

**Summary of Aquifer Pump Test Analysis
CRRA Ash Landfill Investigation
North Franklin, CT**

During spring 2009, TRC Environmental Corporation, under contract to the Connecticut Resources Recovery Authority, conducted aquifer pumping tests as part of CRRA's investigation of a potential ash residue disposal facility site in North Franklin, CT. The results of the pumping tests are presented in a report entitled Pumping Test Analysis Report for Ash Landfill Siting Evaluation, Franklin, CT, prepared by TRC for CRRA, and dated August 2009.

The environmental regulations which govern the permitting of an ash residue landfill require that the groundwater under the site and its zone of influence must be classified as GC. In order to reclassify the ground water to GC, it must be demonstrated that the hydrogeology of the affected area precludes the development of high quality and high yield water supply.

The aquifer pumping tests were designed to obtain aquifer characteristics, such as hydraulic conductivity, in order to evaluate the effect that sustained water withdrawal has on drawdown and nearby surface water features such as Cold Brook and its associated wetland system, and to determine how the hydrogeology of the site area affects aquifer yield for water supply. One pumping well location was chosen to determine aquifer yield in the deepest, most productive (coarsest soil deposits) part of the aquifer, and the second pumping well was located in the area where the landfill would likely be situated.

The procedures to conduct the two aquifer pumping tests were described in a Work Plan prepared by TRC and dated March 2009. This work plan was reviewed and approved by the Connecticut Department of Environmental Protection (CTDEP).

Each aquifer pumping test consisted of the following activities:

- Completion of a pilot hole that allowed appropriate choice of screen length and slot size;
- Installation of an 8-inch pumping well;
- Completion of an array of piezometers around the pumping well and Cold Brook;
- Performance of a step-drawdown test of the pumping well to determine the optimum pumping rate during the pumping test; and
- Performance of a 72-hour (minimum) aquifer pumping test with recovery measurements.

The results of the pumping test indicate that this site area would not be capable of providing a significant water supply, for the following reasons:

First, the pumping tests indicate that Cold Brook and its associated wetlands are directly affected by pumping of the aquifer. Cold Brook and its wetlands serve as a "recharge

boundary” to the aquifer: that is, pumping of the aquifer will very quickly cause water from Cold Brook and its associated wetlands to flow back into the aquifer to replace the groundwater that is being removed by the pumping well. Operation of a water supply well of the capacity necessary to serve a public system would cause a reduction of stream flow in Cold Brook and serve to dewater the associated wetlands system; consequently, such a well field would not be permitted to operate. Pumping from the aquifer will have a direct impact on reducing flow in Cold Brook and the adjacent wetland areas, particularly during periods of low rainfall and runoff.

Second, the bedrock under the site creates a narrow, east-to-west trough which contains the aquifer. The pump tests indicate that the bedrock beneath the site forms “barrier boundaries” north and south of the pumping well locations, and that this barrier boundary condition serves to limit the storage capacity of the aquifer.