OhioEPA
State of Ohio Environmental Protection Agency
Northeast District Office

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Ted Strickland, Governor
Lee Fisher, Lieutenant Governor
Chris Korleski, Director

November 30, 2009

RE: WESTLAKE CITY LANDFILL
CUYAHOGA COUNTY
GROUND WATER
NOTICE OF VIOLATION

CERTIFIED MAIL

Mr. Don Glauner
Service Director
City of Westlake
27216 Hilliard Boulevard
Westlake, Ohio 44145

Dear Mr. Glauner:

On February 24, 2009, Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), received a submittal dated February 23, 2009 "Post Closure Ground Water Monitoring Report, May 2008 Sampling Episode" and a letter from the owner/operator (O/O) dated February 23, 2009, that was in response to Notice of Violations issued by Ohio EPA regarding the October 2007 and May 2008 ground water sampling events. The report and letter were prepared and submitted by Mr. Fraser Hamilton of Earth Consulting, LTD, on behalf of the City of Westlake.

Westlake Landfill closed under the 1990 Solid Waste Landfill Regulations, and is currently conducting post-closure ground water detection monitoring in accordance with OAC Rule 3745-27-10 of the 2003 revised Solid and Infectious Waste Regulations. The sampling report was prepared and submitted to conform with OAC Rule 3745-27-10(C)(10) of the 2003 revised Solid and Infectious Waste regulations.

The May 2008 sampling episode report and the February 23, 2009 response letter were reviewed for compliance with OAC Rule 3745-27-10(D) and the facility's revised 2004 ground water detection monitoring plan (GWDMP).

The following violations were identified during the review of these two documents:

1. **OAC Rule 3745-27-10(D)(5)(a)(ii)(*b*): Ground water samples from each well screened in the uppermost aquifer system must be collected and analyzed semiannually for Appendix I parameters 1-66.**

   None of the ground water samples from the May 2008 sampling event (as well as several previous events) were analyzed for all of the parameters numbered 1-66 in Appendix I of OAC 3745-27-10.

   Ohio EPA records and the ground water detection monitoring plan show that Westlake Landfill is under the August 15, 2003 version of OAC 3745-27-10, thus requiring semi-annual ground water samples to be analyzed for parameters

numbered 1-66 in Appendix I. However, the list of parameters that were reported for the May 2008 sampling event appears to reflect the 1990 rules parameter list. Section 4.3.8 of Revision 2 to the Groundwater Detection Monitoring Program Plan (dated February 2009) refers to "the currently approved alternative ground water monitoring program parameters analyzed on a semi-annual basis." Ohio EPA has no record of the director of Ohio EPA approving an alternative parameter list per OAC 3745-27-10(D)(2) thru –10(D)(4) for Westlake Landfill.

In order to return to compliance with the rules, the O/O must revise the Groundwater Detection Monitoring Program Plan to include semi-annual sampling, laboratory analysis and statistical analysis of Appendix I parameters 1-66 in accordance with OAC Rule 3745-27-10(D)(5)(a)(ii)(b), and must actually conduct sampling, laboratory analysis and statistical analysis of all uppermost aquifer system wells for parameters 1-66 semiannually hereafter.

2. **OAC Rules 3745-27-10(A), 3745-27-10(C)(7)(h), 3745-27-10(D)(5)(a)(iii) and 3745-27-10(D)(7): which require that the ground water monitoring program be capable of determining the impact of the facility on the quality of ground water, including that the O/O determine whether statistically significant increases have occurred in the monitoring wells. According to the statistical procedures specified in paragraphs (C)(6) and (C)(7) of this rule, each constituent is required to be statistically analyzed.**

The O/O has failed to statistically analyze the May 2008 (and previous events) sample results to determine whether any of the results constitute statistically significant increases as required by these rules. The O/O continues to utilize two statistical methods that are in violation of rule: 1) the use of trend analysis for ammonia and chloroethane; and, 2) intrawell prediction limits as the statistical method for other parameters without demonstrating in accordance with OAC 3745-27-10(C)(7)(h) that the downgradient wells have not been affected by the landfill.

Trend analysis is not listed among the acceptable statistical methods in OAC 3745-27-10(C)(6), nor has the O/O received the director's approval to use an alternative method per OAC 3745-27-10(C)(6)(e). Therefore, the O/O's use of trend analysis to meet the requirements of OAC 3745-27-10(D)(5)(a)(iii) for ammonia and chloroethane, or any other Appendix I parameter is inappropriate and in violation of the rules.

The use of intrawell prediction limits, trend analysis, or any other such intrawell statistical method to meet the requirements of OAC 3745-27-10(D)(5)(a)(iii) is inappropriate and in violation of rules at this time since the O/O has not yet demonstrated in accordance with OAC 3745-27-10(C)(7)(h) that the downgradient wells have not been affected by the landfill. The February 23, 2009, response letter from the O/O as well as previous submittals include

statements that spatial variation exists among the two upgradient wells WW/MW-4 and WW/MW -7. A demonstration of spatial variation among the upgradient wells does not amount to a demonstration in accordance with OAC 3745-27-10(C)(7)(h) that the downgradient wells have not been affected by the landfill.

However, after review of the Sanitas letter and associated box plots dated April 4, 2008, it is apparent that statistical outliers at WW/MW-7 for chloride (2800 mg/L in 4/00, 818 mg/L in 10/07) and ammonia (24.7 mg/L in 11/06)[1] were not removed from the data set in the Sanitas box plots. When these statistical outliers are removed, the results for these and other frequent landfill release indicator parameters like potassium actually show little spatial variation among the upgradient wells, especially in comparison to WW/MW-5. As depicted in Graph 1 included in Attachment 1, spatial variation for ammonia among upgradient wells WW/MW-4 and WW/MW-7 is imperceptible compared to the variation between those two upgradient wells versus WW/MW-5. Even when other downgradient ammonia results (WW/MW-1, WW/MW-2) are added as in Graph 2, the variance for ammonia among wells WW/MW-1, WW/MW-2, WW/MW-4 and WW/MW-7 is imperceptible compared to the variance between those four wells versus WW/MW-5. A comparison of results for chloride and potassium yields a similar pattern (Graphs 3 and 4). These results indicate that something is impacting ground water at WW/MW-5.

Finally, the February 23, 2009 response letter from the O/O states that "a trend analysis of the chloroethane results indicates that detected concentrations are declining over time." Whether or not a trend exists is irrelevant for the purposes of satisfying OAC 3745-27-10(D)(5)(a)(iii). Ohio EPA records show that chloroethane has been detected above the practical quantitation limit (PQL) in downgradient well WW/MW-5 at least five times since 1995, but has not been detected in any upgradient wells to date. Therefore, <u>any</u> quantified detection (i.e. ≥current PQL) of chloroethane in a downgradient well such as WW/MW-5 would be a statistically significant change from background. An example of an appropriate statistical method for chloroethane in conformance with OAC 3745-27-10(C) would be a non-parametric, interwell prediction limit set at less than the current PQL. Using this approach, there would have been at least three statistical triggers for chloroethane at WW/MW-5 since 2003 (March 2004, October 2005 and May 2008).

To return to compliance with these rules, the O/O must do the following regarding statistical analysis for parameters 1-66 of Appendix I:

[1] Ohio EPA records actually show the 24.7 mg/L to be from WW/MW-5 rather than WW/MW-7. However, if this result is from WW/MW-7 it is a statistical outlier and should be removed unless justified.

a) Select an interwell statistical approach, or prior to utilizing an intrawell approach demonstrate in accordance with OAC 3745-27-10(C)(7)(h) that the downgradient wells at the facility have not been affected by the landfill.

b) Choose either ANOVA, a tolerance or prediction interval, or control charts in accordance with OAC 3745-27-10(C)(6) and -10(C)(7), or obtain permission from the director to utilize an alternative statistical method (i.e. trend analysis) in accordance with OAC 3745-27-10(C)(6)(e).

c) Revise the statistical analysis plan to reflect changes made in accordance with a) and b) above and implement these changes.

d) The O/O should notify the director of any statistically significant change that occurs in downgradient wells as required by OAC Rule 3745-27-10(D)(7)(a).

Based on a review of the information provided in the February 23, 2009 response letter and other documents, Ohio EPA requires additional information to determine compliance with the following rules:

1) **OAC Rules 3745-27-10(A) and 3745-27-10(D)(5)(a)(ii)(b): which require that the ground water monitoring program be capable of determining the impact of the facility on the quality of ground water and that the O/O collect semiannual ground water samples from all monitoring wells.**

The O/O indicated in the February 23, 2009 response letter that WW/MW-3R and WW/MW-6R did not produce sufficient water for sampling subsequent to purging the wells. The O/O proposed allowing 48 hours between purging and sampling. It is not clear from the information submitted regarding previous sampling events, exactly how long the O/O has waited after purging to attempt sampling. For Ohio EPA to determine compliance, the owner or operator needs to submit data that demonstrates how long the O/O waited after purging to attempt sampling.

Ohio EPA considers a 48 hour lag time between purging and sampling too long a period to produce representative ground water samples. Ground water exposed to ambient air above the water column for that long of a time period may significantly alter the geochemistry of the water in the well and thus produce an unrepresentative sample.

Ohio EPA recommends that the O/O evaluate low-flow purging and sampling for monitoring wells at the facility. Low-flow purging and sampling when performed correctly, typically requires far less purging volume compared to other methods. In low-flow purging, the stagnant column of water overlying the screened section is isolated by pumping the well at a rate that is less than or equal to the yield of the formation, thereby eliminating or stabilizing drawdown in the well. Using low-flow in

this manner thereby only removes water from the screened section and eliminates the need to purge the stagnant water column above the screened section, as is done when bailing is used. Low-flow purging and sampling also typically reduces turbidity in the ground water sample, thereby reducing the occurrence of false positives for metals and other parameters caused by the suspended load within the ground water sample and/or dissolving of the suspended load by acid preservatives within the sample bottle. Technical guidance for how to conduct low-flow purging and sampling can be found in the 2006 Ohio EPA Technical Guidance For Ground Water Investigations (TGM), pages 10-30 through 10-32, which can be found at: http://www.epa.state.oh.us/ddagw/Documents/TGM-10.pdf.

Two methods that are commonly used for wells that have insufficient yield for low-flow purging and sampling (i.e. <100 mL/min) are: 1) the "no purge" method; and, 2) the "purging to dryness" method (i.e. purge the well dry and allow no more than 24 hours for the well to recover for sampling. Technical guidance for how to conduct both of these sampling methods can be found on pages 10-32 through 10-34 of the TGM.

The "purging to dryness" and "no purge" methods are generally considered to produce less-representative samples compared to the low-flow method. However, if the well does not have a sufficient yield for low-flow, then either of these methods may be a reasonable alternative.

Based on a review of the information provided in the February 23, 2009 response letter and other documents, Ohio EPA has the following two comments related to the "point of compliance" and field-filtration of ground water samples.

Comment I. Point of compliance. In the February 23, 2009 response letter, the O/O stated "It is ECL's and the City's position that the point of compliance is the downgradient property line." The O/O and ECL should note that the concept of "point of compliance" does not occur in OAC 3745-27-10. Ohio EPA, Division of Solid and Infectious Waste Management has not been granted authority by the State to issue permits to an O/O to discharge contaminants to ground water, whether on or off-property. Therefore, there is no "point of compliance" downgradient of the limits of waste placement as described in RCRA Subtitle D. Under OAC 3745-27-10 any release of contaminants to ground water, whether on or off-property, must be addressed through assessment and possibly corrective actions.

Comment 2. Field-filtration of ground water samples, the O/O indicated in the February 23, 2009 response letter, that the following protocol would be implemented:

a) That field-filtered samples would be collected *in addition to* unfiltered samples for each sampled well.

b) That the unfiltered samples would be analyzed for total metals and not dissolved metals.

c) That the analytical results for the field-filtered samples would be used as supplementary information regarding the results from the non-filtered samples for total metals, not as a direct substitute for the non-filtered samples.

If this is the O/O's intent and these procedures are described in the sampling and analysis plan, Ohio EPA has determined that the O/O would be in compliance with the rules.

Please submit the revisions to the Groundwater Detection Monitoring Program Plan and the statistical analysis plan to this office within sixty days of receipt of this letter. If you have any questions regarding this review, please contact Steve Churchill at (614) 728-1225. Otherwise, submit all correspondence to Clarissa Gereby, Division of Solid and Infectious Waste Management, Northeast District Office, Ohio EPA, 2110 East Aurora Road, Twinsburg, Ohio 44087.

Nothing in this letter shall be construed to authorize any waiver from the requirements of any applicable state or federal laws or regulations. This letter shall not be interpreted to release the Entity from responsibility under Chapters 3704, 3714, 3734, or 6111 of the Ohio Revised Code or under the Federal Clean Water or Comprehensive Environmental Response, Compensation, and Liability Acts for remedying conditions resulting from any release of contaminants to the environment.

Sincerely,

Clarissa Gereby,
Environmental Specialist
Division of Solid and Infectious Waste Management

CG:cl

cc: Mike Sekerak, Cuyahoga County Health Department
Fraser Hamilton, Earth Consulting, LTD
Stephen Churchill, DDGAW, CO
File: [Kurko/LAND/Westlake City LF/GRO/18] DSIWM ID#: 1582 and 1905

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Mr. Don Glauner, Service Director
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27216 Hilliard Boulevard
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