



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

November 21, 2012

RE: **BROOKLYN LANDFILL
GROUND WATER MONITORING
NOTICE OF VIOLATION**

CERTIFIED MAIL 7011 0470 0002 3496 1139

The Honorable Richard H. Balbier
Mayor, City of Brooklyn
7619 Memphis Avenue
Brooklyn, OH 44144

Dear Mayor Balbier:

The Ohio Environmental Protection Agency (Ohio EPA) Division of Materials and Waste Management (DMWM) reviewed the Ground Water Monitoring Report of the April 2010 Semiannual Ground Water Sampling Event. The report is dated June 30, 2012, and received by Ohio EPA on July 1, 2010. The report was submitted by Civil & Environmental Consultants, Inc. on behalf of the City of Brooklyn (Brooklyn). The report was reviewed for compliance with OAC 3745-27-10(C)(10) of the revised 2003 solid waste regulations, and the facility's site-specific ground water detection monitoring plan (GWDMP).

Upon review of the document, Ohio EPA determined that Brooklyn is in violation of the following:

1. **OAC Rule 3745-27-10(C)(7)(g)** states "*[b]ackground 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.*"

Brooklyn is in violation of this rule for failure to submit background data that has been statistically compared to the current background data or other method accepted by the director. Brooklyn provided time series graphs, which are not an approved statistical comparison method and would need approval by the Director of Ohio EPA or his authorized representative. However, outlier testing was performed on the data included, and no outliers were determined to be present within the dataset included within the OAC Rule 3745-27-10(C)(7)(g) update. The existing background dataset is composed of data from monitoring well W-2 and select data from piezometer W-14.

To return to compliance with this rule, Brooklyn should either submit the results of a valid statistical comparison between the data to be updated and the existing background database that shows no statistically significant differences; or submit a formal request that the Director approve the use of time series graphs for the purpose of updating background.

2. **OAC Rule 3745-27-10(C)(1)** states “[t]he ground water monitoring program shall include consistent sampling and analysis procedures and statistical methods that are protective of human health and the environment and that are designed to ensure monitoring results that provide an accurate representation of ground water quality at the background and downgradient wells installed in accordance with paragraph (B), (D), (E), or (F) of this rule...”

Brooklyn is in violation of this rule for failure to develop a ground water monitoring program that is protective of human health and the environment. However, the existing background dataset (used to establish statistical limits) includes multiple values (see Table 3 of the report) that are out of bounds, even exceeding MCLs in some cases. Generally, it is not protective of human health and the environment if the background dataset is populated with unrepresentative data and corresponding statistical limits exceed MCLs. This is because ground water would be severely degraded before any statistically significant differences would be identified. This is contrary to the entire purpose of ground water monitoring at sanitary landfills; that purpose being, to identify any releases as early as possible so they can be addressed in a timely fashion before they are an imminent threat to human health and the environment. The following table lists several metals whose statistical limit exceeds the MCL or Action Level:

Parameter	MCL/Action Level	Brooklyn Statistical Limit
antimony	0.006 mg/l (6 ug/l)	0.0170 mg/l (17 ug/l)
arsenic	0.010 mg/l (10 ug/l)	0.32 mg/l (320 ug/l)
cadmium	0.005 mg/l (5 ug/l)	1.0032 mg/l (1003.2 ug/l)
lead	0.015 mg/l (15 ug/l)	0.1088 mg/l (108.8 ug/l)
thallium	0.002 mg/l (2 ug/l)	0.010 mg/l (10 ug/l)

Ohio EPA’s review of Appendix C revealed that much of the early ground water data collected from W-2 and most of the data from W-14 may not have been representative of true ground water quality upgradient of the landfill. With some exceptions, starting in about 2004 and later, ground water sample results from W-2 appear to be more consistent and representative than data collected prior to 2004. This appears to be the case for antimony, arsenic, cadmium, chromium, cobalt, copper, lead, nickel, vanadium, and zinc. Nearly all the data from the background well, W-14, appears to be unrepresentative with few if any exceptions. Since the site is sampled using bailers, it is likely this earlier data is affected by high levels of turbidity which can easily distort the true concentration of metals, results in ground water samples.

To return to compliance with this rule, the owner/operator should re-evaluate the background datasets from wells W-2 and W-14. All sample results affected by elevated turbidity should be flagged. The owner/operator will then need to calculate new statistical limits based only on the data that is not flagged as turbidity impacted. This evaluation should be completed before the next semiannual report is submitted so that the statistical comparison results are conducted using the newly calculated limits.

In addition, more information needed to determine compliance with the following:

OAC Rule 3745-27-10 (B)(1)(a) requires that the ground water monitoring system for detection monitoring shall represent the quality of the background ground water that has not been affected by past or present operations at the sanitary landfill facility. However, acetone was detected in the upgradient background well W-2 at 14.0 µg/L, which is above the PQL of 10.0 µg/L. If the upgradient background well is actually impacted by acetone, we will need a new background well, as this well would no longer meet OAC Rule 3745-27-10 (B)(1)(a). Ohio EPA's review of the trip blank results from this sampling event revealed that acetone was not detected in the trip blank. This elevates the concern that the detection of acetone in the sample from W-2 was a real impact. In response, the owner/operator should have resampled or provided some kind of demonstration that the acetone was a result of laboratory contamination, etc.

To demonstrate compliance with this rule, the owner/operator should submit a demonstration or explanation for the presence of acetone in the ground water sample from W-2 and whether or not this well is still suitable for representing background ground water quality.

Ohio EPA also recommends that Brooklyn switch to low-flow purging, also referred to as low-stress purging, low-impact purging, minimal drawdown purging, or Micropurging® to increase the chance of obtaining a representative ground water sample. Ohio EPA also has the following recommendations as they pertain to review of future reports that would improve the clarity of subsequent Ground Water Detection Monitoring Reports:

- A. Coordinate Section 2.2 and the field data sheets in Appendix A. For example, the site summary of ground water sample collection procedures referred to a disposable bailer, and the field data sheets referred to a dedicated bailer at each monitoring well.
- B. Field data sheets report analysis on OAC 3745-27-10 Appendix I parameters 1-78, and the April 2010 semiannual ground water detection monitoring was actually for parameters 1-66.
- C. Field reports are illegible in parts; in particular, turbidity levels reported for upgradient well W-2.
- D. Prior to sampling, turbidity levels in W-2 and W-9 have elevated values. The turbidity levels for the background well W-2 was 72.1 NTU and well W-9 was 98.1 NTU at the time of sampling.
- E. It would be beneficial for these wells to be given sufficient time to settle after purging to lower turbidity levels prior to sampling.

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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.

Please contact Katherine Springer Amey at (330) 963-1289 if you have any technical questions regarding this review. Otherwise, please submit all correspondence to Colum McKenna, Division of Materials and Waste Management, Northeast District Office, Ohio EPA, 2110 East Aurora Road, Twinsburg, Ohio 44087.

Sincerely,



Colum McKenna
Environmental Specialist
Division of Materials and Waste Management

CM/cl

cc: Katherine Springer Amey, DDAGW, NEDO
Laura Travers, Cuyahoga County Board of Health
John Verba, Brooklyn Service Department
Chris Jones, Calfee
File [Sowers/LAND/Brooklyn LF/GRO/18]
DMWM #s 3373 and 3374