



STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION



Frank Nistico
Red Barn Restaurant
292 Wilton Road
Westport, CT 06880

December 30, 2008

Re: Red Barn Restaurant Wastewater Treatment and Renovation System

Dear Mr. Nistico,

The Department of Environmental Protection (DEP) is in receipt of the September 2008 preliminary engineering report, prepared by Nathan L. Jacobson & Associates, for the wastewater disposal facilities serving the Red Barn Restaurant located at 292 Wilton Road in Westport, Connecticut.

The report describes the site and the existing on-site wastewater renovation system, establishes that the DEP has jurisdiction over the system based on the design flow, explains the DEP design criteria for large capacity on-site wastewater renovation systems and evaluates the Red Barn site in meeting these requirements and makes recommendation to address the malfunctioning system. The report only evaluated the general area where the existing on-site system is located. Therefore, during a telephone conversation with Mr. Brian Curtis from Nathan L. Jacobson & Associates, I inquired about the northwestern part of the property. Mr. Curtis replied with a letter dated December 18, 2008 describing the site conditions and limitations for this part of the property. Below is a summary of his analyses and conclusions:

1. The system must be sized based on a conservative flow estimates. The metered flows are averaging of 3,900 gallons per day. By applying the safety factor of 1.5 times the metered flows to account for peak flows, the estimated design flow of 5,850 gallons per day for the restaurant exceeds 5,000 gallons per day, which establishes DEP jurisdiction over the system.
2. The soils beneath and down gradient of the proposed location of the leaching field must have adequate hydraulic capacity to transmit the effluent and renovate the pollutants most likely to occur in domestic sewage. A conservative flow analysis must show that the site is capable to transmit more than 1.5 times the design flow, which factors in a 50% hydraulic reserve capacity for the leaching system. Since the groundwater elevation is shallow on some parts of the property, the leaching system would need to be elevated to meet the required three (3) foot minimum separation distance from the mounded seasonal high groundwater elevation to provide for adequate unsaturated flow under the leaching system.

3. The on-site system must have the capability to treat and renovate the effluent for the pollutants most likely to occur in the domestic sewage including bacteria and viruses, phosphorus and nitrogen.
 - a. For bacteria removal, the effluent must travel underground for at least twenty-one (21) days prior to encountering the point of the environmental concern downgradient of the system in the direction of groundwater flow. If the new leaching system is installed in the general area of the existing leaching system, the point of environmental concern is Poplar Plains Brook and probably the southeast property line. Based on the limited data available on the soil conditions and groundwater gradient, it seems that the twenty-one (21) day travel time cannot be met at this location. Although, the conclusions presented in the report are based on several assumptions, these assumptions conform to acceptable design practices and available information from site and soil investigations. If the system is installed on the westerly part of the property, the point of environmental concern can be the storm water system (which is old and probable leaky) or the restaurant basement (since it has a sump pump which directly discharges to the brook to control groundwater infiltration). Due to the proximity of these two points of concern, it is unlikely that the twenty-one (21) day travel time requirement can be met at this location. For an on-site treatment and renovation system it is the DEP practice not to give credit for bacteria and virus removal through a disinfection unit, therefore counting only on the soil and site capacity for renovation. Unless it can be demonstrated through a conservative analysis that the twenty-one (21) day travel time requirement for bacteria renovation can be achieved, the installation of a new on-site wastewater treatment and renovation system would not be approvable.
 - b. For virus removal, there must be at least three (3) feet of unsaturated soils maintained between the bottom of the leaching structure and the mounded seasonal high ground water elevation. Due to the relatively high ground water elevations at the site, the existing system is in groundwater some times of the year. A potential system located on the north westerly part of the property, as well as north from the existing system, would have to be elevated (installed in fill) in order to meet the three (3) foot vertical separating distance requirement.
 - c. For phosphorus removal, the unsaturated soils available under and down gradient of the system must be capable of absorbing all phosphorus such that there would be no increase in phosphate concentration in groundwater above the background levels at the point of environmental concern. The DEP's design criteria require that the unsaturated soils beneath the system have the capacity to absorb in excess of the six (6) months of phosphorus production. Although the report does not go through the exercise of demonstrating how this criterion would be met, the phosphorus removal can be easily achieved through biological treatment and absorption in the unsaturated soils.
 - d. For nitrogen removal, the drinking water standard of 10 mg/l for total nitrogen must be met in the discharge plume prior to reaching the point of the environmental concern. It is assumed that 20 percent of the nitrogen is removed in the septic tank and another 20 percent of nitrogen is removed in the leaching field. The remaining nitrogen, assuming that ammonia completely nitrifies, must be diluted by precipitation infiltration. Restaurants produce high strength wastewater with high levels of nitrogen, which is difficult to treat, and the wastewater flows vary weekly and seasonally. Due to the limited dilution area available at the site, in order to meet the drinking water standard of 10 mg/l for total nitrogen at the point of environmental concern, an advanced biological

pretreatment system would be required. An advanced biological pretreatment system, if proposed, would have to incorporate safety factors to offset these variations, provide equalization and carefully assess the cleaners and sanitizers used to ensure that the treatment system would not be adversely affected.

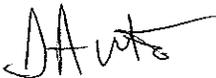
The existing on-site wastewater disposal system is currently pumped on a regular basis to avoid surface failure. Further site investigation of the site would most likely lead to the preliminary conclusions already reached. Therefore, the Department is not requesting additional site investigation. Since an on-site wastewater treatment and renovation system does not seem like a feasible alternative, in order to avoid further ground water pollution and correct the malfunctioning system, Department staff have preliminarily determined that the design analysis presented in Nathan L. Jacobson & Associates report are consistent with the Department's design criteria and concur with the conclusions presented therein that connection to municipal sewer is a desirable alternative for this facility.

I have conferred with the DEP's Planning and Standards Division of the Bureau of Water Protection and Land Reuse regarding the connection to the Westport sewer. While this property is currently outside the sewer service area, the Department would not object to the connection of this property to the sewer on the basis that it is solving an existing water pollution source provided the connection is for this property only as a limited system.

Your engineer should evaluate alternatives for a sewer connection and for an on-site system including the financial impacts, technical feasibility and administrative steps for implementation of each alternative. We expect that a report containing such information be submitted to DEP by January 30, 2009. This information will be necessary in order to conclude the most appropriate alternative.

If you have any questions, please call me at (860) 424-3876.

Sincerely,



Antoanela Daha
Sanitary Engineer

Cc: Chairman of Westport WPCA
Mark Cooper, Westport/Weston Director of Health
Brian Curtis, Nathan L. Jacobsen & Associates
William Hogan, CT DEP