



State of Ohio Environmental Protection Agency

Northeast District Office

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

December 1, 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 December 4, 2008, Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), received a submittal dated December 2008, entitled "Post Closure Ground Water Monitoring Report, November 2008 Sampling Episode." The report was 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 November 2008 sampling episode report was 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 of the subject document:

- 1. 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 owner/operator 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 owner/operator has failed to statistically analyze the November 2008 (and previous events) sample results to determine whether any of the results constitute statistically significant increases as required by these rules. The owner/operator continues to utilize intrawell statistical methods in violation of rule.

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. Therefore, there is no confidence that an intrawell method can detect a release from the landfill.

The November 2008 report includes a statement 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, chloroethane was detected at or above the practical quantitation limit (PQL) at WW/MW-5 during the November 2008 sampling event. The report

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.

states that “..there are no consistent detections of volatile organic compounds in any of the historical data. Therefore, no prediction limits for VOCs have been established at this time.” Whether or not chloroethane or any other VOC has been detected is irrelevant in regards to whether or not statistics should be used for a parameter. OAC 3745-27-10(D)(5)(a)(iii) requires semiannual statistical analysis to be performed on downgradient results for parameters 1-66 in Appendix I, which includes chloroethane. 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, any quantified detection (i.e. current PQL) of chloroethane in a downgradient well would be a statistically significant change from background. According to Ohio EPA records, there would have been at least four statistical triggers for chloroethane at WW/MW-5 since 2003 (March 2004, October 2005, May 2008 and November 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:

- 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 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).

2. OAC Rules 3745-27-10(A) and 3745-27-10(C)(1): 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 owner/operator collect representative ground water samples for analysis.

The owner/operator has collected field filtered ground water samples which have also been analyzed for dissolved rather than total metals during the past several years. The USEPA and Ohio EPA have determined that field or laboratory filtering may remove colloidal particles that are an essential portion of the total metals in ground water that may affect human health and the environment.

To return to compliance with these rules, the owner/operator must begin collecting unfiltered ground water samples and analyzing unfiltered ground water samples for total metals from all ground water monitoring wells. The GWDMP Sampling and Analysis Plan (SAP) must also be revised to include the collection of unfiltered samples for metals and include laboratory analysis of total metals.

The O/O may choose to collect additional samples from wells and to field filter and/or laboratory filter these additional samples to obtain a dissolved metals analysis, but such dissolved metals analysis may only be used to supplement the total metals analysis for each well, not as a replacement. The total metals result for each well is the result that is subject to statistical analysis, unless otherwise approved by Ohio EPA.

3. OAC Rule 3745-27-10(C)(10)(b): which requires that the ground water monitoring data report include laboratory quality assurance/quality control (QA/QC) data.

While the November 2008 report did include various surrogate recovery data, it did not include data or information regarding method blanks (MB), matrix spike/matrix spike duplicate (MS/MSD), laboratory control samples (LCS) or batch numbers.

To return to compliance, the O/O must submit all such QA/QC data to the Ohio EPA for the November 2008 sampling event, and for all future sampling events.

4. OAC Rule 3745-27-10(C)(10)(g): which requires that the ground water monitoring data report include the method detection limits for the constituents analyzed.

The November 2008 report did not include method detection limits (MDLs) for any parameters analyzed.

To return to compliance, the O/O must submit the MDL data to the Ohio EPA for the November 2008 sampling event for each parameter that is analyzed, and for each sample if the MDL varies by batch, matrix or sample. Additionally, all future sampling events must include this MDL data.

Based on a review of the information provided in the December 4, 2008 document, Ohio EPA cannot determine compliance with the following rules and is requesting additional information to determine compliance:

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 owner/operator collect semiannual ground water samples from all monitoring wells.

The November 2008 report indicated that WW/MW-2, WW/MW-3R and WW/MW-6R did not produce sufficient water for sampling subsequent to purging the wells. It is not clear from the information submitted exactly how long the O/O waited after purging to attempt sampling, but the time period should not exceed 24 hours. 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 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.

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However, if the well does not have a sufficient yield for low-flow, then either of these methods may be a reasonable alternative.

2. OAC Rule 3745-27-10(C)(10)(c): which requires preservation methods be included on the chain of custody form.

The November 2008 report includes a copy of the chain of custody forms, which indicate several options for preservatives, but the preservatives used for most samples are not indicated by a circle around the applicable preservative or other means. For Ohio EPA to determine compliance, the owner or operator needs to submit information on which, if any preservatives were used for the ground water samples from the November 2008 samples, and for all future submittals.

Based on a review of the information provided in the December 4, 2008 document, Ohio EPA recommends the following:

1. Ohio EPA recommends consistent labeling of monitoring wells be used throughout reports.

The report text, tables, figures and appendices are inconsistent and do not follow the labeling format for monitoring wells found in the Facility's 2004 GWDMP. For example, the Facility's 2004 GWDMP refers to the monitoring wells in terms of "MW1, MW2, MW3." However, three different designations for monitoring wells the different sections of the report (e.g. GW-1, GW-2, etc. in Appendix D, versus MW1, MW2, etc. in the report text and in Table 1 and Figure 1, versus WW-1, WW-2 in the laboratory data sheets in Appendix C). These inconsistencies can lead to confusion and could possibly lead to misinterpretation and mischaracterization, especially given that gas monitoring wells at the facility at times use the same labeling (e.g. GW-1 for "gas well #1).

Ohio EPA recommends that all parts of the data submittal (text, tables, figures, lab reports, chain of custody, statistical analysis reports, etc.) be revised to follow the labeling format found in the Facility's 2004 GWDMP (MW1, MW2, etc.). Ohio EPA also requests that the November 2008 report be revised as such and resubmitted for Ohio EPA review, and that all future reports follow this labeling format.

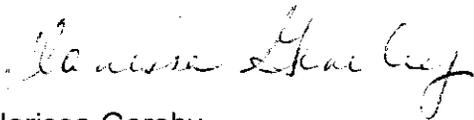
Please submit the revised the Groundwater Detection Monitoring Program Plan Sampling and Analysis Plan (SAP), the revised statistical analysis plan, the QA/QC data for the November 2008 sampling event, and the MDL data for the November 2008 sampling event to this office within sixty days of receipt of this letter. If you have any

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questions regarding this review, please contact Steve Churchill at (614) 728-1225. Please submit all correspondence to my attention at the Ohio EPA Northeast District Office, 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, DDAGW, CO
File: [Kurko/LAND/Westlake City LF/GRO/18]

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 City of Westlake
 27216 Hilliard Boulevard
 Westlake, Ohio 44145

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