

Geoprobe in D&A Compost Area

Samples were collected in the DeRuyter compost areas to determine subsurface soil types, moisture content, and nutrient concentrations. In addition, continuous core samples were collected to allow analysis on 1 foot intervals. This detailed analysis was performed to allow precise characterization of subsurface migration pathways and a detailed description of chemical processes in the subsurface. The yellow highlighted columns in the following table (see below) summarizes all the data collected during this investigation. The brown shading highlights soil intervals with concentrations greater than 100 mg/kg with darker brown representing concentrations greater than 200 mg/kg.

Given the nitrate concentrations in the subsurface and the laboratory moisture content, nitrate concentrations in the soil moisture (pore water) can be calculated using a reference partitioning coefficient for the nitrate contaminant. The last column in the table provides the nitrate concentration in pore water migrating down to ground water. With pore water concentrations as high as 3,000 mg/l, it is readily apparent that ground water concentrations in the 200 mg/l range could originate from the composting operation. Also, under unsaturated flow conditions, the decreasing soil concentrations do not represent the lack of migration, but rather the decrease in soil moisture typical with coarser grained soils.

Data from the table are presented in the following graphs. The correlation between soil moisture and nitrate is a direct indication that the soil moisture is transporting the nitrate into the subsurface. While the soil descriptions show that the silt is retaining moisture to saturated or near saturated conditions, until the liquid breaks through the coarser grained material, most likely under finger flow conditions.

Dave Erickson – Water & Environmental Technologies

Second Supplemental Report

*Community Association for Restoration of the Environment, Inc.
and Center for Food Safety, Inc. v.*

George & Margaret, LLC, George DeRuyter & Son Dairy, LLC, D & A Dairy, and D & A Dairy, LLC.

