



May 12, 2011

Mr. Ervin Lane  
Solid Waste Section, NCDENR-DWM  
401 Oberlin Road, Suite 150  
Raleigh, North Carolina 27605

**Reference: Request to Revise the Monitor Well Network**  
City of Durham Closed Municipal Solid Waste Landfill (Permit #32-01)  
Durham, North Carolina  
S&ME Project No. 1054-07-469

Dear Mr. Lane:

On behalf of City of Durham, S&ME, Inc. (S&ME) is requesting to reduce the number of compliance monitor wells associated with well network for the Semi-Annual Sampling of the City of Durham's Closed Municipal Solid Waste Landfill (MSWLF).

#### Current Compliance Monitoring

The City of Durham has monitored water quality at the landfill since 1989, and continues to monitor water quality semiannually in accordance with the approved Water Quality Monitoring Plan (WQMP) prepared by Malcolm Pirnie, Inc. in April 1994. Since the WQMP was implemented, additional piezometers/monitor wells have been added to the water quality monitoring network. The facility's water quality monitoring network currently consists of 14 monitor wells/piezometers and four surface water locations. At six (6) of the monitor wells/piezometers water levels only are measured during semiannual sampling events. At eight (8) of the monitor wells water samples are collected for laboratory analysis to monitor water quality at the City of Durham landfill.

#### Water Quality Monitoring Network Groundwater Sampling Locations

| Background Monitor Well | Compliance Monitor Wells |
|-------------------------|--------------------------|
| MW-9R                   | MW-2                     |
|                         | MW-3R                    |
|                         | MW-4R *                  |
|                         | MW-5                     |
|                         | MW-7R *                  |
|                         | MW-8 *                   |
|                         | MW-10                    |

\* These wells are requested to discontinue sampling.

Sample locations are depicted on the attached Groundwater Potentiometric Map from the November 2010 sampling report (**Figure 3**).

The *November 2010 Semi-Annual Groundwater and Surface Water Monitoring Report*, dated February 17, 2011, prepared by S&ME stated “Based on the calculated direction of groundwater flow at the facility, the current configuration of the water quality monitoring network appears to adequately monitor the landfill. However, there appears to be a superfluous number of groundwater monitoring locations distributed in the up-gradient/side-gradient direction (MW-4R, MW-5, MW-7R, MW-8 and MW-9R) compared to the relatively wider distribution of sampling locations in the down-gradient direction (MW-2, MW-3R and MW-10)”.

### **Request to Reduce the Number of Wells Sampled**

In accordance with the conclusion presented in the November 2010 report, S&ME request discontinuing sampling of monitor wells MW-4R, MW-7R and MW-8. Monitor wells MW-7R and MW-8 are located up-gradient and MW-4R is located cross-gradient of the landfill.

### **Nature and Extent Study**

A nature and extent study (NES) is currently underway along the western boundary of the landfill in response to volatile organic compounds (VOCs) detected above 2L Standards in monitor well MW-10 and along the western boundary of the landfill in response to barium detected above its 2L Standard in monitor well MW-5. Based on the findings of the NES, modifications to the facility’s water quality monitoring network may be necessary to ensure adequate monitoring of water quality down-gradient of the landfill. S&ME has scheduled the next semi-annual sampling event for May 19, 2011. If possible, please provide affirmation of the request to discontinue sampling of monitor wells MW-4R, MW-7R and MW-8 prior to the proposed sampling date.

### **Closure**

Please call us at (919) 872-2660 if you have any questions or comments, or if we can be of further assistance.

Sincerely,  
S&ME, Inc.



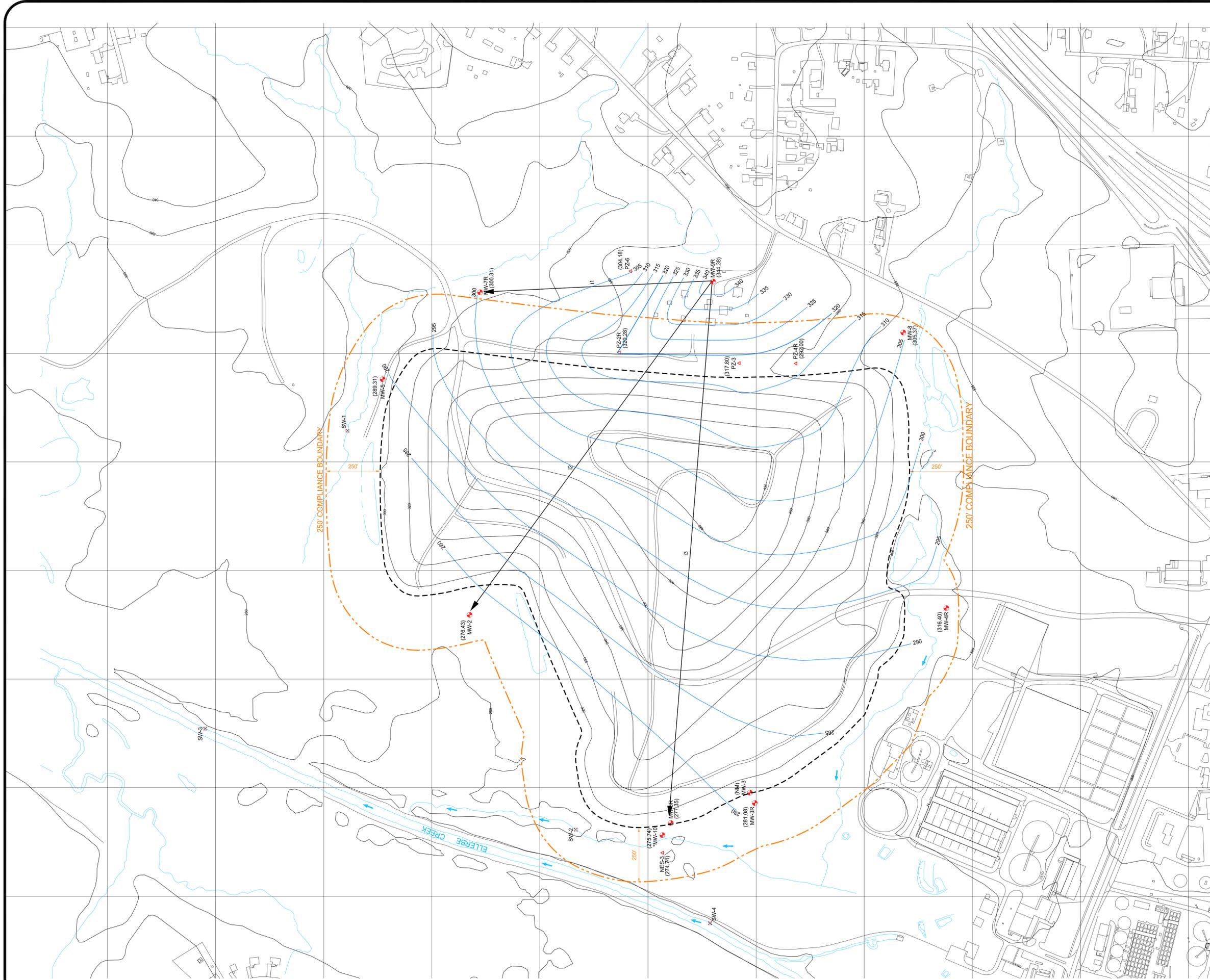
Gerald Paul  
Environmental Staff Professional



Samuel P. Watts, P.G.  
Senior Project Manager

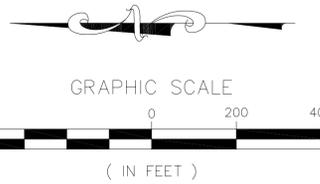
Attachment: Figure 3 – Groundwater Potentiometric Map, November 19, 2010

cc: Ms. Christine Ritter – NCDENR-DWM, Solid Waste Section  
Mr. Simon Lobdell, P.E. – City of Durham, Department of Water Management



- LEGEND**
- MONITOR WELLS
  - PIEZOMETERS
  - SURFACE WATER SAMPLE LOCATIONS
  - GAS COMPLIANCE MONITORING POINTS
  - CONTOUR LINE - MAJOR (20 FT)
  - CONTOUR LINE - MINOR (2 FT)
  - GROUNDWATER ELEVATION (276.08)
  - GROUNDWATER CONTOUR WITH ELEVATION (285)
  - GROUNDWATER FLOW DIRECTION
  - SURFACE WATER FLOW DIRECTION
  - 250' COMPLIANCE BOUNDARY
  - APPROXIMATE LIMIT OF WASTE (NM)
  - NOT MEASURED (NM)

- NOTE:**
1. MONITOR WELL LOCATIONS SURVEYED BY MULKEY ENGINEERING IN JANUARY 2001 AND 2005.
  2. WELLS MW-1, MW-4, MW-6, MW-7, MW-9, PZ-1, PZ-2 AND PZ-4 HAVE BEEN ABANDONED, DAMAGED OR DESTROYED AND ARE NOT SHOWN ON THIS MAP.
  3. TOPOGRAPHIC CONTOUR INTERVAL = 2 ft.
  4. GROUNDWATER SURFACE CONTOUR INTERVAL = 5 ft.
  5. GROUNDWATER CONTOURS BASED ON LINEAR INTERPOLATION BETWEEN AND EXTRAPOLATION FROM KNOWN DATA, TOPOGRAPHIC CONTOURS, AND KNOWN FIELD CONDITIONS. THEREFORE, GROUNDWATER CONTOURS MAY NOT REFLECT ACTUAL POTENTIOMETRIC CONDITIONS.
  6. GW ELEVATIONS MEASURED ON NOVEMBER 19, 2010.
  7. \*MW-10 SURVEYED BY BATEMAN CIVIL SURVEY.
  8. MW-3R HAS NOT BEEN SURVEYED, AND WAS NOT INCLUDED IN CALCULATION OF CONTOUR LINES.
  9. STREAM GAUGES WERE NOT USED FOR THE CREATION OF GROUNDWATER CONTOURS.



SOURCE:  
CONTOURS - NCDOT LIDAR DATED APRIL 2007  
BUILDINGS - DURHAM GIS DATED 1994  
IMAGERY - DURHAM GIS DATED 2005

| NO. | DATE | DESCRIPTION | BY |
|-----|------|-------------|----|
|     |      |             |    |
|     |      |             |    |
|     |      |             |    |
|     |      |             |    |

|                                |              |
|--------------------------------|--------------|
| GROUNDWATER POTENTIOMETRIC MAP |              |
| NOVEMBER 19, 2010              |              |
| CLOSED LANDFILL PERMIT #32-01  |              |
| DURHAM, NORTH CAROLINA         |              |
| DRAWN BY:                      | CHECKED BY:  |
| BTR                            | BTR          |
| DESIGNED BY:                   | APPROVED BY: |
| PROJECT NUMBER:                | 1054-07-469  |
| SCALE:                         | DATE:        |
| 1" = 200'                      | DEC. 2010    |
| DRAWING NUMBER:                | D-1189       |
| DRAWINGS:                      | OF:          |
| 3                              | 3            |

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