



MECKLENBURG COUNTY
Land Use and Environmental Services Agency

November 17, 2008

Jaclynne Drummond
North Carolina Department of Environment
and Natural Resources
Division of Waste Management
Groundwater Compliance Unit
Mail Service Center 1646
Raleigh, NC 27699-1646

Subject: Holbrooks Road Landfill Permit 60-02
Semi-annual Monitoring Results

Dear Ms. Drummond:

Mecklenburg County conducted semi-annual water quality monitoring at the closed Holbrooks Road Landfill in March 2008 in accordance with the approved sample and analysis plan dated March 27, 2003. This report details the results of that monitoring event. Laboratory data, field data, tables of values exceeding 2L standards and landfill gas monitoring data is contained on the electronic data deliverable CD enclosed.

Samples were collected from eleven (11) monitoring wells (HRW-7, HRW-8, HRW-9, HRW-10, HRW-11R, HRW-13, HRW-16, HRW-18, HRW-19, HRW-20 and HRW-21) and three (3) surface-water sampling locations (HRSW-2, HRSW-3 and HRSW-4). Samples were analyzed for metals and volatile organic compounds ("VOCs") listed in Appendix I of 40 CFR Part 258.54 "Detection monitoring program". Field measurements of temperature, pH, and specific conductivity were made at each sampling location using a calibrated instrument. Additionally, measurements of dissolved oxygen were made at each surface-water sampling location.

The Excel spreadsheet containing the monitoring data is labeled to reflect the units that are used for reporting. Applicable standards and reporting limits have been included for all sampling locations. Surface water standards listed are the water quality standards established for freshwater classification for aquatic life as outlined in 15A NCAC 2B "Classification and Water Quality Standards Applicable to Surface Waters of North Carolina". Groundwater standards listed are the standards outlined in 15A NCAC 2L "Classification of Water Quality Standards applicable to the Groundwaters of North Carolina".

PEOPLE • PRIDE • PROGRESS • PARTNERSHIP

700 N. Tryon Street • Suite 205 • Charlotte, NC 28202-2236 • (704) 336-5500 • FAX (704) 336-4391
www.co.mecklenburg.nc.us/coenv

Surface-water samples:

No metals or VOCs were detected in the samples collected from the three surface-water sampling locations (HRSW-2, HRSW-4 and HRSW-3). All field-measured parameters were within the established regulatory limits. The table below summarizes field-measured parameters for surface-water samples.

Sample Location	Temp. °C	pH S.U.	Specific Conductivity ms/cm	Dissolved Oxygen mg/l
HRSW-2 upstream	12.6	7.20	0.172	9.69
HRSW-4 mid-stream	12.1	7.13	0.167	9.53
HRSW-3 downstream	11.3	7.76	0.173	9.55
2B Std.	(N)	6.0 – 9.0	None	5.05

(N) Temperature: not to exceed 2.8 degrees C above the natural water temperature, and in no case to exceed 29 degrees C for mountain and upper piedmont waters and 32 degrees C (89.6 degrees F) for lower piedmont and coastal plain waters.

Groundwater samples:

Cadmium was detected above the 2L standard in the sample collected from HRW-7. Chromium was detected above the 2L standard in the sample collected from HRW-18. Barium, Chromium, Cobalt Copper, Nickel, Selenium, Vanadium and Zinc were detected below the respective 2L standards. The table below summarizes metals detection for groundwater samples. Bolded values indicate a result in excess of the 2L standard.

Well ID	Ba ug/l	Cd ug/l	Cr ug/l	Co ug/l	Cu ug/l	Pb ug/l	Ni ug/l	Se ug/l	Vn ug/l	Zn ug/l
HRW-7	450	36	6.4	17	60	-----	7.2	7.9	45	140
HRW-8	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
HRW-9	280	-----	-----	-----	-----	-----	-----	-----	-----	-----
HRW-10	180	-----	-----	-----	10	-----	16	10	20	16
HRW-11R	190	-----	8.2	-----	-----	-----	11	-----	18	26
HRW-13	100	-----	12	8.1	20	-----	6.7	-----	28	29
HRW-16	-----	-----	5.8	-----	-----	-----	-----	-----	27	14
HRW-18	390	-----	54	6.5	16	-----	24	-----	14	34
HRW-19	-----	-----	-----	-----	7.5	-----	-----	-----	9.3	10
HRW-20	-----	-----	-----	-----	-----	-----	-----	-----	7.1	-----
HRW-21	-----	-----	-----	-----	-----	-----	-----	-----	5.3	-----
2L Std.	2,000	1.75	50	-----	1,000	15	100	50	-----	1,050

VOCs were detected in four monitoring wells; HRW-7, HRW-9, HRW-18 and HRW-20.

The number of VOCs detected in HRW-7 increased from two to three compared to the September 2007 monitoring results. Trichloroethene exceeded the 2L standard. Acetone and Cis-1,2-Dichloroethene were detected below the standard. VOCs in HRW-7 are resulting from direct leaching and landfill gas migration upgradient of the landfill.

The number of VOCs detected in HRW-9 decreased from nine to eight compared to the September 2007 monitoring results. Cis-1,2-Dichloroethene, 1,4-Dichlorobenzene, Methylene Chloride, Tetrachloroethene, Trichloroethene and Vinyl Chloride exceeded the 2L standard in the sample collected from HRW-9.

The number of VOCs detected in HRW-13 declined from two to zero compared to the September 2007 monitoring results. VOC detections and concentrations have been declining significantly since September 2005 and is likely attributable to landfill cover improvements made on the east section of the landfill upgradient of this well.

The number of VOCs detected in HRW-18 decreased from eight to six compared to the September 2007 monitoring results. Benzene, Trichloroethene and Vinyl Chloride were detected above the 2L standard.

1,1-Dichloroethane was detected below the 2L standard in the sample from HRW-20. This is the third consecutive detection of 1,1-Dichloroethane in HRW-20.

A summary of VOC's detected is provided in the table below. Bolded values indicate a result in excess of the 2L standard.

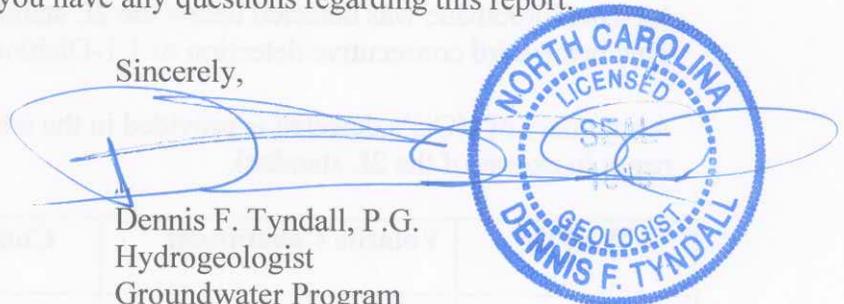
Well ID	Volatile Constituent	Concentration (ug/l)	2L Standard (ug/l)
HRW-7	Acetone	16	700
	Trichloroethene	12	2.8
	Cis-1,2-Dichloroethene	13	70
HRW-9	Cis-1,2 Dichloroethene	78	70
	Methylene Chloride	19	0.7
	Tetrachloroethene	6	0.7
	Trichloroethene	14	2.8
	Vinyl Chloride	11	0.015
	1,2-Dichlorobenzene	6	240
	1,4-Dichlorobenzene	6	1.4
1,1-Dichloroethane	56	70	
HRW-18	1,1-Dichloroethane	54	70
	Benzene	8	1
	Cis-1,2-Dichloroethene	6	70
	Vinyl Chloride	15	0.015
	Trichloroethene	3	2.8
Chloroethane	7	2,800	
HRW-20	1,1-Dichloroethane	6	70

Field measurements of pH were more acidic than the 2L standard range of 6.5 to 8.5 standard units at locations HRW-7, HRW-8, HRW-9, HRW11R, HRW-18, HRW-20 and background well HRW-21. Field-measured parameters for groundwater samples are summarized in the table below. Values exceeding the 2L standard for pH are shown in bold.

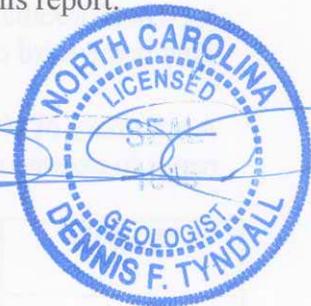
Sample Location	Temp. °C	PH	Specific Conductivity ms/cm
HRW-7	17.6	5.97	0.521
HRW-8	12.6	6.35	0.081
HRW-9	14.0	6.07	0.746
HRW-10	11.7	6.68	0.730
HRW-11R	12.1	6.08	0.386
HRW-13	11.0	6.95	0.108
HRW-16	13.5	6.79	0.163
HRW-18	15.7	6.47	1.281
HRW-19	15.3	6.55	0.280
HRW-20	15.4	6.44	0.199
HRW-21	16.1	6.42	0.447

Please call me at (704) 336-5454 if you have any questions regarding this report.

Sincerely,



Dennis F. Tyndall, P.G.
Hydrogeologist
Groundwater Program



cc: Abmer Lindon, P.G., Mecklenburg County LUESA, Solid Waste