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May 31, 2011



Fac/Perm/Co ID #	Date	Doc ID#
97-04	8/30/11 <i>B.W.</i>	DIN 14911

Mr. Brian Wootton
NCDENR, Solid Waste Section
1646 Mail Service Center
Raleigh, NC 27699

**RE: Response to Comments on Permit to Construct (PTC) Application – Phase 4
Wilkes County MSWLF at Roaring River – Phase 4
Wilkes County, North Carolina
Permit No. 97-04, Document ID No. (Doc ID) 13408
JEI Project No. 356.1002.11, Task 02**

Dear Mr. Wootton:

Joyce Engineering, Inc. (JEI) is submitting this letter on behalf of the Wilkes County in response to the questions received (March 2011) from your technical review of the Permit to Construct Phase 4 of the Roaring River Landfill. For your reference, the questions are repeated below in italicized print, with the responses provided in bold font. JEI would also like to submit revisions to the Permit to Construct regarding the grading and capacity of Phase 4. The revisions can be found in the following sections:

- Facility Plan
 - Section 3.2 Landfill Capacity
 - Table 2: Projected Yearly Disposal Rates
 - Table 3: Soil Balance
 - Drawings FP-04 and FP-5
- Engineering Plan
 - Section 2.7 Landfill Gas Collection and Control System Design Plan
 - Drawings EP-03 and EP-04
- Operations Plan
 - Section 6.2 Landfill Gas
 - Drawing OP-2

Water Quality Monitoring Plan

1. Existing groundwater monitoring well MW-13 could not be located on the submitted drawing (Drawing no. WQMP-01). The well is most likely beyond the left margin of the drawing. Also, this drawing depicts the location of groundwater monitoring well MW-2R and according to the drawing legend, this well appears active. Drawings included in the Facility Plan (i.e. FP-01, FP-02, FP-04) depict groundwater monitoring wells, MW-2 and MW-2R as abandoned. Also, the location of groundwater monitoring well, MW-13 depicted on the referenced facility drawings (FP-01, FP-02, &

FP-04) appears to be an upgradient/side-gradient monitoring well in a different watershed. An additional upgradient groundwater monitoring well is most likely required instead of using MW-13, possibly between abandoned groundwater monitoring well, MW-2R and the waste boundary of existing Phase 3. Provide a possible location of an additional upgradient groundwater monitoring well, by revising Drawing No. WQMP-01. Also, if possible depict the location of existing groundwater monitoring well, MW-13 on the drawing.

On April 7, 2010, Joyce Engineering, Inc. (JEI) submitted a request for replacing background well MW-2R with MW-13. Monitoring well MW-2R is located northeast of Phase 3 and the area is slated to be used for borrow material for the facility. On April 30, 2010, the Solid Waste Section approved the use of MW-13 as the new background monitoring well. Drawing WQMP-01 has been revised to include groundwater monitoring well MW-13, as well as the correct depiction (abandoned) of MW-2 and MW-2R.

2. *Drawing No's FP-01, FP-02, and FP-03 included in the Facility Plan also depict the location of groundwater monitoring wells, MW-14, MW-15R, and MW-16 at the western portion of the facility. Explain the role these groundwater monitoring wells have at the facility (i.e. monitoring closed landfills, etc?)*

Groundwater monitoring wells MW-14, MW-15R, and MW-16 were installed for the proposed C&D facility that has not been constructed. To prevent confusion, the groundwater monitoring wells have been removed from the drawings.

3. *In addition to revising the reference drawing WQMP-01, please also revise the narrative portions of the Water Quality Monitoring Plan accordingly.*
 - i. *Volume 3, Section VII, Water Quality Monitoring Plan, page 3, third sentence, under Section 3.0 states: "Further guidance is provided in the Draft North Carolina Water Quality Monitoring Guidance Document for Solid Waste Facilities; Solid Waste Section, Division of Solid Waste Management; Department of Environment, Health and Natural Resources (March 1995)."*

This guidance is no longer in use. Please omit this reference.

The reference has been omitted from the text.

- ii. *Volume 3, Section VII, Water Quality Monitoring Plan, page 4, first paragraph, under Section 3.1 states in-part: "Groundwater samples will be collected in accordance with Solid Waste Management Rule 15A NCAC 13B.1632 and guidance provided in the Draft North Carolina Water Quality Monitoring Guidance Document for Solid Waste Facilities; Solid Waste Section, Division of Solid Waste Management; Department of Environment, Health and Natural Resources (March 1995)."*

As stated above, this guidance is no longer in use. Please omit this reference and revise the Water Quality Monitoring Plan with recent Solid Waste Section guidelines and memorandums and include printouts of these into the Water Quality Monitoring Plan. These guidelines and memorandums are located at the Solid Waste Section's web site, under the subcategory "Environmental Monitoring". Pertinent guidelines/ memorandums to include in the Water Quality Monitoring Plans are: "Groundwater, Surface Water, and Soil Sampling for Landfills", "Leachate Sampling and Analysis", "Solid Waste Environmental Monitoring Data Form", "Electronic Data Deliverable (EDD)

Template”, “October 2007 Memo”, “October 2006 Memo”, and “Addendum to the October 2006 Memo”.

The Draft North Carolina Water Quality Monitoring Guidance Document for Solid Waste Facilities reference has been omitted from the Water Quality Monitoring Plan. An additional appendix has been added to include the recommended guidelines and memorandums.

- iii. Volume 3, Section VII, Water Quality Monitoring Plan, page 8, Section 3.4 states: “Any monitoring wells at the site which need to be abandoned due to damage, construction activities, or approved changes in the monitoring network will be properly abandoned in accordance with the procedures for permanent abandonment, as described in 15A NCAC 2C Rule .0113 (a)(2) and the NC Water Quality Monitoring Guidance Document for Solid Waste Facilities. No wells will be abandoned without prior approval from the SWS.”

This guidance is no longer in use. Please omit this reference. The North Carolina Well Construction Standards (2C Rules) were revised September 2009. Revise reference rule 15A NCAC 2C Rule .0113(a)(2) to read 15A NCAC 2C Rule .0113(d). Also, add a statement to this section to read: “any wells to be abandoned shall have prior approval from the SWS and also be certified by a licensed geologist.”

The reference has been omitted from the text, the reference to 15A NCAC 2C Rule .0113 has been revised and the recommended statement has been included.

Operation Plan

4. *The Section 6.2 – “Landfill Gas” of the Operations Plan (January 2011) is similar to the Landfill Gas Criteria stated Section 6.1 of the May 2004 Operations Plan. Some modifications to Section 6.2 of the Operational Plan are necessary/ Please revise/ address the following:*

- i. *Please confirm/provide the following construction information for each of the existing landfill gas monitoring wells and in table format.*
- *Construction record for each well if available.*
 - *Total depth for each well.*
 - *Well screen interval in feet for each well.*
 - *Diameter for each well.*
 - *Type of and condition of well identification tag (i.e. weather proof, legible, etc.) for each well.*
 - *Is the upper portion of each gas well grouted?*
 - *Does the well have a water/rust proof cap?*
 - *Does the well have a stop-cock valve?*
 - *Name/number for each well.*

We were unable to obtain the construction records for the existing landfill gas monitoring wells, which would indicate the total depths, well screen intervals, and grouted intervals. The facility has five boundary probes: GP-1, GP-2, GP-3, GP-5, and GP-6. The probes are constructed of 1” Schedule 40 PVC with water/rust proof PVC

caps and do not have stop-cock valves or identification tags. We are currently planning to modify and measure each gas well to meet the above mentioned requirements.

- ii. *Provide a narrative statement pertaining to the total number of landfill gas monitoring wells, the names of the landfill gas monitoring wells, associated with the MSWLF and other portions of the facility (i.e. closed cells, etc) and facility structures sampled. Also, provide a drawing/map depicting the surveyed location of the existing landfill gas monitoring wells and possible location of additional new landfill gas monitoring wells. Further discussion pertaining to landfill gas monitoring well locations, construction criteria, sampling, etc. maybe necessary once this information is received. Also, revise Section 6.2 of the Operations Plan to include a copy of the Solid Waste Section's "Landfill Gas Monitoring Guidance Document" – revised November 2010. These guidelines are located at the Solid Section's web site. Once a Landfill Gas Monitoring Plan for this facility is finalized it is to be signed by a professional engineer or licensed geologist.*

Revisions have been made to section 6.2 discussing the number of gas probes, the approval and signature of a professional engineer or licensed geologist for the finalized Landfill Gas Monitoring Plan, and the inclusion of the Landfill Gas Monitoring Guidance Document. The Landfill Gas Monitoring Plan will be submitted once modifications have been completed for each landfill gas monitoring well.

The area east of Phase 3 is being used for borrow material at this time. Once the area is no longer used for borrow, an additional gas monitoring probe will be proposed at that time.

On behalf of Wilkes County, we would like to thank you for your attention to, and assistance with, this Phase 4 Permit to Construct Application. If you have any questions, please feel free to contact me at (336)323-0092.

Sincerely,
JOYCE ENGINEERING, INC.



Stephen Cowie, P.E.
Sr. Project Consultant