



MECKLENBURG COUNTY  
Land Use and Environmental Services Agency  
Solid Waste Services  
November 16 , 2009

Jaclyne 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 September 2009 in accordance with the approved sample and analysis plan dated March 27, 2003. This report details the results of that monitoring event. Laboratory analytical data, field-measured data table of values exceeding 2L standards and landfill gas monitoring data is contained on the electronic data deliverable submittal.

Samples were collected from fifteen (15) monitoring wells (HRW-7, HRW-8, HRW-9, HRW-10, HRW-11R, HRW-12, HRW-13, HRW-14, HRW-15, HRW-16, HRW-17, 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 electronic data deliverable package containing the monitoring data is labeled to reflect the units used for reporting. 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". If the sample is reported in parts per billion, then the standard is also reported in parts per billion.

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**Surface-water samples:**

No VOCs or Metals were detected in any of 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 following table 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	20.5	6.84	0.219	9.63
HRSW-4 mid-stream	20.6	6.65	0.218	9.23
HRSW-3 downstream	20.5	6.07	0.222	9.41

**Groundwater samples:**

Cadmium was detected above the 2L standard in the sample collected from HRW-7 and HRW-12. Nickel was detected above the 2L standard in the sampled collected from HRW-12. Barium, Chromium, Cobalt Copper, Lead, Selenium, Vanadium and Zinc were detected below the respective 2L standards. The following table summarizes metals detection for groundwater samples.

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	230	<b>29</b>	-----	-----	7.5	-----	-----	-----	7.8	33
HRW-8	-----	-----	-----	91	6.0	-----	-----	-----	11	12
HRW-9	290	-----	-----	-----	6.4	-----	-----	-----	6.8	-----
HRW-10	180	-----	-----	-----	9.0	-----	16	7.7	-----	-----
HRW-11R	370	-----	-----	18	3.2	-----	17	8.3	-----	10
HRW-12	810	<b>2.9</b>	-----	16	650	-----	<b>110</b>	13	27	22
HRW-13	130	-----	8.2	-----	15	-----	6.0	-----	20	22
HRW-14	100	-----	-----	7.2	37	-----	-----	-----	52	31
HRW-15	-----	-----	-----	-----	12	-----	-----	-----	12	11
HRW-16	160	-----	-----	24	8.9	-----	5.7	-----	17	21
HRW-17	-----	-----	-----	-----	2.4	-----	7.3	-----	-----	-----
HRW-18	320	-----	-----	-----	-----	-----	6.4	-----	-----	-----
HRW-19	-----	-----	-----	-----	-----	-----	-----	-----	5.4	-----
HRW-20	-----	-----	-----	-----	-----	-----	-----	-----	6.8	-----
HRW-21	-----	-----	-----	-----	-----	-----	-----	-----	6.5	-----
2L Std.	2,000	1.75	50	-----	1,000	15	100	50	-----	1,050

Note: Results shown in bold exceed the 2L standard.

VOCs were detected in eight monitoring wells; HRW-7, HRW-9, HRW-11R, HRW-12, HRW-13, HRW-15, HRW-17 and HRW-18. The following table summarizes VOC detections.

Well ID	Volatile Constituent	Concentration (ug/l)	2L Standard (ug/l)
HRW-7	Cis-1,2-Dichloroethene	6	70
	<b>Trichloroethene</b>	<b>10</b>	<b>2.8</b>
HRW-9	<b>Cis-1,2 Dichloroethene</b>	<b>84</b>	<b>70</b>
	<b>Methylene Chloride</b>	<b>6</b>	<b>4.6</b>
	<b>Tetrachloroethene</b>	<b>7</b>	<b>0.7</b>
	<b>Trichloroethene</b>	<b>11</b>	<b>2.8</b>
	Trichlorofluoromethane	5	2,100
	<b>Vinyl Chloride</b>	<b>10</b>	<b>0.015</b>
	1,2-Dichlorobenzene	8	24
	<b>1,4-Dichlorobenzene</b>	<b>8</b>	<b>1.4</b>
	1,1-Dichloroethane	39	70
HRW-11R	Chlorobenzene	5	50
HRW-12	1,1-Dichloroethane	5	70
	Chlorobenzene	6	50
HRW-13	1,1-Dichloroethane	5	70
HRW-15	Toluene	3	1000
HRW-17	1,1-Dichloroethane	17	70
	Cis-1,2-Dichloroethene	3	70
HRW-18	<b>Benzene</b>	<b>14</b>	<b>1</b>
	Chloroethane	15	2,800
	Trichlorofluoromethane	14	2,100
	1,1 Dichloroethane	53	70
	<b>1,4 Dichlorobenzene</b>	<b>5</b>	<b>1.4</b>
	<b>Vinyl Chloride</b>	<b>58</b>	<b>0.015</b>
	Cis-1,2-Dichloroethene	4	70
	<b>1,2-Dichloroethane</b>	<b>3</b>	<b>0.38</b>

Note: Results shown in bold exceed the 2L standard.

Measurements of pH were more acidic than the 2L standard range of 6.5 to 8.5 standard units at locations HRW-7, HRW-9, HRW-10, HRW-11R, HRW-12, HRW-13, HRW-15, HRW-16, HRW-17, HRW-18, HRW-19, HRW-20 and background well HRW-21. Field-measured parameters for groundwater samples are summarized in the following table.

Sample Location	Temp. °C	PH	Specific Conductivity ms/cm
HRW-7	18.7	<b>5.79</b>	0.570
HRW-8	15.5	<b>5.75</b>	0.117
HRW-9	14.4	<b>5.80</b>	0.735
HRW-10	17.1	<b>6.20</b>	0.936
HRW-11R	16.0	<b>5.97</b>	1.57
HRW-12	15.4	<b>6.10</b>	2.31
HRW-13	16.2	<b>5.98</b>	0.298
HRW-14	15.0	6.75	0.183

HRW-15	16.4	<b>6.40</b>	0.210
HRW-16	17.3	<b>6.39</b>	0.315
HRW-17	15.8	<b>6.22</b>	1.067
HRW-18	16.5	<b>6.24</b>	1.321
HRW-19	15.5	<b>6.35</b>	0.297
HRW-20	15.9	<b>6.47</b>	0.195
HRW-21	16.1	<b>5.92</b>	0.478

Note: Results shown in bold are outside of the 2L standard range of 6.5 - 8.5 S.U.

Please call me at (704) 432-2478 if you have any questions regarding this report.



Sincerely,

Amber R. Lindon, P.G.  
Project Manager  
Solid Waste Services