



MARYLAND DEPARTMENT OF THE ENVIRONMENT

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Deputy Secretary

May 11, 2010

Mr. Warren Halle
National Waste Managers, Inc.
2900 Linden Lane, Suite 300
Silver Spring MD 20910

Dear Mr. Halle:

The Maryland Department of the Environment (the "Department") acknowledges the receipt of two copies of the Phase III Report Addendum 1 dated April 28, 2009, in response to our January 30, 2009 comment letter for the Chesapeake Terrace Rubble Landfill. The document was submitted on your behalf by Century Engineering.

The following comments are presented based on the review of your revised report and on previous comments made by the Department that have not been fully addressed. Your Phase III report (the "Plan") will not be considered complete until all of the following comments are fully addressed and resubmitted to us for approval:

1. You have proposed three entrances to the facility. Please see the attached comment letter sent by Anne Arundel County dated July 27, 2005, stating that only one entrance will be used for the facility and specifying which entrance is acceptable. The County's letter also offers additional comments for the facility. Please communicate directly with the County to resolve any outstanding issues and send us copies of your responses to the County.
2. Section 3.6.4, "Optional South Entrance", appears to contain incorrect information which is repeated from Section 3.6.3. Please revise the section to include the correct language and data for the South Entrance.
3. Section 3.6.2, "Assumed East Entrance", seems to infer that there are 5,000 feet of queuing space prior to the scale house. However, as shown on Permit Drawing Sheet 3, not all of the access road for the facility is on the Chesapeake Terrace property. Note that queuing is not allowed on county roads. Please revise the calculations in your report to address this issue.
4. "Typical Section from Site Property Line to Landfill", shown on Permit Drawing Sheet 3, indicates two 12-foot lanes into the facility, with one for ingress and the other for egress. Queuing will not be allowed on the ingress or egress routes as this will prevent emergency vehicles and other traffic from safely passing the queued traffic when required. Therefore, a queuing lane must be proposed for the Assumed East Entrance. If a queuing lane is not shown on the plan, no queuing will be allowed at the facility and then a turnaround lane for excess trucks will be required.

5. Please check your reference for #6 in the table of Section 3.1. The reference discusses amounts of cover material, whereas the section it refers to is "Variance from Sequence of Construction for Landfill Cells".
6. Please add a note on Permit Drawing Sheets 7 through 10, "The cell floor shall have a minimum of 2 percent slope post-settlement at all locations" to satisfy the Code of Maryland Regulations (COMAR) 26.04.07.07C(12)(a)(v).
7. Please clarify the berm elevation shown between Cells 3 and 4 (southern section) and Cells 7 and 10 (eastern section) on Permit Drawing Sheet 8. The contour lines as shown suggest sections of the berm are flat.
8. Sediment control during construction is discussed in Section 7.2.2, "Description of Intermediate Construction Stage Plans". Note that stormwater management ponds must be checked to determine the depth of any accumulated sediments. Whenever the accumulated sediment exceeds one-half of the pond's storage capacity design, a schedule must be developed for removal of the accumulated sediment to restore the pond to its design storage capacity. Please include language in your report outlining this requirement.
9. Please check the "Aquastore Tank Brochure" starting on Page 10C-3 in Appendix C of Section 10.0, as it appears that a duplicate copy was included in the submittal to the Department.
10. Section 11.5.2, "Gas Well Construction Specifications", suggests placement of gas wells from the landfill surface to 20 feet above the liner system. The Department recommends the wells to be installed approximately 60% of the depth of the waste. Please revise the Plan to reflect these changes.
11. Please check the numbering of Section 11.5. It appears that 11.5.1 is missing.
12. Drawings 2 and 3 of the Landfill Gas Management Plan (Section 11.0) show flare paddocks. There are a total of three paddocks shown on these two sheets, each with different dimensions and in different locations. In addition, only the 140 foot by 100 foot paddock on Drawing 2 shows a connection to the landfill gas extraction system. However, this paddock is shown to be less than 100 feet from the property line. The Department does not recommend placement of the flare in this location due to potential nuisances to neighboring property owners. Please propose an alternate location for the flare that is further away from the property boundary and will not be in the 100-year floodplain.
13. The North arrows on Drawings 2 and 3 of Section 11.0 are inconsistent. The match line between the two seems to indicate that both drawings should have the same direction; however this is not the case as shown. Please revise Drawing 3 and all other incorrect drawings to show the proper orientation of the North arrow.
14. Dust control by mulching is mentioned in Section 12.7.3. However, the Department will not approve of mulching as a dust control method if it is not shown to be fire-retardant. Please revise your report to include the necessary information.

15. Please revise Section 12.4, Personnel, to include the following information.

- a. Although the facility is not permitted at this time and therefore no personnel are assigned to it, please include a list of positions for personnel that will manage the facility and a phone number for the facility. This list of personnel should include all positions required for the facility, including spotters, maintenance personnel, and operators. Both the positions and number of personnel assigned to each position should be clearly listed in a table.
- b. Ensure that all contact persons listed in the Plan are still accurate. The Department should be informed in writing if contact persons change. This comment includes revising the contacts in Sections 7.0, 8.0, and 10.0 on pages 12D-5 and 12D-6.
- c. Please include in table format the type and quantity of equipment required for operation.

16. Section 12.7.7, "Filling Operations", proposes to have multiple working faces simultaneously. Please discuss the adequacy of the leachate storage tanks to handle the additional capacity of more than one working face, the amount of equipment and personnel required for each operation, and how to ensure each working face will be appropriately covered by the end of the working day.

17. You have proposed to use a fabric-type alternative daily cover material (ADCM) in Section 12.7.7, "Filling Operations". In order to be approved as an ADCM, the fabric must be shown to be as good as or better than soil in controlling dust, odors, vectors, fires, and blowing litter. Please revise the report to address this issue.

18. Please remove all language from Section 12.7.6 and anywhere else in the Plan that implies that tires or tire chips will be disposed of at the facility. This is not allowed and conflicts with the statement in Section 12.7.8.3 that "disposal of tires in a landfill is prohibited".

19. The CQA report, as discussed in Section 13.4.6, "Record Documentation Report", must be submitted to the Department in order to comply with Section 9-204 of the Annotated Code of Maryland. The Department requires that this report be submitted within 90 days of completion of closure construction.

20. The Closure and Post Closure Plan, as introduced in Section 15.0, should be designed in accordance with COMAR 26.04.07.21-22, not 26.04.07.16 as referenced on page 15-1.

21. Section 15.1.5, "Gas Collection System", incorrectly references Drawings 1 and 2 of the Landfill Gas Management Plan. Please revise this reference to correctly cite Drawings 2 and 3.

22. The Department could not verify whether information is missing from Section 15.1.8, "Notification", as there is only one paragraph on the page while the section is continued on the next page. Please revise this section as necessary.

23. On Page 16A-3 of Appendix A in Section 16 is a reference to the "Waste Management Administration". Be advised that the name has changed to the "Land Management Administration" and the contact number for the Solid Waste Program is (410) 537-3318.
24. Section B of Section 17.0 describes the closure cap as being "2 feet of earthen cover over a geosynthetic drainage net...and two feet final cover". However, Conceptual Cap Closure Detail on Permit Drawing Sheet 49 and 50 proposes 2 feet of final cover, a 40-mil liner, a drainage net, and a minimum of 2 feet of the closure cap to meet the requirements of COMAR 26.04.07.21E. In addition, the conceptual design must include a geotextile below the 40-mil liner for protection from the waste. Please revise both this section and any other references or plans showing a capping design that is incompatible with the COMAR requirements.
25. The site plan found on Permit Drawing Sheet 2 fails to indicate the location of the landfill offices. The offices must be located onsite to maintain records and files for the landfill and to house restroom facilities for the employees. Please revise the site plan to include offices onsite and any other pertinent features.
26. There is a concrete clean-out shown on the site plan, Permit Drawing Sheet 2, next to the wheel wash for the East Entrance to the facility. Please address the purpose of this clean-out.
27. The year of the "Highest Predicted Groundwater...", as shown on the Clay Dam Detail on Permit Drawing Sheet 16, is dated 2004, while your response to Comment No. 13 makes reference to 2007. Please specify which year is correct and revise your report as necessary to minimize confusion.
28. Section A-A on Permit Drawing Sheet 17 shows a detail of leachate collection pipes from the sump to the pump house. Please revise the drawing to incorporate the following comments.
 - a. The drawing must specify the type of geonet to be used to wrap the perforated pipe and must demonstrate that the proposed length adequately prevents sediment from entering the sump.
 - b. The drawing fails to show the wrapping of the geonet on both the top and the bottom of the pipe. However, the Department does not recommend wrapping leachate collection pipes with material due to the potential for leachate clogging.
 - c. Please specify the type of material to be used for the drainage material. Be aware that the material must be of a size such that it will not clog the geonet or the 5/8 inch diameter perforations in the collection pipe.
 - d. Due to continuous and excessive collection of leachate in the sump area, the Department recommends the use of a double-liner system along this section in order to ensure that there is no leachate penetration through the liner and contamination of the groundwater.
29. Section A-A on Permit Drawing Sheet 50 fails to show the required 4% slope on the top of the final closure cap. In addition, the soil proposed for this layer must have a permeability of greater than 1×10^{-3} cm/sec. Please revise this sheet to reflect the requirements from COMAR 26.04.07.21E.

30. Please ensure that all items in all of the respective Table of Contents of the Phase III report contain accurate page references.
31. Please submit along with your revised report copies of correspondence between yourself and the Department's Water Management Administration regarding dewatering activities for the site. An approval from the Water Supply Program must be included with the Phase III plans in order for the application to be considered complete.
32. Approval from the local soil conservation district for the Erosion and Sediment Control plan is required prior to the approval of your Phase III plan. This also includes meeting the Anne Arundel County Planning and Code Enforcement requirements for the storm water management features.
33. The Department has previously commented on the proposed clay dam design, and requested identification of the source of the perched water, an evaluation of the ability of the clay dam to withstand continued groundwater withdraw under the side slope of the landfill and the cell floor, and impacts of landfill activity on the clay dam. You have responded that liquefaction is not a factor in the hard clay foundation soil, and the shear strength of the clay exceeds the stress that might be imposed by increased pore pressure due to vibrations and soil liquefaction that can occur in loose saturated sandy soils typically triggered by dynamic events such as an earthquake or subsurface explosion.

Please note part of the clay dam proposed as a diversion berm is submerged by groundwater and will remain in a saturated condition for the life of the landfill. Further, continuously draining the perched water as landfill construction takes place will add increased vibration resulting in increased pore pressure that will influence pore water chemistry with the presence of ions that could change the microstructure of the soil, making it more vulnerable to increased liquefaction. Liquefaction is a phenomenon in which the strength and stiffness of the soil is reduced not only by an earthquake or blast as you have stated, but also from vibration of the land by landfill construction activities such as the use of heavy equipments and continuous landfill operation. The landfill activity and the added static load from the waste material will force the clay dam to vibrate, causing water pressure to increase to the point where the soil particles will move. These landfill activities will trigger flow liquefaction. Once this phenomenon is triggered, the strength of the soil below the landfill or the clay dam will be susceptible to flow liquefaction and will no longer be sufficient to withstand the static stress load.

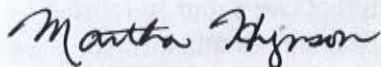
Therefore, the design must include evaluation of perched water and perched water withdrawal beneath the clay dam and the landfill, as well as impacts from landfill construction and operational activities on the clay dam. The evaluation must include detailed landfill and clay dam stability analyses that include bearing capacity analysis, short and long term static loading, and ability of the clay dam to withstand impacts from continued landfill construction, operation, and perched water withdrawal. The evaluation must include static case loading factors of safety against instability for short and long term conditions and consider material properties used in the design analysis, such as waste load, liner interface for moist unit weight, saturated unit, drained and undrained zones for shear strength, cohesion, groundwater withdrawal under the clay dam and supporting soils under the landfill.

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The evaluation should be for each location, thickness and properties of the materials measured section by section for settlement that may occur. For example, settlement of sand occurs immediately after the application of additional load as a result of deformation of the soil skeleton and rearrangement of particles to denser configurations due to load. Settlement of clay occurs as pore water is expelled from the layer over time in response to additional load, not to mention the constant perched water withdrawal proposed for the design of this landfill. Please note landfill failure can result from collapse of the underlying soil voids and rearrangement of soil particles into denser configurations. Therefore, all of these mechanisms of settlement must be considered in your design.

Based on the number and extent of the amendments required to these plans, we anticipate that a complete new submittal will be required (as opposed to submitting replacement pages for the existing report). Please revise your report and resubmit two copies to the Department for review and approval. Due to the extent of the comments addressed in this letter, the Department requests that this be a complete, stand-alone revision. If you have any questions regarding the comments contained in this letter, please contact Mr. Andrew Dubina, Project Manager, at (410) 537-3318.

Sincerely,



Martha Hynson, Chief
Solid Waste Operations Division

MH:AD:ad
Enclosure

cc: Mr. Michael Armstrong
Mr. Jonathan A. Hodgson
Mr. Horacio Tablada