



NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

Division of Waste Management

Dexter R. Matthews

Director

Solid Waste Section

Beverly Eaves Perdue
Governor

Dee Freeman
Secretary

March 6, 2009

Mr. Edward Mann, Public Works Director
Dare County
P.O. Box 1000
Manteo, NC 27954

Subject: Comments on Cell No. 4 Construction and Demolition Debris Landfill (C&DLF) Permit Application, Dare County C&DLF Permit No. 28-03, Dare County, North Carolina Document ID No. 6963

Dear Mr. Mann:

The Division of Waste Management (DWM), Solid Waste Section has received the above-referenced permit application for Dare County C&DLF and conducted a review of compliance with the Solid Waste Management Rule (Rule), 15A NCAC 13B .0500. The SWS hydrogeologist will review the Design Hydrogeologic Investigation and Water Quality Monitoring Plan of the permit application and may request any additional information in a separate letter upon completion of his or her review. This letter is a review of the engineering related portions of the permit application, and the Solid Waste Section needs the following additional information:

Section One – Facility Plan

1. (Section 1.3.1.4) Please describe the waste recycling program (recyclable wastes, such as white goods, concrete rubbles, scrap tires, scrap metals, cardboard box, etc.) conducting at the landfill facility and requiring waste segregated management.
2. Is the landfill facility located within a 100-year floodplain? Has the Dare County Board of Commissioners adopted a resolution to grant a variance to the Dare County's flood hazard ordinance for the C&DLF facility in accordance with Rule .0536(c)(4)? Please provide a copy of the resolution approving the variance.
3. (Section 1.3.2.4 & Sheet D-2) There is discrepancy of the thickness of the final cover between this section and Detail E of Sheet D-2 and the Section 1.3.3 and the Closure Plan. Please clarify.
4. (Section 1.3.2.6) The Table 3-3 mentioned in the section is likely a typographic error of Table 1-3. Please clarify.
5. (Section 1.3.3.1.1, Page 1-8) This section proposes "the closure cap post-settlement surface slope must be between 5 to 25 percent." However, the figures in permit application document

show the top surface slope of the final cap is 2 percent and side slope is 33.3 percent [3 (horizontal) to 1 (vertical)]. Please clarify.

Section Two – Engineering Plan

6. (Section 1.2) The section proposes that the post-settlement grades of the top surface slope will not be less than 5 percent (to prevent ponding). But the Sheets SD-3 and C-4 show the top surface slope of the final cover of Cell No. 4 is 2 percent from crown to the edge of the top surface of the final cover. Please clarify.
7. (Section 1.3, the first sentence) The Cell No. 3 mentioned in this section is apparently a typo of the Cell No. 4. Please correct the typographic error.
8. (Section 1.3, on page 1-2) Please provide a copy of approval letter, issued by Division of Land Resources, Land Quality Section, of the Sedimentation and Erosion Control Permit Application. The approval letter shall be a portion of the Cell No.4 Permit to Construction Permit Application.
9. (Section 2.1, the second paragraph) Please provide the soil loss calculations, which are not presented in Appendix A.
10. (Section 2.2) This section indicated that designs of site drainage structures and sediment ponds are based on a 25-year, 24-hour storm event. However, designs of drainage structures - filter basins and canal crossing in Appendix A are based on a 10-year storm event. Please clarify.
11. (Section 2.4, page 2-2) The pertinent documents of the location restrictions for the entire proposed C&D landfill expansion are not provided in Section 1 – Facility Plan, Appendix B. Please clarify.
12. (Section B-2) The Sheet OP-6 is not available in the document. Please provide the Sheet OP-6.
13. (Section B-6.3, page 6-1) The final cover thickness is 3 feet thick, not 2 feet, as described in Section 1.2 of the Engineering Plan. Please correct the typographic error.
14. (Section B-6.4 & Appendix B-4) Has the presence of groundwater in the subsurface been considered in the slope stability analysis? Please clarify.
15. (Section B-6.4 & Appendix B-4) Please provide the input data summary sheets and summary of the analysis results from the slope stability modeling software SLOPE/W 2004.
16. (Sections B-6.4.3 & B-6.4.4) Please provide Appendix D mentioned in both sections.

Section Three - Construction Quality Control Plan (CQA Plan)

17. The CQA Plan needs to specify material, construction procedures, QA/QC testing items, methods, and frequencies to ensure that the as-built 5- foot thick compacted landfill sugrade for Cell No. 4 meets the design requirements of material as described in Section 1.1 of the Engineering Plan and the minimum engineering parameters – unit weight 120 pcf and internal friction angle 35 degrees as described in Table 6-1 in Appendix B of the Engineering Plan.

18. Please provide material (pipe, fitting, backfill material) and construction specifications (including disposal deco water and soil cuttings) for installing perimeter gas probes and passive gas vents in the CQA Plan.
19. Please provide material and construction specifications for installing the erosion and sediment control measures as described in the Section 1.3 of the Engineering Plan and the Section 8 of the Operations Plan.
20. To meet the safety factor requirements of slope stability analysis described in the Section B-6 of Appendix B, the compacted soil used as landfill cap must have a unit weight greater than or equal to 120 pound per cubic feet and internal friction angle greater than or equal to 30 degree tested by ASTM method D4767. Please make necessary revision in the Sections 4 and 5 of the CQA Plan.
21. (Section 2) Please describe the responsibility and authorities of the owner/operator and the responsibility, qualification, and submittals of the quality control laboratory (QCL) mentioned in Sections 4.2 and 4.3 and surveyors who will conduct as-built final grade survey and confirm the thickness of each layer of the final soil cover system.
22. (Section 4.1) Please define the passing/failure criteria of the QA/QC testing of compaction effort – density and moisture content and internal friction angle.
23. (Section 4.1 A) The acceptable soil types based on soil classification has two “CH.” Please correct this typographic error.
24. (Sections 4.1 A & 4.1 B) Please explain why the ASTM Method 2488 is proposing to be used for classifying soil type. If the soil index tests are proposed to run for this project, will the ASTM Method 2487 be more appropriate method for classifying soil type?
25. (Sections 4.1 A, 4.2 A, & 4.2 D) Please add the test for organic content (see Section 4.1 A) to the conformance test list in Section 4.2 A. The specifications of the test item, method and frequency stated in Section 4.2 D need to match those in the Section 4.2 A. Please revise the Sections 4.2 A and 4.2 D accordingly.
26. (Section 4.2 A) If the shear test (ASTM D4767) is not applicable to a low permeability soil liner consisting of the soil-bentonite mixture, please clarify what assurance is there, and how to confirm if the constructed liner has adequate shear strength, in term of an internal friction angle, exceeding the minimum engineering property stated in Section 4.1 A.
27. (Section 4.3.1) Please specify (i) the testing methods for testing in-place density and moisture at the test pad (ii) how to repair test holes.
28. (Section 4.3.2) Are there any requirements / specifications for the subgrade (12-inch-thick intermediate soil cover) preparation to be achieved and confirmed, accepted, & documented by the EFR or Engineer prior to installing soil liner? Please clarify.
29. (Section 4.4.1) To ensure the constructed soil liner has an internal friction angle greater than or equal to the criterion specified in Section 4.1, please add the QC testing of internal friction angle with adequate test frequency to this Section.
30. (Section 5.4) Please specify the minimum thickness of the constructed vegetative cover.

31. The final acceptable zone, consisting moisture contents, dry unit weights and compaction for which hydraulic conductivities less than or equal to 1.0×10^{-5} cm/sec and discussed in Sections 4.2 B or 4.2 C needs to be a portion of the CQA report. Please add this to the Section 6.

Section Four - Operations Plan

32. The Operations Plan needs include a contingency plan to address the management and handling procedures for the unexpected events & conditions including, but not limited to, equipment breakdown, spills, unusual traffic patterns, long-term power outages and natural disasters affecting operations. Please clarify.
33. (Section 2.3) Please add the asbestos wastes to the list of acceptable wastes and also describe the provisions to manage the disposal of asbestos wastes at the C&DLF facility in accordance with Rules .0542(b) and (c).
34. (Section 7.6) The scrap tires (Appendix C, Section 4 - The Operations Plan) and white goods (Facility Compliance Audit Report dated December 20, 2007) are listed as a recyclable waste at the C&DLF. Therefore, the Operations Plan needs to address provisions to manage white goods, scrap tires, and other recyclable wastes (scrap metals, cardboard box, etc.), if present at the C&DLF. The plan may include, but not limited to, the physical features of each type waste storage area, practices to prevent surface water from contacting wastes, the maximum allowable tonnage to be stored at any time at the facility, the estimated tonnage per month, the contact information of a contractor or recycler to handle, off-site transportation, and the frequency or schedule to remove the waste tires off-site. The temporary storage areas of the recyclable wastes must be shown on the site plan.
35. (Section 8) Please describe the approaches to dispose of the removed sediment from the filter basins.
36. (Section 9) What are provisions in the Plan to ensure the C&DLF units not to violate the requirements stated in Rule .0542(I)(5)? Please clarify.
37. (Appendix A – Water Quality Monitoring Plan) The Section 3.1.2 proposes to abandon existing monitoring wells GW-6 & GW-7 prior to construction of new Cell No.4. What are provisions there for well abandonment and notification in the monitoring plan? Please clarify.
38. (Appendix B – Gas Control Plan) The Section 3 needs to describe the rationality to select the locations, spacings, and depths of perimeter gas wells/probes. Please clarify.
39. (Appendix B – Gas Control Plan) Please describe the schedules for installing the proposed 12 perimeter methane monitoring wells and for initiating the quarterly monitoring program. The well completion report could be submitted as a portion of the CQA report. Otherwise, the Gas Control Plan needs provide the schedule of the report submittal (The DWM suggests that within 30 days upon completion of wells). The written report that is signed, sealed and dated by a Professional Engineer or Professional Geologist registered in the State of North Carolina includes, but not limited to, a scaled as-built drawing depicting the locations of the gas probes which are surveyed by surveyors register in the State of North Carolina, well construction records (completed GW-1 form), well & boring logs, groundwater tables, and descriptions of any deviations from the original plan. The report will also describe the schedules for the first methane gas sampling event and the follow-up quarterly sampling events.

40. (Appendix B – Gas Control Plan) Please provide the typical details of the proposed 12 perimeter gas probes on the figures.
41. (Appendix C – Section 3.2) Please add the asbestos wastes to the list of acceptable wastes and add the wastewater treatment sludge to the list of the prohibit wastes.
42. (Appendix C – Section 6, 2nd paragraph, bullet item 2) Is there a Waste Screening Plan for the Subtitle D landfill placing at the C&DLF facility? Or is this referencing the Dare County MSW transfer station facility (permit # 28-05T)? Please Clarify.
43. (Appendix C – Section 7) What provisions are there to prevent the repeat violation of disposal of unauthorized wastes at the C&DLF facility?
44. (Appendix C – Section 7) Please provide the detail descriptions of the random inspection procedures including, but not limited to, inspection location, inspector's qualification/ training requirement, random sample selection process, requirements for wastes isolation and containment, and protocols for managing the found prohibit wastes (especially for hazardous wastes and PCB wastes).
45. (Appendix C – Section 9) Could the Contingency Plan be associated and consistent with the "Hazardous Waste Management Plan annexed to the Dare County Emergency Operation Plan (<http://www.co.dare.nc.us/EmgyMgmt/eop.pdf>). Please clarify.

Section Five – Closure Plan

46. (Section 1.1.1) The Closure Plan proposes the post-settlement grade of top surface slope will not be less than 5 percent. However, the figures in permit application document show the top surface slope of the final cap is 2 percent. Please clarify.
47. (Section 1.1.1) The descriptions of slope stability of the final cover system in the last paragraph on Page1-1 are not consistent with those described in the Engineering Plan associated with Cell No.4 construction. Please clarify.
48. (Section 1.3) It is likely a typographic error of the maximum available net air space in Cells 1 through 4. Please verify.

Figure

49. It appears that the buffer distance from the east side of the waste footprint to the center line of a canal is 260 feet, not 210 feet. Please correct this typographic error on the figures –SD-1, SD-2, and C-1.
50. The Division's record shows that the landfill property is recorded in Deed Book No. 530 Page No. 733. The notes on Figures SD-1 & SD-2 are likely wrong. Please make necessary correction.
51. According to the Division's Facility Compliance Audit Report dated December 20, 2007, white goods are received and temporarily stockpiled at the C&DLF facility. The temporary storage areas of the recyclable wastes (including white goods areas) need to be present on Figures SD-1 & SD-2 (see Comments 1, 32, & 33).
52. The Cell No. 3 (Phase 3) is the active cell; please correct the typographic errors on Figure OP-01 & OP-02.

53. Please add the note of the proposed Cell No. 4 to Sheet C-1.
54. On Sheets C-3 and C-4 the locations of the monitoring well GW-09 and piezometers P-3 & P-6 (Sheet C-3) and P-1 (Sheet C-4) are associated with Cell No. 3, not at Cell No.4. Please add wells GW-06 & GW-07 to Sheet C-3 and update the Note 5 by including abandoned monitoring wells inside the landfill cell.
55. The Detail E of Sheet D-2 shows the landfill base pad is typically 4 feet thick, which is different from the proposal discussed in the Section 1.3.2.8 that proposes to construct a 5-foot thick compacted pad accounting for settlement that may occur. Please clarify.
56. There are discrepancies of the gross capacity of Cells 1 & 2 between the tabulated data on Figure SD-2 and data on Figure OP-03. The final grade lines shown Figures OP-01 & OP-02 are not consistent with these on Figure OP-03. Please make necessary corrections.

Please incorporate requested information, document, revisions, and responses to a new submittal including a written hard copy and an electronic copy (including figures) of the revised permit application. The Solid Waste Section appreciates your efforts and cooperation in this matter. If you have any questions or would like to schedule a meeting to discuss this matter further, please contact me at (919) 508- 8507.

Sincerely,



Ming-Tai Chao, P.E.
Environmental Engineer II
Solid Waste Section

cc: W. Michael Brinchek, P.E., CDM
Donna Wilson, DWM
Chuck Boyette, DWM
Central Files

Ed Mussler, Permitting Branch Supervisor
Christine Ritter, DWM
Dennis Shackelford, DWM