

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



February 7, 1994

Mr. John A. Bove  
Hazen and Sawyer  
4011 Westchase Boulevard  
Raleigh, N.C. 27607

RE: Hydrogeological Review For The Construction Record  
Documentation Report For The Halifax County Coal Ash  
Monofill - Cell 1

Dear Mr. Bove,

A review has been completed of section 6 of the above referenced report that includes information on monitoring wells, well completion records, and the Groundwater Monitoring Plan. Several items will require changes or clarification.

According to the report by the land surveyor the inner wells were capped and locked at the time of the survey. Therefore no surveyed measuring reference point has been established on the top of the inner well casings to accurately measure the water table elevations. Another survey must be done to correct this deficiency and all measurements on the well construction logs and well completion records must be corrected. The current water table elevation for well MW-11 is especially suspect, as it presently shows the water table to be above the ground surface. The engineer who actually made this measurement has stated that the water table was not above the ground surface at the time he took the measurement.

Typically locking caps for inner well casings are not vented as required by Section policy. If the inner well caps are not presently vented, they should be replaced or modified. If holes are to be drilled in the existing caps, care should be taken to avoid drill cuttings getting into the wells.

Several items need to be clarified or changed in paragraph four of the Groundwater Monitoring Plan. SES should be SWS. If there is no unusual data from the baseline sampling event, the Solid Waste Section will allow the parameters BOD, COD, TOC, TOX, Iron and Manganese to be deleted from the parameter list for future routine detection monitoring events. However, the Section may sample or split samples and analyze for these or other constituents occasionally.

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As a RCRA program in EPA Region IV, the Solid Waste Section requires analysis for total metals. Therefore field filtering is not allowed for the metals samples. The Groundwater Monitoring Plan must be amended and resubmitted to reflect this change in sampling protocol. If the landfill owner/operator desires to also do additional analysis for their own purposes, that is allowed. The Section would recommend use of the 3030C method required by the Groundwater Section for any supplemental metals analysis, since this is the method normally used in evaluating metals data for the State 2L Groundwater Quality Standards.

There is little detail provided in the Groundwater Monitoring Plan for sampling and analysis equipment and procedures. All sampling and analysis should be done according to the rules and policies of the Solid Waste Section at the time of sampling.

Jim Barber, of our office, also asked that additional information be provided to clarify the base grade information for the sump located at the midpoint of the southern part of Cell 1, as illustrated on Drawing Number: B & A 5-142. It appears that the sump elevation is higher than the grade and that the grade rises (rather than drops) in the approach to the sump from the western direction. Please provide a corrected As Built Drawing and/or additional explanation to clarify this issue.

A clarification regarding Drawing Number: B & A 5-142 and a corrected Groundwater Monitoring Plan must be received prior to issuing a Permit to Operate. The revised land survey data for the inner casings of the monitoring wells and the associated corrected well construction logs and well completion records should be received by the Solid Waste Section by March 31, 1994. The sample data from the baseline sampling should be submitted as soon as it becomes available. If you have any questions regarding this letter, please contact me at (919) 733-0692.

Sincerely,

*Bobby Lutfy*

Bobby Lutfy, Hydrogeologist  
Solid Waste Section

cc: Sherri Hoyt  
Jim Barber  
Mack Armstrong

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



James B. Hunt, Jr., Governor  
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February 3, 1994

✓ 14FO. REVIEWED ON  
2/8/94 AND FOUND  
TO BE SATISFACTORY.

Mr. John A. Bove  
Hazen & Sawyer  
4011 Westchase Boulevard  
Raleigh, North Carolina 27607

RE: Request for Additional Information/Clarification  
Construction Quality Assurance Report  
Halifax Coal Ash Monofill-Cell  
Amendment to Permit No. 42-04

Dear Mr. Bove:

In accordance with the amended conditions of Permit No. 42-04, dated May 12, 1993, the Division of Solid Waste Management, Solid Waste Section (the Section) recently reviewed the Construction Quality Assurance Report (CQA Report) submitted by Hazen & Sawyer on behalf of Halifax County. Based on this review, the Section requests the following comments and items clarified:

**HAZEN & SAWYER REPORTS:**

- ✓ Report dated 11/19/93 - Stan Smith indicates a weak subgrade area in the cell that may need undercutting. Was this area removed or reworked and left in place?
- ✓ Report dated 11/24/93 - Stan Smith - Did deer damage liner?/Where repairs required.
- ✓ Report dated 11/23/93 - Scott Collins - On 11/22 or 11/23 areas welded after dark without supervision by H&S. Seams on 11/22 and 11/23 indicated test samples taken, sheets 91 of 254 & 97 of 254, but for seams welded after dark, on 11/25/93, were destructive sample(s) taken?
- ✓ Report dated 12/01/93 - Which panels, please reference page or panel # showing repairs.

**GEOTECHNOLOGIES REPORTS:**

- ✓ 9/29/93 - Which density tests correspond to undercut area.
- ✓ 9/30/93 - 8 foot of fill, which tests correspond.
- ✓ 11/15/93 - Was subgrade adequate in trench bottoms to satisfy H&S?

Fayetteville Regional Office

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DENSITY TESTS

- ✓ Only one Standard Proctor is presented in the report indicating a Max. dry density of 99.0 PCF and optimum moisture of 21.9. Check plug Max. density and optimum moisture values range from 89.9 to 108 PCF and 16% to 31% respectively?
- ✓ Page 5 Tests 84 thru 87, 88? - 7.2, 7.2, 7.3, 7.3 (100+) cut?/fill?
- ✓ Page 6 Test 95? Why is it bad?  
Test 101, 119% compaction.? Consistency  
Depth's below grade
- ✓ Page 7 Test 109, 112 Retests?  
Test 113, 114, 115, Seem High (refer to #95?)  
Test 120?
- ✓ Page 8 Test 122 Retest?  
Test 128 12.2% over optimum, but passed ???
- ✓ Tests on base of landfill subgrade?/If "cut" was area proofrolled and documented.
- ✓ Page 14 Of Geomenbrane - Do these 5 conformance tests include the two extra rolls of liner needed to finish the lining of the cell, that were acquired from another project?
- ✓ Panel Layout Diagram?

COA PANEL REPORT

- ✓ # 87 not legible
- ✓ 88 "
- ✓ 92 "
- ✓ 94 "
- ✓ 97 "
- ✓ 98 "
- ✓ 100 "
- ✓ 101 "
- ✓ 102 "
- ✓ 103 "
- ✓ 104 "
- ✓ 105 "
- ✓ 106 "
- ✓ 111 "
- ✓ 126 "
- ✓ 127 "
- ✓ 128 "

Mr. Bove  
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- ✓130 not legible
- ✓134 "
- ✓104 to 110 cross hatched area indicates liner overlap?
- ✓112,115, remark struck thru?
- ✓Welded temps, Scott Collins reports, why no actual temp?.

**SEAM INSPECTION FORMS**

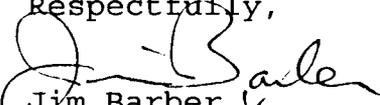
- |      |                 |   |
|------|-----------------|---|
| Seam | ✓7 - 8          | Vacuum Tested(V.T.)?                                      |
|      | ✓9 - 8          | V.T.?   |
|      | ✓14 - 15        | V.T.?   |
|      | ✓18 - 19        | Dimple's?   |
|      | ✓22A-28A        | V.T.? Patch?  |
| Seam | ✓32 - 33        | Did liner overlap patch or was repair with/V.T. required? |
|      | ✓48 - 49        | V.T.?   |
|      | ✓51 - 52        | Patch? how repaired                                       |
|      | ✓64 - 63        | V.T. with Patch?  |
|      | ✓68 - 67        | Patch, cutout, overlap?                                   |
|      | ✓71 - 70        | Panel Orientation?  |
|      | ✓76 - 77        | Same as 68 - 67   |
|      | ✓79 - 78        | What panel notes (defect)?                                |
|      | ✓87 - 88        | V.T.  |
|      | ✓89 - 88        | V.T.  |
|      | ✓119 - 120A     | Dark, No Supervision - same panel?                        |
|      | ✓119 - 120      | Dark, No Supervision - same panel?                        |
|      | ✓134 - 132, 133 | Patch #1 approved?  |
|      | ✓142 - 143      | V.T.?   |
|      | ✓151 - 152      | V.T.?   |
|      | ✓178 - 179      | V.T.?   |
|      | ✓105 - 106      | Seam failure, was cap strip completely V.T.?              |

**OPERATIONAL COVER**

- ✓Page 24 How was patch repaired - extrusion welded with V.T.?

Should you have any questions concerning the information contained in this letter, please feel free to contact me at (910) 486-1191.

Respectfully,

  
Jim Barber ✓  
Eastern Area Engineer

cc: Jim Coffey  
Sherri Hoyt  
Terry Dover  
Bob Harding  
Neal Phillips