



North Carolina Department of Environment and Natural Resources
Division of Waste Management

Beverly Eaves Perdue
Governor

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Director

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February 8, 2012

Mr. Ray Hoffman, P.E.
Republic Services of North Carolina, LLC
Area Engineer
1220 Commerce Street
Conover, NC 28613

RE: Groundwater Assessment at Monitoring Well MW-8
JMNC/Cleveland Container Landfill, Permit #23-02

Dear Mr. Hoffman:

The Solid Waste Section (Section) has reviewed the *Groundwater Assessment at Monitoring Well MW-8* report submitted on behalf of Republic Services of North Carolina, LLC by Golder Associates (Golder). The assessment was conducted in accordance with the workplan submitted to the Section on June 1, 2011. Historical groundwater analytical data from the JMNC/Cleveland Container Landfill indicated tetrachloroethene and vinyl chloride concentrations in exceedance of groundwater standards established in 15A NCAC 2L .0202 (2L Standards). An assessment near MW-8 was conducted to comply with rule 15A NCAC 13B .503 (2)(d)(iv), which states groundwater contaminant concentrations cannot exceed the 2L Standards at the compliance boundary.

Golder collected a landfill gas sample from MW-8 in order to evaluate the potential impact of landfill gas on groundwater. The landfill gas sample reported detections of 14 volatile organic compounds (VOCs) which included six contaminants of concern previously detected in groundwater samples with the exception of vinyl chloride. Golder subsequently used Henry's Law to determine if VOC concentrations in groundwater could be attributed to VOCs partitioning from landfill gas. The results of the evaluation indicated that only two VOCs, 2-hexanone and acetone, could partition to groundwater at detectable concentrations. Acetone was detected in the groundwater sample collected from MW-8 in July 2011 while 2-hexanone was not. Two primary contaminants of concern, vinyl chloride and tetrachloroethene were detected in the July 2011 groundwater sample, but vinyl chloride was not detected in the gas sample and tetrachloroethene was not detected at a concentration in the gas sample expected to partition to groundwater.

The geochemical characteristics of MW-8 were compared to upgradient wells, MW-1B and MW-1C, in order to determine if landfill leachate impacted groundwater in the vicinity of MW-8. Groundwater samples were analyzed for calcium, chloride, magnesium, sodium, alkalinity, and ammonia. The analytical results were used to construct Piper and Stiff diagrams to illustrate the geochemical characteristics of each groundwater sample. The diagrams illustrated that MW-1B and MW-8 share more geochemical similarities than MW-1B and MW-1C, thus indicating that landfill leachate had not impacted MW-8 since its geochemical characteristics were similar to that of a background well. Golder also identified two nearby sites listed in the NC DENR Inactive Hazardous Sites Program and several offsite activities that could potentially impact groundwater at MW-8.

Golder concluded that landfill gas is a possible source of VOCs detected in MW-8 although the results of the headspace sample in comparison to the July 2011 groundwater sample proved to be inconclusive. Golder indicated that past variations in landfill gas presence and migration routes could have contributed to groundwater impact in the past. Due to no VOCs being reported above 2L standards during the July 2011 groundwater monitoring event, geochemical analysis indicating that MW-8 was not impacted by landfill leachate, and the possibility of offsite origin of contamination, Golder recommended that no further action be taken. Based on the evidence presented in the assessment report, the Section will

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not require additional assessment in the vicinity of MW-8 at this time. Additional assessment may be necessary if future conditions change.

Please contact me at (919) 508-8516 or by e-mail at ervin.lane@ncdenr.gov if you have any questions or concerns regarding this letter. Thank you for your cooperation in this manner.

Sincerely,



Ervin Lane
Hydrogeologist
Environmental Compliance
Solid Waste Section

cc: David Y. Reedy II, P.G., Golder Associates, Inc.
Mark Poindexter, Field Operations Branch Head
Jason Watkins, Western District Supervisor
Bill Wagner, Environmental Senior Specialist