



## North Carolina Department of Environment and Natural Resources

Dexter R. Matthews, Director

Division of Waste Management

Michael F. Easley, Governor  
William G. Ross Jr., Secretary

### SOLID WASTE SECTION

June 20, 2008

Mr. Jerry Mears  
Buncombe County - Solid Waste Manager  
85 Panther Branch Road  
Alexander, NC 28701

Subject: Cells 1-6 Leak Detection Monitoring Meeting Summary  
Buncombe County MSWLF  
Buncombe County, Permit #11-07, Document ID No. 4993

Mr. Mears:

I am writing to summarize our June 17<sup>th</sup> meeting regarding leak detection system (LDS) monitoring for Cells 1 through 6 at the Municipal Solid Waste Landfill (MSWLF). The meeting was initiated due to the presence of vinyl chloride concentration in excess of the 2L standard in the LD-3 sample during the September 2007 as mentioned in the March 6, 2008 letter from Jackie Drummond. As we discussed, the presence of leachate in the leak detection zone is not alarming as all liners will leak a certain amount. Of importance, especially with dual-layer geomembrane liners, is the quantity and quality of liquid found in the LDS between the liners.

In your case, cells 1 and 2 are lined with single geomembrane liners so it is difficult to quantify the volume of leachate coming through the primary liner. However, cells 3 through 6 have dual-layer (primary and secondary) geomembrane liners so monitoring the volumes of leachate is easy with good confidence the numbers are accurate. To calculate the expected leakage rate through the primary liner, Bernoulli's equation for free flow through an orifice is used. Generally accepted assumptions for the calculation are 12 inches of head on the liner, one acre of surface area with one 1/8" defect (hole) per acre. These assumptions yield a design leakage rate of 330 gallons per acre per day. Using the data you provided for the 90 day period March 1<sup>st</sup> through May 29<sup>th</sup>, the maximum actual leakage rate is approximately 48 gallons per acre per day from Cell 6. Therefore, from a quantity standpoint, the volumes of liquid measured in the dual-layered cells are well within expected values and are not a concern.

However, if there is an expected leakage rate for the primary liner there will also be an expected leakage rate for the secondary liner. Unfortunately, there is no means of measuring an actual leakage rate through the secondary liner. Therefore, the only method of reducing the risk of secondary liner leakage is to keep leachate off of the secondary liner. To that end, I request you continue pumping the leak detection zones and sumps and ask you to do this on a two week frequency. If the volumes of leachate trend upward you may be required to pump on a more frequent basis. In addition, I request you continue measuring the water quality parameters (pH, Turbidity, Dissolved Oxygen, Temperature, Total Dissolved Solids, Conductivity and Oxidation Reduction Potential) you have shown on your log sheet. As always, these log sheets should be kept on site and available for inspection at any time.

From a quality standpoint, concentrations of volatile organic compounds have been detected and have exceeded the Groundwater Protection Standards in several of the leak detection samples that have been collected at the MSWLF.

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Even though the downgradient groundwater monitoring wells have not indicated exceedances of the Groundwater Protection Standards for volatile organic compounds to date, the quality of the liquid found in the leak detection system is a concern and may be an indicator of groundwater contamination in the future.

If you should have any questions regarding this matter please contact me at (828) 296-4703.

Sincerely,

A handwritten signature in black ink, appearing to read 'A. Gaither', written over a light gray rectangular background.

Allen Gaither  
Environmental Engineer

Cc: Ed Hilton – SCS Engineers  
Jackie Drummond – SWS/Raleigh  
Andrea Keller – SWS/ARO  
Deb Aja – SWS/ARO