



# COMMONWEALTH of VIRGINIA

Department of Health  
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State Health Commissioner

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January 11, 2019

Scott Samuelson, Managing Director

[Scott@fujicleanusa.com](mailto:Scott@fujicleanusa.com)

Fuji Clean USA, LLC

41-2 Greenwood Road

Brunswick, MN 04011

VIA ELECTRONIC AND REGULAR MAIL

RE: Treatment Level 3 General Approval of Fuji Clean USA's CEN5, CEN7, and CEN10 Treatment Units

Dear Mr. Samuelson:

We have completed our review of your request for listing of Fuji Clean's CEN series wastewater treatment units as "Generally Approved" under the Virginia Department of Health's (VDH's) Guidance, Memorandum, and Policy (GMP) 2016-03 and in accordance with the Treatment Level 3 (TL-3) general approval requirements in the *Regulations for Alternative Onsite Sewage Systems* (12 VAC5-613, *AOSS Regulations*).

The complete submittal for review consists of the following:

1. Application submitted August 4, 2017
2. Memorandum of Understanding and Agreement, signed and dated September 5, 2017
3. Technical Plan sheets for the approved units
4. Owner's Manual
5. Contractors Installation Manual
6. Operation and Maintenance Manual (revised 1/10/19) with Pump Out Instructions
7. Quality Assurance and Quality Control Procedures data August 16, 2017
8. Contract between Fuji Clean USA LLC and Bennette Burks, PE, dated August 16, 2017
9. Engineer's Operation and Maintenance Manual Certification and Treatment Level 3 Certification Statement by Bennette Burks, PE, dated May 30, 2017
10. Final Report for TL-3 Listing dated November 16, 2018, which includes an excel spreadsheet with individual site information and relevant data entered into the VDH data analytical spreadsheet
11. Supplemental information received December 21, 2018 in response to VDH comments

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Based on our review, VDH approves the referenced Fuji Clean wastewater treatment units for listing as “Generally Approved” under GMP 2016-03 and as “Generally Approved” for TL-3 effluent treatment under the *AOSS Regulations*. The effluent testing results indicate a predicted BOD<sub>5</sub> of 7.1 mg/l and TSS of 4.6 mg/l using the protocol established in GMP 2016-03. See the attached review memo for discussion of the review.

The specific units included in this approval are below.

<b>Rated Treatment Capacity (gallons per day)</b>	<b>Model</b>
500	CEN5
700	CEN7
900	CEN10

The Fuji Clean CEN units are already included in GMP 2013-01 as 50% nitrogen reducing units on the basis of their NSF 245 certification. GMP 2013-01 will be modified to reflect the TL-3 General Approval Status.

Please feel free to call me at (804) 387-1883 or contact me by email at [Marcia.Degen@vdh.virginia.gov](mailto:Marcia.Degen@vdh.virginia.gov) if you have any questions.

Sincerely,



*Marcia J. Degen, Ph.D., P.E.*  
Technical Services Administrator  
Division of Onsite Sewage, Water Services,  
Environmental Engineering & Marina Programs

Attachment: Review Memo

Cc: Lance Gregory, Division Director

**Virginia Department of Health**  
**Office of Environmental Health Services**  
*Technical Services – Wastewater Engineering*

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To: File

From: Marcia Degen, Ph.D., P.E. – Technical Services Manager, OEHS

Date: January 10, 2019

RE: Fuji Clean USA, LLC  
***Approval of Fuji Clean CEN5, CEN7, CEN10 Treatment Units for TL-3 General Approval***

Cc: Lance Gregory – OEHS

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Fuji Clean USA, LLC, (Fuji Clean) has completed their GMP 2016-03 testing in accordance with their September 5, 2017, Manufacturer Agreement; Memorandum of Understanding and Agreement. TL-3 General Approval is requested for Models CEN5, CEN7, and CEN10.

Fuji Clean requested and received a variance signed March 19, 2018, to allow the use of data from units installed outside of VA. Data from a total of 22 units were submitted, with 10 sites in Virginia and 12 sites in Maryland. The Maryland data was collected in compliance with the Chesapeake Bay Data Sharing protocol which requires composite samples. The submitted data set contains a mix of composite samples (from Maryland) and grab samples (from Virginia). Mr. Bennette Burks, P.E., the third party overseer, discussed this discrepancy with VDH early in the testing process. These treatment units utilize a 5:1 recirculation ratio (effluent volume to influent volume) from the effluent to the initial settling tank. As a result, the effluent quality is relatively stable and VDH allowed a mix of sample types to be submitted.

The recirculation of the effluent also affected influent testing. All of the influent values were extremely low, but that is expected and is directly related to the way the system functions. The only way to obtain a true influent sample would be to shut off the recirculation and that would have been considered a treatment interruption, affected the effluent quality, and challenged the validity of the results.

Four to seven sampling events were conducted on each treatment unit. All units have data from all 4 quarters, except one unit. MD-12 (Unit #20) has 5 samples: 2 in quarter 3, 2 in quarter 4, and one in quarter 2. Given that one of the quarter 4 samples was collected 12/19/17, within 2 weeks of being in the first quarter, VDH will accept the December test as similar to a first quarter event.

The submittal was reviewed to determine if the test data supported the request to list the Fuji Clean treatment units as TL-3 compliant under GMP 2016-03 and 12VAC5-613-70. The results of the statistical analyses are provided in the table below.

	<u>BOD<sub>5</sub></u>	<u>TSS</u>
Count (N) =	22	22
Degrees of Freedom (N-1) =	21	21
Mean =	1.59	1.22
Std Dev =	0.70	0.57
Std Err =	0.15	0.12
Upper 99% T (1-tailed) =	2.52	2.52
Upper 99% T Conf Int =	1.96	1.53
Upper 99% T Conf Int =	7.1	4.6
	Native Values	
	Log-Transformed Values	

Fuji Clean has completed the testing in accordance with GMP 2016-03 and 12VAC5-613-70. A statistical analysis of the data indicate compliance with the TL-3 standard. The Fuji Clean CEN5, CEN7, and CEN10 are recommended TL-3 General Approval.

Fuji Clean recently had the design flows for the CEN models reevaluated by NSF. NSF increased the design flows for the CEN5 and the CEN7. The current design flows as listed on the NSF 245 website listing are CEN5=500 gpd; CEN7=600 gpd; and CEN10=900 gpd. Fuji Clean provided a letter from NSF dated September 24, 2018, supporting the modified design flows. At the time of this memo, however, the NSF40 listing had not been updated, but the NSF 245 listing had been updated.