

State of North Carolina
Department of Environment,
Health and Natural Resources
Division of Solid Waste Management

James B. Hunt, Jr., Governor
Jonathan B. Howes, Secretary
William L. Meyer, Director



September 8, 1995

Mr. Jim Brown, Director
Madison County Solid Waste
23 Long Branch Road
Marshall, NC 28753

Fac/Perm/Co ID #	Date	Doc ID#
58-02	08/10/2011	DIN 14627

RE: Upgrade of Detection Monitoring System
Closed Madison County Sanitary Landfill
Permit #58-02

Dear Mr. Brown,

After our telephone conversation yesterday, I reviewed the data in our files concerning the water quality monitoring system at the closed Madison County landfill. We had agreed over the telephone that the number and locations of wells MW-1 and MW-2 were likely sufficient for downgradient detection monitoring at the site. However, both of these wells were constructed with long screened intervals in bedrock, below the water table. The sand packs on the wells are 77 feet and 39 feet long, and groundwater flowing into these wells from the landfill through the surficial aquifer is almost certain to be severely diluted by water flowing from fractures in the bedrock.

Before a final closure letter for the landfill can be issued, Madison County will need to replace MW-1 and MW-2 with new wells at the same locations. These need to be installed with 15-foot screens, with the tops of the screens set just above the seasonal high water table, unless hydrogeologic conditions justify changes from this design.

The upgraded monitoring system will also need to include an upgradient groundwater monitoring point. The Solid Waste Section will consider allowing Madison county to use the surface spring mentioned during our conversation. Before approving use of the spring as an upgradient monitoring point, the Section will need information about its location (on a site map with topographic contours) and an estimate of its flow rate.

I have attached a copy of the newly revised *Sampling and Analysis Requirements for Construction and Demolition Landfills and Closed Sanitary Landfills*. In the future, groundwater samples from the closed landfill need to be analyzed for the constituents listed there.

Mr. Jim Brown
Closed Madison Co. Landfill
Permit #58-02
September 8, 1995
Page 2

The geologist who will be supervising the installation of the new wells needs to contact me at the Solid Waste Section ((919) 733-0692, ext. 342) before mobilizing the drill rig, to insure that the wells will be constructed in a manner that meets the requirements of the Section.

Sincerely,

A handwritten signature in black ink that reads "Jim Bateson". The signature is written in a cursive style with a large, sweeping initial "J".

Jim Bateson,
Hydrogeologist,
Solid Waste Section

cc: Mr. Bobby Luffy; Solid Waste Section
Ms. Jan McHargue "
Mr. Jim Patterson "

State of North Carolina
Department of Environment,
Health and Natural Resources
Division of Solid Waste Management



James B. Hunt, Jr., Governor
Jonathan B. Howes, Secretary
William L. Meyer, Director

November 2, 1995

Mr. Thomas Beggs
Law Environmental, Inc.
P.O. Box 240674
Charlotte, N.C. 28224

RE: Hydrogeologic Review Of The Water Quality Monitoring Plan Of
The Transition Plan For The Madison County Landfill, # 58-03

Dear Mr. Beggs,

The Solid Waste Section Hydrogeologic Unit has reviewed the Transition Plan for the Madison County Landfill. There are a few items that need additional clarification or changes. Please address the following questions and comments:

- On page 12-9, while the field equipment blank should be sampled for all of the Appendix I constituents, it is only necessary to analyze the trip blank for the organic parameters.
- Also on page 12-9, statistical analyses are required for all detected constituents, not just those that exceed the N.C. Groundwater Standards. All detected data should also be compared to the Groundwater Standards.
- In Table 3, Appendix I Constituent List, there are currently no proposed groundwater standards for Antimony, Beryllium, Cobalt, Thallium, or Vanadium. The earlier document that referenced proposed standards for these constituents was in error.
- Some of the inorganic data included in the Transition Plan Report was done using analytical methods that are not consistent with current Solid Waste Section policies. For the Solid Waste Section laboratory certification requirements and approved analytical methods for Appendix I constituents, please refer to the Memos to MSWLF Owners and Operators dated June 24, 1994 and January 18, 1995.

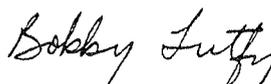
- The total depth and screened interval for well MW-3 shown on the well schematic diagram is different from that shown on the Well Construction Record.
- The MSWLF Owner or Operator is required to report the direction and rate of ground-water flow for each well for each sampling event. In order to calculate the ground-water flow rate, in-situ hydraulic conductivity tests must be done for each monitoring well. Also, an effective porosity value representative of the formation materials for each monitoring well must be determined. The hydraulic conductivity and effective porosity values (along with the horizontal gradient values) are then used to calculate the ground-water velocity (rate) at each well location. This information has not yet been submitted to the Solid Waste Section.
- The Solid Waste Section has not received water quality data for the Madison County Lined Landfill since 1994. That data did not include the direction and rate of ground-water flow, a comparison of the data to the Groundwater Standards, or a statistical evaluation of the detected constituents.
- According to the data on file in the Solid Waste Section office, several of the metals were detected at levels that exceed the Groundwater Standards in several of the monitoring wells. Therefore according to the Solid Waste Management Rules, .1633(c), Madison County was responsible within 90 days to either sample all wells for the Appendix II constituents or make a demonstration that the exceedences to the Standards are due to sampling or laboratory error, or due to natural variability.

Madison County needs to supply the sampling and analyses data, ground-water flow direction and rate data, statistical analyses, and demonstration report or Appendix II monitoring data as soon possible in order to remain in compliance with the Solid Waste Management Rules.

Mr. Thomas Beggs
Law Environmental, Inc.
Madison County Transition Plan
Page 3

Please provide the revisions to the Transition Plan as soon as possible, so the Solid Waste Section can complete our technical review. If you have any questions regarding this letter, please contact me at (919) 733-0692, extension 258.

Sincerely,



~~Bobby Lutfy~~
Hydrogeologist
Solid Waste Section

cc: Greg Eades, Solid Waste Section
Jim Patterson, SWS - Asheville
Jim Brown, Madison County Solid Waste Director

State of North Carolina
Department of Environment,
Health and Natural Resources
Division of Solid Waste Management

James B. Hunt, Jr., Governor
Jonathan B. Howes, Secretary
William L. Meyer, Director



July 7, 1995

Mr. Jim Brown
Madison County Solid Waste Director
23 Long Branch Road
Marshall, NC 28753

SUBJECT: Closure of the Madison County Landfill
Permit #58-02

Dear Mr. Brown:

The Solid Waste Section has received and reviewed documentation submitted by your consultant on your behalf regarding the subject facility. Upon review of this information, the Section has determined that the water quality monitoring system needs to be upgraded for post-closure monitoring in order to ensure the early detection of any release of hazardous constituents. Some of the existing monitoring wells are greater than 250 feet from the waste boundary or have design or maintenance conditions that make upgrading of the monitoring system necessary.

Within 60 days of receipt of this letter, Madison County, or its consultants, needs to submit to the Solid Waste Section a plan for upgrading the water quality monitoring system at the subject facility.

If there are any questions regarding this letter, please call the Solid Waste Section Hydrogeologist at (919) 733-0692.

Sincerely,

Jim Bateson,
Hydrogeologist
Solid Waste Section

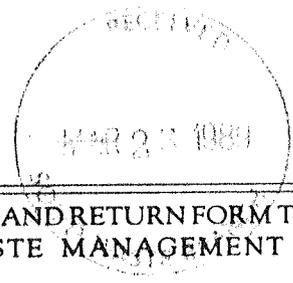
cc: Bobby Lutfy; Solid Waste Section
Jan McHargue; SWS Western Area Engineer

Post-It™ brand fax transmittal memo 7671 # of pages ▶ 3 + COVER

To	JONATHAN BURR	From	JIM BATESON
Co.		Co.	SOLID WASTE
Dept.		Phone #	919 733 0692
Fax #	704 227 7647	Fax #	

PHONE 704 227 7268

WELL COMPLETION RECORD



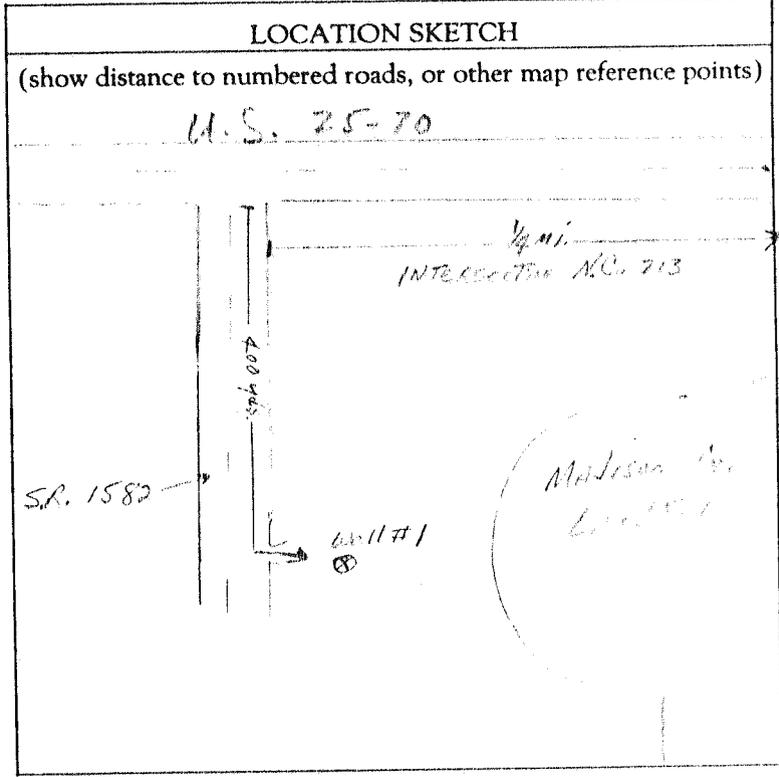
COMPLETE ALL INFORMATION REQUESTED BELOW FOR EACH WELL INSTALLED, AND RETURN FORM TO THE N.C. DEPARTMENT OF HUMAN RESOURCES, SOLID AND HAZARDOUS WASTE MANAGEMENT BRANCH, P. O. BOX 2091, RALEIGH, N.C. 27602

NAME OF SITE: <i>Madison County Landfill</i>		PERMIT NO.: <i>58-02</i>
ADDRESS: <i>23 Long Branch Rd., Marshall, N.C. 28753</i>		OWNER (print): <i>MADISON COUNTY</i>
DRILLING CONTRACTOR: <i>Clarks Well</i>		REGISTRATION NO.: <i>548</i>

Casing Type: Steel dia. 6 in. Grout Depth: from 5 to 20 ft. - dia. in.
 Casing Depth: from 0 to 22 ft. - dia. 6 in. Bentonite Seal: from 20 to 28 ft. - dia. in.
 Screen Type: Sch. 80 - PVC. dia. 2" in. Sand/Gravel PK: from 28 to 105 ft. - dia. in.
 Screen Depth: from 92' to 102 ft. - dia. 2" in. Total Well Depth: from 2 to 105 ft. - dia. 6 in.

Static Water Level: 25' feet from top of casing Date Measured / /
 Yield (gpm): 20 Method of Testing: Blow out Casing is 2 feet above land surface

DRILLING LOG		
DEPTH		FORMATION DESCRIPTION
FROM	TO	
<u>0'</u>	<u>20'</u>	<u>Dirt - Silty clay</u>
<u>20'</u>	<u>105'</u>	<u>Granite</u>



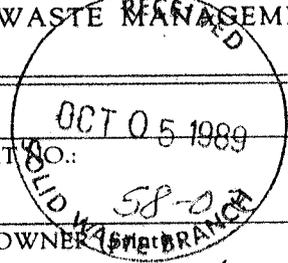
REMARKS: 77 ft sand/gravel pack

MW-1

DATE: _____ SIGNATURE: _____

WELL COMPLETION RECORD

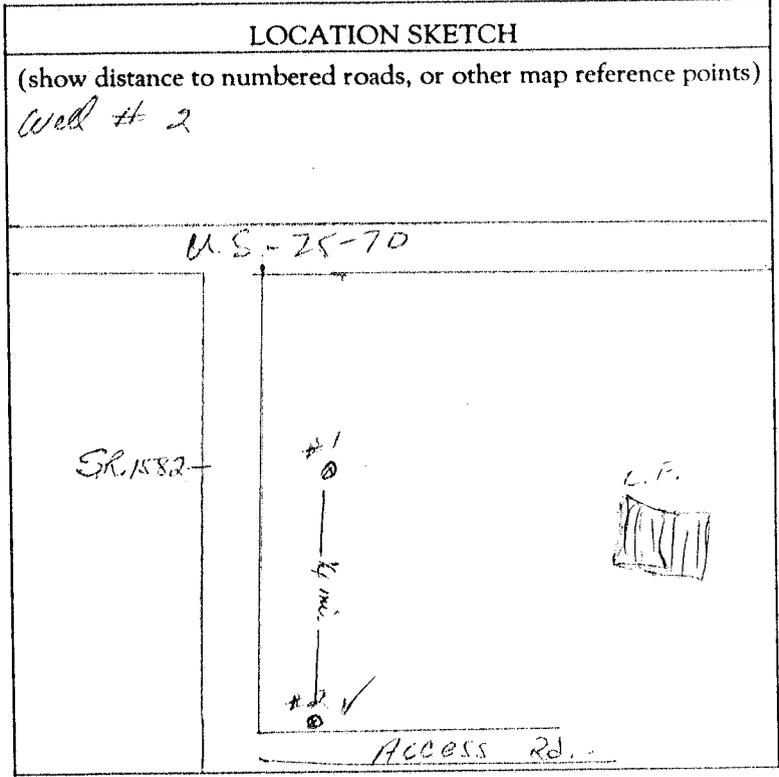
COMPLETE ALL INFORMATION REQUESTED BELOW FOR EACH WELL INSTALLED, AND RETURN FORM TO THE N.C. DEPARTMENT OF HUMAN RESOURCES, SOLID AND HAZARDOUS WASTE MANAGEMENT BRANCH, P. O. BOX 2091, RALEIGH, N.C. 27602



NAME OF SITE: <i>Madison County Landfill</i>	PERMIT NO.: <i>58-07</i>
ADDRESS: <i>23 Long Branch Rd., Marshall, N.C. 28753</i>	OWNER: <i>Madison County</i>
DRILLING CONTRACTOR: <i>Clark</i>	REGISTRATION NO.: <i>548</i>

Casing Type: Steel dia. 6 in. Grout Depth: from 3 to 18 ft. - dia. _____ in.
 Casing Depth: from 0 to 20 ft. - dia. 6 in. Bentonite Seal: from 18 to 21 ft. - dia. _____ in.
 Screen Type: 40 PVC well screen dia. 2 in. Sand/Gravel PK: from 21 to 60 ft. - dia. _____ in.
 Screen Depth: from 48 to 58 ft. - dia. 2 in. Total Well Depth: from 2 to 60 ft. - dia. 6 in.
 Static Water Level: 15 feet from top of casing Date Measured 10/1/89
 Yield (gpm): 15 Method of Testing: Blow Out Casing is 2 feet above land surface

DRILLING LOG		
DEPTH		FORMATION DESCRIPTION
FROM	TO	
0	18	Silty clay
18	60'	Rock-



REMARKS: MW-2 39 ft. sand/gravel pack

DATE: 10-3-89 SIGNATURE: *Jim Brown*

Table 1

Groundwater and Stream Sample
Results from Landfill 58-03

Analysis	MW-1 NEW	MW-2 NEW	MW-3 NEW	MW-4 NEW	MW-5 NEW	MW-6 NEW
pH	6.1	6.1	5.9	6.6	6.4	6.1
Specific Conductivity	58 umhos	306 umhos	183 umhos	138 umhos	71 umhos	176 umhos
Silver	<.0002	.0004	.0022	<.0002	<.0002	<.0002
Arsenic	<.005	<.005	<.005	<	<.005	<.005
Barium	.362	.196	.878	.096	.654	.028
Beryllium	<.001	<.001	<.001	<.001	<.001	<.001
Cadmium	.0030	.0005	.0013	.0002	.0016	.0011
Chromium	.015	.015	.118 ²³	.004	.112 ²²	.010
Cobalt	.045	.027	.094	<.005	.050	<.005
Copper	.077	<.005	.027	<.005	.072	.007
Lead	.303 ND	<.010	.031 ND	<.010	<.010	<.010
Nickel	.020	.005	.096	<.005	.085	<.005
Selenium	<.005	<.005	<.005	<.005	<.005	<.005
Thallium	.001	.002	.009	.001	.008	.002
Antimony	.038	.020	.041	.019	.065	.011
Vanadium	.073	.007	.191	.013	.106	.007
Zinc	.099	.026	.294	.086	.171	.015

Results are presented in parts per million (ppm) unless specified

Table 1 continued

Analysis	MW-7 NEW	SWU NEW	SWD NEW	MW-9*
PH	5.7	6.9	7.4	5.5
Specific Conductivity	49 umhos	123 umhos	124 umhos	<1 umhos
Silver	.0030	.0005	<.0002	<.0002
Arsenic	<.005	<.005	<.005	<.005
Barium	3.168	.580	.048	<.005
Beryllium	<.001	<.001	<.001	<.001
Cadmium	.0022	.0022	<.0001	<.0001
Chromium	.055	.055	.003	.002
Cobalt	.090	.089	<.005	<.005
Copper	.024	.030	<.005	<.005
Lead	.050	.024	<.010	<.010
Nickel	.067	.037	<.005	<.005
Selenium	<.005	<.005	<.005	<.005
Thallium	.023	.009	<.001	<.001
Antimony	.086	.045	.014	.009
Vanadium	.247	.250	<.005	<.005
Zinc	.485	.221	.011	<.010

Results are presented in parts per million (ppm) unless specified

* Equipment Blank