Virginia Department of Health

Office of Environmental Health Services

Division of Onsite Sewage, Water Supplies, Environmental Engineering and Marina Programs

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To: Allen Knapp – Director – VDH Division of Onsite Sewage, Water Supplies, Environmental Engineering, and Marina Programs

From: Marcia J. Degen, Ph.D., P.E. – VDH Technical Services Administrator DOSWSEEMP
Phone: 804-387-1883 Email: Marcia.Degen@vdh.virginia.gov

Date: July 1, 2010

RE: Clearstream Wastewater Systems, Inc.
P.O. Box 7568 Beaumont, TX 77726-7568
Model 500N 500 GPD
600N 600 GPD
750N 750 GPD
1000N 1000 GPD
~~1500N 1500 GPD~~ (Note: 1500 gpd cannot be approved under this protocol)
Recommendation Memo – Data Submission for General Approval for TL-3 Listing

Cc: D. Roadcap – Program Manager – DOSWSEEMP

Recommendation:

VDH should approve the Clearstream units 500N, 600N, 750N, and the 1000N as 'Evaluation Completed' under GMP 147 and consider them 'Generally Approved' for the purposes of the Emergency Regulations for Alternative Onsite Sewage Systems, 12 VAC 5-613. The 1500N cannot be included in the approval as it exceeds the maximum size requirement in GMP 147 and the small alternative onsite sewage system(AOSS) definition in the Emergency Regulations (less than or equal to 1000 gpd). General approval cannot be provided for large AOSS (>1000 gpd).

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Submittals and Dateline:

A submittal for review under GMP 147 for the referenced treatment units was received on November 5, 2009. The submittal included 404 data sets, an engineer's certification letter, and an O&M manual. The submittal was reviewed for completeness and compliance with the requirements of GMP 147. Comments were generated on December 28, 2010. Additional information addressing the comments was received on March 26, 2010, and consisted of:

(1) A cover letter from Mr. Peyton providing background on the project that produced the data and contact information.

(2) A March 23, 2010 letter from Mr. Richard Gerard, Area Administrator for the Lake Livingston project that produced the data being considered by Virginia stating that most of the systems were residential.

(3) Gulf Coast Test data for fecal test data for the Salcor UV following the Clearstream unit (using NSF 40 standards)

(4) October 15, 2009, letter from Sharon Steiner – NSF relaying a summary of testing results for Clearstream with UV with associated spreadsheet of results

Additional comments were generated on May 7, 2010. Additional information was provided electronically on May 20, 2010, and by hard copy on May 25, 2010, and consisted of:

(1) Letter dated May 20, 2010, from Mr. Peyton verifying year round occupancy of homes sampled, all systems were sampled (no protocol for removing systems), and verification that the unit design has not been modified since the date of the sampling period (1990's).

(2) A second letter from Mr. Richard Gerard, dated May 13, 2010, who verified that the sample collection, preservation and analytical methods were in accordance with 40 CFR 136.

(3) Two copies of the revised O&M manual to reflect the 10/10 effluent goal.

Analysis:

Third Party Status and Validity of Data Set: No information was originally provided with the submittal to support the third party status of the data set. VDH investigated and determined the following based on supplemental information provided by Mr. Peyton and a phone conversation between Marcia Degen VDH and Mr. Richard Gerard – Trinity River Authority of Texas – on April 29, 2010.

The data set was collected by the Trinity River Authority (TRA) (http://www.trinityra.org) of Texas as part of a water quality study for Lake Livingston. Built, owned and operated by the Trinity River Authority of Texas (TRA), Lake Livingston is the largest lake constructed for water supply purposes only, located totally within the State of Texas and serves the City of Houston. The lake covers approximately 83,000 surface acres. and has homes with onsite sewage systems in the watershed of the reservoir. In the 1990's, ATUs began to be installed on numerous home in the watershed. TRA conducted a study (1992 to 1998 by the data set) to determine how well the ATUs were working because they were concerned about water quality in the reservoir.

Samples were collected and analyzed by TRA in accordance with their then current procedures which were later stated to be in accordance with 40 CFR 136 (see letter dated May 13, 2010). TRA has a lab certified by the Texas Commission of Environmental Quality and all samples were run through that lab. Mr. Richard Gerard - Area Administrator for the Lake Livingston Project – stated that he was contacted by Mr. Peyton (of Clearstream) in 2009 and Mr. Peyton requested a copy of the dataset. Mr. Gerard had his lab pull the records and supply them to Clearstream. The total number of samples in the dataset Clearstream provided (405) is roughly what Mr. Gerard remembers as the number of data samples. There does not appear to be any missing data.

Influent testing was not provided with this dataset. GMP 147 requires influent data for samples collected under the policy's protocol. The purpose of the influent testing is to determine if there are anomalies in the influent that would warrant editing the dataset. However in assessing this outside dataset, influent data were not considered necessary because all of the data were provided and a certification was provided from the third party monitoring group, TRA, that all data are from residential units occupied year round.

The data set appears to conform with the requirements of a third party data set. The data were collected by a third party and analyzed by a third party. Clearstream did not initiate the study nor did they fund the study. The third party is a public service authority that has trained individuals that are used to following standard methods for sampling, preservation, and analysis. The Trinity River Authority of Texas is an independent political subdivision of the State of Texas. Created by the Texas Legislature in 1955, the Authority has evolved into one of the largest of all of the Texas river authorities, primarily as a result of the geographic territory in which TRA provides service. The study was initiated to assess potential water quality issues for Lake Livingston, a drinking water reservoir. There is no reason to suspect that the study would be skewed to the benefit of the manufacturer.

Statistical Analysis: The data set contained 405 data sets for effluent BOD and TSS. Effluent fecal coliform data were submitted as well, but were not analyzed as the manufacturer is recommending disinfection (ultraviolet). It is noted that no influent samples were supplied. Of the 405 data sets, 11 were eliminated because they were not residential or they were missing either a BOD or TSS sample point. A total of 396 data sets were then left for the

statistical analysis. At least 25 systems had 4 or more data sets which accounted for 170 data sets. Another 5 or 6 systems likely have the 4 data sets, but the installation dates were not consistent even though the system name was the same. The remaining data sets were primarily single data sets, but there were also systems sampled two or three times as well. It is noted that the third party stated that the residences in the data set were occupied year round.

The statistical procedure as outlined in GMP 147 was conducted and the results complied with the GMP 147 requirements. The results are as follows:

Upper 99% Confidence Interval for BOD5, converted back to normal units: 5.48 mg/l

Upper 99%Confidence Interval for TSS, converted back to normal units: 8.96 mg/l

Summary: All required submittals have been provided with one exception. The data set does not include influent testing as currently required by procedures listed under GMP 147 for those systems being tested under the GMP 147 testing Agreement. Discussions within the department have concluded that the influent testing does not impact the Agency's analysis of this data set. Division staff believe that the total number of residences represented in the data is sufficient to account for the expected variability in influent wastewater strength.

The Division recommends there be no deviation from the current GMP 147 requirement for influent testing *for systems being tested in Virginia* or for any system that relies on data from only 20 residences. The influent testing is necessary in those cases in order to justify eliminating data points due to unusual influent if necessary.

The data set volume exceeds the minimum 80 data sets (20 systems with 4 quarterly data points) required by GMP 147 and the data set appears to conform to the third party requirement in GMP 147. The third party is a professional service authority that is familiar with sample collection, proper preservation, and analytical procedures. The statistical analysis completed on the data set indicates that the data comply with the quality standards as set in GMP 147.

The data set and the accompanying submittals all appear to comply with the requirements of GMP 147. The Clearstream wastewater treatment system models 500N (500 GPD), 600N (600 GPD), 750N (750 GPD), and 1000N (1000 GPD) are recommended for approval as "Evaluation Completed" under GMP 147 and as "Generally Approved" for TL 3 under the Emergency Regulations for Alternative Onsite Sewage Systems. It is noted that the manufacturer submitted a 1500 gpd unit for approval, but GMP 147 only addresses units 1000 gpd or less. The Emergency Regulations only provide for General Approval of small AOSS's defined as <1000 gpd.