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August 18, 2016

Mr. Van Burbach, P.G.  
Joyce Engineering  
2211 W. Meadowview Road, Suite 101  
Greensboro, NC 27407

Re: **Permit No. 1203-CDLF-2014**  
Burke County Johns River Waste Management facility  
Design Hydro and WQ Plan Reviews for CDLF Expansion – Phases 2a and 4  
**DIN 26650**

Dear Mr. Burbach,  
The Solid Waste Section (Section) has completed the technical review of the Design Hydrogeologic Report (DIN 26500) for the proposed Phase 2a/4 C&D landfill expansion and the updated Water Quality Monitoring Plan for the facility, both submitted by Joyce Engineering on behalf of Burke County. The documents were received via FedEx by the Section on June 3, 2016. Joyce indicated a permit-to-construct application for Phases 2A/4 is planned to be submitted separately to the Section at a later date. Phases 2A/4 cover approximately 6.2 acres and would be an expansion of the currently active Phase 1A C&D landfill area permitted for operation in August 2014 (DIN 21528).

Design Hydrogeologic Report – ref. 15A NCAC 13B .0538(b)

Based on our review, the Design Hydro Report for the Phase 2A/4 expansion meets the criteria required in .0538(b)(3) for construction, including the top-of-bedrock datum and seasonal high groundwater table determinations for vertical separation requirements for construction [15A NCAC 13B .0540(2)]. This portion of the Permit to Construct is approved.

Water Quality Monitoring Plan – ref. 15A NCAC 13B .0544(b) and (c)

The Burke County CDLF facility is currently operating under a Corrective Action Plan (CAP) Addendum (DIN 19615) and a Water Quality Monitoring plan (DIN 17215) previously approved by the Section. The CAP addresses groundwater contamination associated with the closed unlined MSW disposal unit (with a C&D disposal unit on top) located on the site. Corrective measures being undertaken include monitored natural attenuation, phytoremediation, and landfill gas extraction. The current monitoring plan includes both assessment monitoring of the old closed landfill and detection monitoring for the Phase 1A expansion C&D landfill, as well as surface water monitoring of two adjacent streams.

The updated Water Quality Monitoring Plan submitted for review adds four (4) detection monitoring wells to the existing facility's overall monitoring network that monitors the closed MSW disposal unit, as well as the active C&D disposal unit. Together with the Phase 1A detection wells, these newly added wells will comprise that portion of the detection well network monitoring the new C&D landfill area (Phases 1A, 2A/4). Of the four wells, one will be a newly installed well (MW-30) and three (3) are existing piezometers that will be converted to detection monitoring wells (MW-30, MW-23s, and MW-24s. Other existing wells within the footprint of Phase 2A/4 will be abandoned per the plan: MW-1, MW-22s/-22d, and PZ-40/-41/-42. In addition, two other bedrock piezometers will be converted to monitoring wells MW-23d and MW-24d, but will not be included in the detection monitoring network. The proposed Phase 2A/4 expansion detection monitoring wells will be sampled, along with the current facility monitoring network, according to the Water Quality Monitoring Plan. The initial baseline sampling requirements will be included in the Permit-To-Construct to be issued at a later date. Guidelines for water quality sampling and electronic data submittal can be located at the Section's web site. <http://portal.ncdenr.org/web/wm/sw/envmonitoring>

In an August 15, 2016 phone conversation Van Burbach (Joyce Engineering) informed the Section that facility owner has decided that Phase 2A and 4 will be constructed at the same time rather than in phases as was described in the permit application submittal. Prior to final approval of the updated WQ Plan, the following revisions are requested based on our review and the changed construction phasing plan:

- Section 2.2.1 Monitoring Networks for Phases 1A, 2A, and 4: Revise text and table to reflect current plan to construct phases 2A and 4 simultaneously.
- Section 2.6 Well Abandonment: Revise text to reflect current plan to construct phases 2A/4 simultaneously.
- Table 1: Construction Data for Wells & Piezometers: Update table to reflect current plan to construct phases 2A/4 simultaneously.
- Plan Sheet WQMP-01: Revise plan sheet to reflect current plan to construct phases 2A/4 simultaneously.
- Appendices: Include the most recent guidance on monitoring data submittal. The November 2014 memo can be downloaded from our website: [SWS Electronic Data Submittal Memo - Nov2014](#)

#### Landfill Gas Monitoring Plan – ref. 15A NCAC 13B .0544(d)

The current LFG plan (DIN 17215) for the facility is dated August 2012 and was submitted with the Phase 1A landfill expansion permit application. While the plan is not expected to substantially change with the proposed 2A/4 expansion, some minor updates will be necessary to reflect changes in monitoring requirements since 2012. Please submit an updated Landfill Gas Plan for the facility for review and approval prior to the Phase 2a/4 permit approval. As applicable, include the following updates in the LFG plan:

- Hydrogen Sulfide (H<sub>2</sub>S): Due to the nature of materials disposed in them, C&D landfills are also a source of the explosive gas hydrogen sulfide (H<sub>2</sub>S). The plan needs to be updated/amended to include hydrogen sulfide gas (H<sub>2</sub>S) monitoring. Regulatory action limits for hydrogen sulfide are 4% by volume for 100 LEL and 1% by volume for 25% LEL, respectively. Please add H<sub>2</sub>S monitoring to the plan and forms as appropriate.
- Landfill Gas Monitoring: If additional landfill gas monitoring well locations are necessary and proposed, please revise maps, tables, forms, text as appropriate.

Well Abandonment

There are at least six (6) existing piezometers and/or monitoring wells within the footprint of the proposed Phase 2A/4 expansion. These wells are proposed for abandonment prior to construction activities commencing for the landfill expansion. (*Piezometers, groundwater monitoring wells, and borings, located in proposed expansion may be abandoned now or after a Permit-to-Construct is issued by the Solid Waste Section*). Please adhere to the following conditions:

Prior to construction of cell(s), all piezometers, ground-water monitoring wells, and borings, located in the proposed cell(s), shall be properly abandoned by over drilling first (exception for non-cased borings) and sealed with grout in accordance with 15A NCAC 2C .0113, entitled "Abandonment of Wells".

- a. In areas where soil is to be undercut, abandoned piezometers, monitoring wells, and borings must not be grouted to pre-grade land surface, but to the proposed base grade surface to prevent having to cut excess grout and potentially damaging the wells.
- b. Well abandonment records (GW-30 form) for each decommissioned piezometer, boring, and groundwater monitoring well must be certified by a Licensed Geologist in accordance with rule .1623(b)(2)(1) and submitted to the Solid Waste Section in accordance with 15A NCAC 02C.0114(b).

NOTE: The Permit-to-Construct will include Geologic, Ground Water, and other Monitoring Requirements.

Please submit the revised WQ Plan and LFG Plan to me once the changes have been completed. An electronic pdf copy of each will be fine. If you have any questions concerning these comments, please do not hesitate to contact me via email [perry.sugg@ncdenr.gov](mailto:perry.sugg@ncdenr.gov) or phone (919) 707-8258.

Sincerely,



Perry Sugg, PG  
Permitting Hydrogeologist  
Solid Waste Section

Cc: Ed Mussler, P.E. – SWS, Permitting Branch Head  
Allen Gaither – SWS, Permitting Engineer