



John R. Kasich, Governor  
Mary Taylor, Lt. Governor  
Scott J. Nally, Director

February 4, 2013

Mr. Paul Quinn  
Service Director  
City of Westlake  
27216 Hilliard Boulevard  
Westlake, Ohio 44145

**RE: WESTLAKE CITY LANDFILL  
CUYAHOGA COUNTY  
POST CLOSURE GROUND WATER MONITORING  
NOTICE OF VIOLATION  
ADDITIONAL INFORMATION NEEDED TO DETERMINE COMPLIANCE**

Dear Mr. Quinn:

The Ohio Environmental Protection Agency (Ohio EPA), Northeast District Office (NEDO), has reviewed the following report for Westlake Landfill:

- Post Closure Ground Water Monitoring Report, June 2010 Sampling Episode, dated August 2, 2010, received August 3, 2010.

The document is dated August 2, 2010. It was received August 3, 2010. 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 June 2010 report was reviewed for compliance with OAC Rule 3745-27-10(D) and the facility's revised 2004 ground water detection monitoring plan (GWDMP).

Ohio EPA has reviewed the referenced document and has noted the following violations:

## Violations

- 1) OAC Rule 3745-27-10(C)(7)(g): Performance standards for statistical methods. Any statistical method chosen in accordance with paragraph (C)(6) of this rule shall comply with the following performance standards as appropriate: Background data can be added only in blocks of data resulting from the analysis of four or more statistically independent samples after the data have been statistically compared to the current background data and no statistical differences are detected, unless another method is deemed acceptable to the director.

Page 11 of Appendix F (Statistical Analyses Methodology) in Revision 4.1 of the Groundwater Detection Monitoring Program Plan (GWDMP) states in the paragraph entitled "Updating The Background Data" that "Westlake Landfill will update the background data by consolidating more recent sampling observations with historical background data during each sampling event." Since Westlake Landfill only has two background wells (WW-4, WW-7), such updates would typically only include two results for each parameter rather than four as required by OAC Rule 3745-27-10(C)(7)(g). Furthermore, it appears from the June 2010 report that the data from the last sampling event (October 2009) were updated alone (i.e. in blocks of two per parameter).

To return to compliance with this rule, the owner or operator should revise the statistical analysis plan (page 11 of Appendix F in the July 2010 revision of the GWDMP) to require that background be updated only with four or more statistically independent samples per the requirement of OAC Rule 3745-27-10(C)(7)(g), and follow this revised plan for all future detection ground water monitoring events.

- 2) OAC Rules 3745-27-10(E)(5)(a)(i) and -(ii): Within one hundred thirty-five days of notifying Ohio EPA of a statistically significant change in accordance with paragraph (D)(7) of this rule, the owner: Sample the affected well(s) and analyze the samples for all waste-derived constituents, including all constituents listed in appendix I and appendix II of this rule. Any background wells within the flow path or closest to the affected well and screened within the same geologic unit as the affected well shall be sampled and analyzed for appendix I and II parameters.

And

Within seventy-five days of commencing the sampling required in paragraph (E)(5)(a)(i) of this rule, sample all monitoring wells screened within the same geologic units at the facility as the affected well, not sampled under paragraph (E)(5)(a)(i) of this rule. These samples shall be analyzed for those waste-derived constituents found to be above background levels in the affected monitoring wells sampled under paragraph (E)(5)(a)(i) of this rule.

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The owner or operator has failed to disprove the statistically significant increases at WW-5 during the October 2009 event through resampling and/or alternate source demonstrations, and Ohio EPA has not yet received data to indicate that the affected well (WW-5) or nearby background well within the same saturated zone (WW-7) were sampled for Appendix II parameters within 135 days after notifying Ohio EPA of a statistically significant increase over background (May 27, 2010).

To return to compliance the owner should immediately sample all ground water monitoring wells at the facility for all constituents in Appendix II of OAC 3745-27-10, and comply with the requirements of paragraph (E) of OAC 3745-27-10, including continuing to sample all relevant assessment wells in accordance with OAC 3745-27-10(E)(5) during assessment.

It is Ohio EPA's understanding that all monitoring wells at the facility were recently sampled in November 2010 for Appendix I parameters to satisfy the semi-annual detection monitoring requirements in OAC 3745-27-10. Ohio EPA also received electronic notification from the owner or operator's qualified ground water scientist (QGWS) on December 8, 2010 that monitoring wells WW-5 and WW-7 were sampled for Appendix II constituents, and that they are waiting on laboratory results. When and if Ohio EPA receives documentation of Appendix II sampling at all monitoring wells at the facility, a letter rescinding these violations can be issued.

#### **More Information Needed to Determine Compliance**

- 1) OAC Rule 3745-27-10(D)(7)(b): requires that the owner or operator submit written notification to Ohio EPA of a statistically significant increase over background not later than seventy-five days after withdrawing a sample from the well, that upon analysis demonstrates a statistically significant change.

No clear notification of statistically significant increases of barium, potassium and chloroethane that occurred in monitoring well WW-5 during the June 2010 sampling event could be found in the June 2010 report. Although Section 4.0 of the June 2010 report did highlight the statistically significant increases of ammonia and chloride at WW-5 and chloride at WW-1 and WW-2 during the June 2010 sampling event, the statistically significant increases of barium and potassium in monitoring well WW-5 were not mentioned in Section 4.0 of the June 2010 report, but could only be determined through careful examination of the statistical report in Appendix D.

Additionally, as stated in previous letters from Ohio EPA, statistical comparisons must be made for chloroethane in downgradient wells and any quantifiable detection of chloroethane at a downgradient well is a statistically significant change from background for the following reasons:

- a) OAC 3745-27-10(D)(5)(a)(iii) specifically requires semiannual statistical analysis on parameters 1-66 in Appendix I (which includes chloroethane).
- b) Chloroethane has been non-detect in upgradient, background wells. Therefore, any quantifiable detection (i.e. at or above the practical quantitation limit (PQL)) would be statistically elevated above background. This can be approached statistically by setting a non-parametric prediction limit at less than the PQL.

While the owner or operator did point out that chloroethane was detected at WW-5 during the June 2010 event, they did not explicitly state that there was a statistically significant change from background.

To demonstrate compliance with this rule, the owner or operator should submit unambiguous, written notification of the statistically significant increase above background for barium, potassium and chloroethane that occurred in monitoring well WW-5 during the June 2010 sampling event. Additionally, the owner or operator should likewise provide an unambiguous notification of any future statistically significant changes in accordance with OAC 3745-27-10(D)(7)(b). One example of an unambiguous notification that is in accordance with OAC 3745-27-10(D)(7)(b) is a separate letter or letter of transmission accompanying a data submittal that states all of the constituent/well pairs where and when a statistically significant change from background occurred.

## Recommendations

- 1) Determine the purging equipment volume for each monitoring well and revise the GWDMP accordingly.

According to the GWDMP and the June 2010 report, the owner or operator is now utilizing low-flow purging and sampling method (low-flow) in all ground water monitoring wells at the facility. Two fundamental requirements for low-flow are as follows:

- a) The volume of water in the purging equipment (all water hosing/tubing, the pump, flow-through cell chamber, etc.) is being replaced between each round of stabilization parameter measurements, such that each round of stabilization parameter measurements is on a different body of water, and not simply re-measuring the same water. Therefore, it is essential to know the volume of the purging equipment each sampling event, and to assure that at least one purging equipment volume is purged between measurements. The average purging equipment volume is approximately one liter, far less than the half gallon removed between measurements during the June 2010 event. Therefore, there is not a compliance issue regarding purge volumes for the June 2010 event, but

the owner or operator may be removing more water than is necessary. Additionally, should the owner or operator reduce purge volumes or increase purging equipment volume significantly in the future, knowing the exact volume of purging equipment might become a compliance issue.

- b) The water level during pumping is stabilized, such that the pumping rate is low enough that little to no drawdown is occurring during measurement of stabilization parameters. Accordingly, any drawdown that occurs prior to or during purging and sampling should be recorded on a field data sheet, and a descriptive statement indicating the level (if any) that the water level stabilized.

Therefore, Ohio EPA recommends that the owner or operator do the following:

- i) Revise the GWDMP text and the blank field data sheets to describe the purging equipment volume for each ground water monitoring well at the facility, or any deviations from an earlier-calculated volume. This could be done by describing the inner diameter and typical length of any hosing/tubing, volume of pump, flow-through cell, etc. in the GWDMP, and then simply recording on the field data sheet any deviations from this standard.
  - ii) Revise the GWDMP text and blank field data sheets to include a field for describing any drawdown that occurs and if and at what level the water level stabilized prior to taking measurements and sampling, including a statement in the GWDMP that measurement and sampling will not occur prior to water level stabilization.
- 2) Determine the stabilization parameters and criteria for each monitoring well and revise the GWDMP accordingly.

Section 4.3.2 (Sampling and Analysis Plan) in the July 2010 revision to the GWDMP states that ground water samples will be collected “in general accordance with the Ohio EPA’s Technical Guidance For Ground Water Investigations” (TGM), including the use of stabilization parameter and criteria found in Table 10.5 of the TGM. Stabilization of such parameters is essential for determining if the well screen portion of the well has been purged of any overlying stagnant water and is now receiving representative water from the monitored aquifer/saturated unit. Therefore, it is essential to enumerate specific stabilization criteria in the sampling and analysis plan to assure that ground water samples are representative of ground water at the facility in accordance with OAC 3745-27-10(C)(1).

Now that the owner or operator has conducted two sampling events using low-flow, the owner or operator should have sufficient data to determine the appropriate stabilization parameters and more specific stabilization criteria. Ohio EPA

recommends that the owner or operator adopt stabilization parameters and criteria the same as or similar to the following:

- a) Monitor for the stabilization parameters: dissolved oxygen, oxidation-reduction potential, pH, specific conductance and temperature using a flow-through cell (as in the June and October 2010 events).
- b) Consider the well to be sufficiently purged and able to yield a representative sample when stabilization is achieved for four of the five parameters across three consecutive measurements in accordance with the following criteria (ASTM Standard D6771-02):

<u>Parameter</u>	<u>Stabilization criteria</u>
<u>Temperature</u>	<u>+/- 0.5° Celsius</u>
<u>pH</u>	<u>+/- 0.2 standard units</u>
<u>Specific conductance</u>	<u>+/- 3%</u>
<u>Oxidation-reduction potential</u>	<u>+/- 20 millivolts</u>
<u>Dissolved oxygen</u>	<u>+/- 10% of reading value or +/- 0.2 mg/L, whichever is greater</u>

- c) Consider the well to be sufficiently purged and able to yield a representative sample if six well volumes have been purged, even if stabilization in accordance with b) above is not yet achieved.

The above recommended parameters and criteria are defensible, being based on several literature sources and are slightly less stringent than those found in the TGM for low-flow.

### Statements

- 1) Status regarding statistically significant changes from background.

Results in the June 2010 report for the Westlake Landfill facility indicated statistically significant increases above background in downgradient ground water monitoring wells for the following well/parameter pairs:

- WW-1: chloride
- WW-2: chloride
- WW-5: ammonia-N, barium, chloride, potassium and chloroethane

Regarding the statistically significant changes above background for chloride at WW-1 and WW-2 during the June 2010 event:

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On December 1, 2010, Ohio EPA received a letter from the owner or operator entitled "Report of Resampling Wells WW1 and WW2." The letter and attached laboratory report documented the 1-of-2 resampling on October 21, 2010 at WW1 and WW2 for chloride. The results for chloride (180 mg/L at WW-1; 230 mg/L at WW-2) were below the interwell prediction limit for chloride of 426 mg/L.

Therefore, the owner or operator has successfully demonstrated in accordance with OAC 3745-27-10(D)(7)(c)(i) that the statistically significant changes above background for chloride at WW-1 and WW-2 during the June 2010 event were false positives, and thus monitoring wells WW-1 and WW-2 may be returned to the detection monitoring program.

2) Status regarding ground water quality assessment.

Ohio EPA received a ground water quality assessment plan (GWQAP) electronically and an email correspondence from the QGWS on behalf of the owner or operator on December 1, 2010 indicating that the owner or operator intends to conduct a ground water quality assessment to address the statistically significant changes above background at WW-5. The QGWS also notified Ohio EPA of the installation of assessment wells WW-9 and WW-10 in several email correspondences between December 6-8, 2010 and submitted a revised version of the GWQAP that declared that the GWQAP was prepared due to continued exceedances of chloroethane, ammonia, barium, chloride and potassium at WW-5.

If the owner or operator later chooses to try to demonstrate that any of the five statistically significant changes above background at WW-5 for the June 2010 event were false positives due to a source other than the landfill (i.e. error in the sampling, analysis, statistical evaluation or natural variation in ground water quality) in accordance with OAC 3745-27-10(D)(7)(c)(ii), the owner or operator has two hundred ten days from initial sampling to make an alternate source demonstration to the Director of Ohio EPA and to receive approval from the Director of Ohio EPA or his authorized representative to continue detection monitoring in accordance with OAC 3745-27-10(D)(7)(c)(ii). If the owner or operator does not obtain written approval from the director to continue detection monitoring by January 5, 2010, the owner or operator must continue the ground water quality assessment by complying with paragraph (E) of OAC 3745-27-10.

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 City of Westlake 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.

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Please submit a response within 60 days of receipt of this letter, indicating how the facility has returned to compliance with OAC Rule 3745-27-10(C)(7)(g) and OAC Rules 3745-27-10(E)(5)(a)(i) and -(ii). The response should also include the information needed to determine compliance with OAC Rule 3745-27-10(D)(7)(b).

If you have any technical questions regarding this review, please contact Steve Churchill of the Division of Drinking and Ground Waters at (614) 728-1225. Please submit all correspondence to Jennifer Carlin, Division of Materials and Waste Management, NEDO, Ohio EPA, 2110 East Aurora Road, Twinsburg, Ohio 44087.

If you have any questions regarding this letter, please feel free to contact me at (330) 963-1133, or e-mail me at "[jennifer.carlin@epa.state.oh.us](mailto:jennifer.carlin@epa.state.oh.us)."

Sincerely,



Jennifer Carlin  
Environmental Specialist  
Division of Materials and Waste Management

JC/cl

cc: Mike Sekerak, Cuyahoga County Health Department  
Fraser Hamilton, Earth Consulting, LTD  
Stephen Churchill, DDAGW, CO  
File: [Sowers/LAND/Westlake City LF/GRO/18]  
DMWM # 3399