proposed for facilities with an influent waste strength that exceeds the parameters in Rule .1970(b) by Fuji Clean USA and a licensed Professional Engineer (PE). The State shall review and approve proposals on a case-by-case basis prior to permitting by the local health department (LHD). The design must include the proposed raw wastewater strength (e.g., BOD₅, COD, TN, TSS, fats, oils and grease, etc.), expected organic loading rate (in pounds of BOD per day), and hydraulic loading rate (in gallons per day) on the

advanced pretreatment system, calculations, references, and any other needed information to support the proposed design.

- D. This Provisional Approval is limited to 200 systems. The intent of this Provisional Approval is to gain sufficient field experience to qualify this system for Innovative Approval as a TS-I system pursuant to Rule .1969(g).
- E. Data from Fuji Clean CEN7 and CEN10 systems installed on TS-I sites, that are designed for TS-II effluent quality standards, may be sampled for TS-II parameters. These samples may be used in support of attaining TS-II Provisional or Innovative Approval, as appropriate.
- F. Use of Fuji Clean CEN7 and CEN10 systems with a design flow exceeding 3,000 gallons per day may be permitted after review and approval by the State on a case-by-case basis in accordance with the Large Systems State Review/Approval Process and Rule .1938.

II. System Description

Fuji Clean CEN7 and CEN10 advanced pretreatment wastewater systems are self-contained fiberglass reinforced plastic (FRP) vessels with baffles that separate the vessel into three compartments. The first compartment serves as a settling chamber or septic tank that stores sludge, greases, etc. The second compartment is an anaerobic chamber that includes fixed film plastic media, which occupies about one-third ($\frac{1}{3}$) of the compartment capacity. There is also space in the second compartment for additional sludge storage. The third compartment is the aerobic chamber. Plastic fixed film media in the third chamber provides mechanical filtration and two airlines introduce oxygen into the chamber. The third compartment also contains two airlift pumps that serve to continuously recycle mixed liquor and sludge to the first chamber and a pump to convey treated effluent to a final settling compartment before discharge. The third compartment includes hand operated mechanical control valves used to set and adjust air and water flows. The treatment process is powered by one blower manufactured by Fuji Clean USA.

III. Siting Criteria

- A. A Provisional System may be installed at sites that meet the requirements of this Section and the soil and siting criteria for a conventional, modified, alternative, innovative, or accepted wastewater system. The manufacturer agrees to provide another approved system if the Provisional System fails to perform properly. The site shall have sufficient area to install a replacement advanced pretreatment system and 100 percent dispersal field repair area. Exceptions to the repair area requirement are as set forth in Rule .1969(f)(3).
- B. Fuji Clean CEN7 and CEN10 wastewater systems shall be sited and sized in accordance with Rule .1970 for TS-I systems. Drip irrigation systems used with Fuji Clean CEN7 and CEN10 systems shall be sited and sized in accordance with the manufacturer's specific drip approval.

IV. Dispersal Field Sizing

The dispersal field sizing criteria shall be based upon the long term acceptance rate (LTAR) specified in the rules or the specific dispersal field system approval.

V. Special Site Evaluation

A special site evaluation may be required based on the proposed dispersal field in accordance with Rule .1970(p) or a manufacturer specific drip approval.

VI. Design Criteria

- A. Fuji Clean CEN7 and CEN10 systems shall be designed by a designer authorized in writing by Fuji Clean USA (authorized designer) or by a PE.
- B. Fuji Clean CEN7 and CEN10 systems shall be designed in accordance with the following criteria.
 - 1. The model number, maximum number of bedrooms, and design daily flow are specified in Table 1:

Table 1		
Fuji Clean Model #	Number of Bedrooms	Design Daily Flow
CEN7	Up to 5	≤ 630 gpd
CEN10	Up to 7	≤ 900 gpd

- 2. The dispersal field pump tank shall be a state-approved tank sized in accordance with Rule .1952(c).
- 3. Influent to the advanced pretreatment unit shall have sufficient alkalinity and carbon to facilitate nitrogen removal. Designs shall incorporate a mechanism for adding alkalinity and carbon, as needed.
- 4. Systems designed to meet TS-II effluent quality standards shall use the Salcor 3-G UV system.
- 5. The influent sample shall be taken from inside the inlet baffle in the first compartment.
- 6. Effluent samples shall be collected from the outlet end of the disinfection unit or a tap on the dispersal field force main. The tap should be located before the spin filter for drip systems. The preferred location of the tap is in the pump tank discharge/riser assembly.
- 7. Effluent from Fuji Clean CEN7 and CEN10 systems may be discharged to a gravity dispersal field or a dispersal field pump tank.
- 8. The 7-day and 30-day readings shall be measured and stored in the following:
 - a. SJE-Rhombus IFS Model IFI41W114H6A8AC10E27D for systems discharging to a pump tank; or
 - b. Premier Plastics pre-packaged Flout system that includes data logger Model Lascar EL-USB-5 Data Logger for gravity dispersal fields.
 - c. Other automatic flow monitoring and recording systems may be used on a case-by-case basis when specifically approved by the State and Fuji Clean USA.
- 9. The Fuji Clean CEN7 and CEN10 systems shall not be placed under driveways, parking areas, or other areas subject to vehicular traffic.
- 10. Buoyancy calculations shall be completed by a PE on sites where a soil wetness condition is present within five feet of the top of the ground surface. The PE shall make appropriate design modifications as needed.

VII. Installation and Testing

- A. Prior to beginning construction of Fuji Clean CEN7 and CEN10 systems, the Fuji Clean USA authorized designer, PE, if required, Fuji Clean USA licensed distributor, installer authorized in

writing by Fuji Clean USA (authorized installer), and LHD shall attend a preconstruction conference.

- B. The Fuji Clean CEN7 and CEN10 systems shall be located in compliance with the horizontal setback requirements of Rule .1950(a) and Rule .1970 and shall be located to prevent surface/subsurface water inflow/infiltration. The horizontal setback requirements shall be in accordance with Rule .1970.
- C. All Fuji Clean CEN7 and CEN10 systems shall be installed according to directions provided by Fuji Clean USA. Additionally, all Fuji Clean CEN7 and CEN10 systems and components used with, but not manufactured by Fuji Clean USA, shall be installed in accordance with all applicable regulations and manufacturer instructions.
- D. All individuals/companies installing Fuji Clean CEN7 and CEN10 systems shall be in possession of all necessary permits and licenses before attempting any portion of a new or repair installation. The company/individual must be a Level IV installer and authorized installer.
- E. Watertightness of the tanks shall be tested by either a 24-hour hydrostatic test or a vacuum test in accordance with the following, as applicable:
 - 1. Hydrostatic Test^{1, 2}
 - a. Temporarily seal the inlet and outlet pipes.
 - b. Fill tank with clean water to a point at least two inches above the pipe connections or the seam between the tank and the riser, whichever is highest.
 - c. Measure the water level.
 - d. Allow the tank to sit for 24 hours.
 - e. Re-measure the water level.
 - f. If the water level change is ½-inch or less or one percent of the liquid tank capacity, the tank passes the leak test.
 - g. If the water level change is greater than ½-inch, any visible leaks can be repaired and the tank may be topped off with water and allowed to sit for a minimum of one hour.
 - h. The tank passes the leak test if there are no visible leaks (flowing water or dripping in a steady stream) and no measureable drop in water level after one hour. Otherwise, the tank fails the leak test.
 - 2. Vacuum Test³
 - a. Temporarily seal the inlet and outlet pipes.
 - b. A vacuum of four (4) inches of mercury should be pulled on the tank and held for five (5) minutes.
 - c. During the testing, the tank manufacturer or their representative can seal the tank if it is found to be leaking.
 - d. If the tank is repaired, the vacuum must be brought back up to four inches and held for five minutes.
- F. Prior to Operation Permit (OP) issuance, the authorized installer and authorized designer or PE shall conduct an inspection/start-up of the Fuji Clean CEN7 and CEN10 systems and all associated system components. The LHD personnel and the operator in responsible charge (ORC) will attend

¹ Victor D'Amato and Ishwar Devkota, *Development of Prefabricated Septic and Pump Tank Construction and Installation Standards for North Carolina*.

² National Precast Concrete Association, *Best Practices Manual Precast Concrete On-Site Wastewater Tanks*, Second Edition, October 2005, 24.

and observe the inspection/start-up. An acceptance letter from the authorized installer, authorized designer, and PE, as applicable, shall be provided to the LHD prior to issuance of the OP.

- G. All specified site preparation steps and construction specifications for the dispersal field shall be strictly adhered to including, but not limited to, specified depth of trenches in relation to site limiting conditions, cover material specifications (if needed), and trench installation method.

VIII. Operation, Maintenance, Monitoring, and Reporting

- A. Fuji Clean CEN7 and CEN10 systems shall be classified, at a minimum, as a Type Vc system in accordance with Table V(a) of Rule .1961(b). Management and inspection shall be in accordance with Rules .1961 and .1970.
- B. All Fuji Clean CEN7 and CEN10 systems require an operation and maintenance agreement between the system owner and Fuji Clean USA, its authorized representative, or with a certified subsurface operator authorized in writing by Fuji Clean USA (authorized ORC) as per Rule .1970. The system shall be inspected by the authorized ORC. The authorized ORC must have proper equipment and training to access and program the control panels on site.
- C. All Fuji Clean CEN7 and CEN10 systems shall be operated and maintained according to the latest version of Fuji Clean USA O&M manual.
- D. At each Fuji Clean CEN7 and CEN10 system inspection, the authorized ORC shall follow service procedure steps identified in the Fuji Clean USA O&M Manual and, at a minimum, observe, monitor, record and/or collect the following:
 - 1. Conductivity, pH, DO and Temperature of system effluent;
 - 2. Clarity of system effluent;
 - 3. Wastewater, sludge, and scum levels in all tanks;
 - 4. Proper operation of system aerator, noting any unusual sounds or physical appearance;
 - 5. Air flowrate for the system aerator;
 - 6. Solids level in the aeration chamber;
 - 7. Watertightness of all tanks, risers, and pipe connections at the tanks;
 - 8. Operation of pumps, floats, valves, electrical controls, and alarms, including record of alarms since last visit and troubleshooting actions;
 - 9. Dispersal field pump delivery rate (drawdown test), determination of the average pump run time, and dispersal field dosing volume;
 - 10. Average and maximum 7-day and 30-day flowrates in gallons per day;
 - 11. Any structural damage, accessibility issues, adequate ventilation, excess odors, ponding of effluent, insect infestations, vegetative growth over the dispersal, or surfacing of effluent on the dispersal field; and
 - 12. Samples and laboratory analyses of Fuji Clean CEN7 and CEN10 systems influent and effluent as required.
- E. The ORC shall also conduct additional observations, measurements, monitoring, and maintenances activities as specified in the OP and as recommended by Fuji Clean USA.
- F. Sampling
 - 1. All sampling shall be done in accordance with Rule .1970(n)(3) and (5).

2. All systems shall be tested for effluent CBOD₅, TSS, NH₄-N, and fecal coliforms. Influent shall be tested for BOD₅ and TKN. The manufacturer may choose for TS-I system effluent to be additionally tested for TN in support of pursuing TS-II approval.
3. Influent samples shall be taken from inside the inlet baffle in the first compartment of the advanced pretreatment system.
4. Effluent samples shall be collected from the outlet end of the disinfection unit or a tap on the dispersal field force main.

G. Notification and Performance of Maintenance and Repairs

1. The ORC shall alert Fuji Clean USA, the LHD, and the system owner within 48 hours of needed maintenance or repair activities including but not limited to landscaping, tank sealing, tank pumping, pipe or control system repairs, media or aerator replacement, and/or adjustments to any other system component.
2. The ORC shall notify the system owner, Fuji Clean USA, and the LHD whenever the pump delivery rate efficiency and/or average pump run times are not within 25% of initial measurements conducted prior to system start-up.
3. System troubleshooting and needed maintenance shall be provided to maintain the pump delivery rate and average pump run time within 25% of initial measurements conducted during system start-up.
4. Tank compartments will be pumped as needed upon recommendation of the ORC and in accordance with the Fuji Clean USA system Operation and Maintenance instructions. However, at a minimum, the septic tank will be pumped whenever the solids level exceeds 25% of the tank's total liquid working capacity or the scum layer is more than four inches thick.
5. The tanks shall be pumped by a properly permitted septage management firm, and the septage handled in accordance with 15A NCAC 13B .0800.
6. All maintenance activities shall be logged and recorded in the ORC reports provided to the LHD.

H. Reporting

1. The ORC shall provide a completed written report to the system owner, Fuji Clean USA, and the LHD within 30 days of each inspection. At a minimum, this report shall specify:
 - a. The date and time of inspection;
 - b. System operating conditions measured and observed according to VIII.D and VIII.E;
 - c. Results from any laboratory analyses of any influent and effluent samples;
 - d. Maintenance activities performed since the last inspection report;
 - e. An assessment of overall system performance;
 - f. A list of any improvements or maintenance needed;
 - g. A determination of whether the system is malfunctioning, and the specific nature of the malfunction; and
 - h. Any changes made in system settings based on recommendations of the manufacturer.
2. Proposal for Evaluation and Reporting
 - a. The manufacturer shall maintain a contract for evaluation of the performance of the controlled demonstration wastewater system with an independent third-party laboratory, consultant, or other entity that has expertise in the evaluation of wastewater system and that is approved by the Department.
 - b. Semi-annual reports are due to the Department by January 31 and July 31 of each year from the third-party. The reports shall include the following information at a minimum:
 - (1) list of all systems currently installed under Provisional Approval;

- (2) results of all effluent quality samples collected, including a table summarizing all the effluent quality results;
 - (3) flow monitoring information;
 - (4) copies of all ORC inspection reports;
 - (5) assessment of system performance in relation to effluent quality standards and showing compliance with Rule .1970(o);
 - (6) assessment of system performance in relation to flow monitoring and showing compliance with Rule .1970(o);
 - (7) assessment of physical and chemical properties of the materials used to construct the system in terms of strength, durability, and chemical resistance to loads and conditions experienced and showing compliance with Rule .1969(g)(2)(B);
 - (8) recommended areas of applicability for the system; and
 - (9) conditions and limitations related to the use of the system.
- d. Upon completion of the research and testing protocol, the third-party shall submit a final report to the Department. This report shall be submitted in conjunction with Fuji Clean USA completing an application for Innovative Approval and within five years of the effective date of the first OP issued pursuant to this approval.
- e. The final report shall contain the following information at a minimum:
- (1) list of all systems currently installed during the Provisional Approval period;
 - (2) results of all effluent quality samples collected, including a table summarizing all the effluent quality results;
 - (3) flow monitoring information;
 - (4) copies of all ORC inspection reports;
 - (5) assessment of system performance in relation to effluent quality standards and showing compliance with Rule .1970(o);
 - (6) assessment of system performance in relation to flow monitoring and showing compliance with Rule .1970(o);
 - (7) assessment of physical and chemical properties of the materials used to construct the system in terms of strength, durability, and chemical resistance to loads and conditions experienced and showing compliance with Rule .1969(g)(2)(B);
 - (8) recommended areas of applicability for the system; and
 - (9) conditions and limitations related to the use of the system.
- f. The Final Report shall be in electronic format and may be published on the On-Site Water Protection Branch's website without confidentiality. The contents of the semi-annual and final reports shall not be altered from the original document without approval from Fuji Clean USA.
- c. The research and testing protocol shall be managed by 3-Engineering, LLC or other approved third-party evaluator and includes the following minimum activities outlined in a detailed protocol provided in the submittal:
- (1) A minimum of 50 complete data sets shall be collected from a minimum of 15 sites.
 - (2) A complete data set includes the following information: influent BOD and TKN; and effluent CBOD, TSS, NH₄-N, TN, and fecal coliforms. If the manufacturer chooses for TS-I system effluent to be additionally tested for TN, that information shall be included in the complete data set reporting.
 - (3) There must be at least 30 days between samples collected from any one site.
 - (4) Samples shall be collected from all sites. A site may be excluded if justification is provided that it is unsuitable as a test site. The samples from that site must be provided but will not be used as part of the data evaluation.

- (5) Each site shall produce a minimum of two sample sets collected over at least a 12-month period.
- (6) For coastal resort communities, two samples shall take place between June 1 and September 8 of each year. The samples must be taken at least six weeks apart.
- (7) Other seasonal homes shall be sampled during the projected times of greatest use.
- (8) The samples will be collected during a scheduled visit by the ORC.
- (9) A copy of the sample results will be provided to the On-Site Wastewater Branch after the analyses.

IX. Responsibilities and Permitting Procedures

- A. Prior to the installation of a Fuji Clean CEN7 or CEN10 system at a site, the owner or owner's agent shall fill out an application at the LHD for the proposed use of this system. The LHD shall issue an Improvement Permit (IP) or Construction Authorization (CA) or amend a previously issued CA allowing for the use of a Fuji Clean CEN7 or CEN10 system.
- B. The IP and CA shall contain all conditions the site approval is based upon, including the proposed use of the Provisional System. The OP will include all conditions specified in the IP and the CA.
- C. When a special site evaluation is required pursuant to Rule .1970(p)(1) or a drip approval, an evaluation and written, sealed report from a Licensed Soil Scientist (LSS) regarding the site shall be provided to the LHD. The report shall contain the information as specified in Rule .1970(p)(2) and "Requirements for Submittals of Soil Reports and Pretreatment and/or Dispersal System Designs". The LHD may request the assistance of their Regional Soil Scientist in evaluating this report prior to permit issuance.
- D. Prior to issuance of a CA for Fuji Clean CEN7 and CEN10 systems, a design submittal prepared by an authorized designer or a PE shall be submitted for review and approval by the LHD. The design submittal shall include the information required in "Requirements for Submittals of Soil Reports and Pretreatment and/or Dispersal System Designs".
- E. It is recommended that local authorized environmental health practitioners attend a design training session offered by the manufacturer/authorized representative prior to permitting the system. Also, at the request of the LHD, an OSWP Engineer will review designs not otherwise required to be reviewed by the State.
- F. An authorized installer and authorized designer or PE, as applicable, shall certify in writing that the Fuji Clean CEN7 or CEN10 system was installed in accordance with the approved plans and specifications prior to OP issuance.
- G. For sites required to be evaluated by a LSS or Licensed Geologist (LG) (see Section V and IX.C), the LHD may specify as a condition on the IP and CA that a LSS or LG oversee critical phases of the dispersal field installation and certify in writing that the installation was in accordance with their specified site/installation requirements prior to the OP issuance.

X. Repair of Systems

The provisions of 15A NCAC 18A .1961(l) shall govern the use of the Fuji Clean CEN7 and CEN10

systems for repairs to existing malfunctioning wastewater systems.

Approved By: _____ Date: _____