Environmental
Protection Agency
John R. Kasich, **Governor**
Mary Taylor, **Lt. Governor**
Scott J. Nally, **Director**

February 8, 2012

RE: MT. EATON LANDFILL
GROUND WATER
WAYNE COUNTY
NOTICE OF VIOLATION / NOTICE OF DEFICIENCY

Mr. Joe Balog
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Independence, Ohio 44131

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Mr. Freeman Mullet
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Twilight Mining
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Dear Gentlemen:

The Ohio Environmental Protection Agency (Ohio EPA) has completed a review of the *Ground Water Quality Assessment Report (GWQAR)* for the Mt. Eaton Landfill, Wayne County, Ohio. The report is dated November 30, 2011, and was received by Ohio EPA on December 1, 2011. This report was prepared by Eagon & Associates, Inc., on behalf of Mt. Eaton Landfill. The purpose of the *GWQAR*, as required by OAC 3745-27-10(E)(7), is to present the results of the ground water quality assessment investigation to determine the rate, extent, and concentration of waste-derived constituents in the ground water.

The facility no longer accepts waste, and all 22 wells, and eight seeps, in the ground water monitoring system are in the assessment monitoring program. The ground water monitoring program at the closed Mt. Eaton Landfill is regulated by OAC 3745-27-10, as effective August 15, 2003.

Based on a previous review of the 8th revision to the *Ground Water Quality Assessment Plan* (dated June 3, 2011), and recent analytical data, Ohio EPA considered that the owner/operator had enough information to adequately determine the rate, extent, and concentration of all waste-derived constituents in the ground water. Therefore, this *GWQAR* also represents the first determination of rate, extent, and concentration, in accordance with OAC 3745-27-10(E)(6).

The owner/operator concludes that nine wells have been impacted by waste-derived constituents, specifically by the subsurface migration of landfill gas. The constituents of concern include Appendix I Volatile Organic Compounds (VOCs) 1,1-dichloroethane (MW-8R, MW-15R, MW-16-R, MW-19), cis-1,2-dichloroethane (MW-8R, MW-15R, MW-20R, MW-22), chloroethane (MW-8R,

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MW-17, MW-21), and Appendix II parameter CFC-12 (MW-19, MW-20D). The owner/operator also contends that the elevated concentrations of metals and inorganics, including ammonia, chloride, and sodium, in all the downgradient wells, are due to the influence of acid mine drainage (AMD), and not from the landfill.

The owner/operator has not made an adequate determination of the concentration, rate, and extent of migration of waste-derived constituents in the ground water.

The following violation was identified during the review of the Ground Water Quality Assessment Report:

1. **The owner/operator is in violation of OAC 3745-27-10(E)(6) for not making an adequate determination of the concentration, rate, and extent of migration of waste-derived constituents in the ground water.**

   The owner/operator contends that AMD is a contributor to the ground water quality impacts observed in the Upper Aquifer System (UAS) (Homewood Sandstone) at the site. Ohio EPA agrees that AMD from strip mining activities and mine spoil is a contributing factor, but not the sole source.

   Section 4.3.4.1 on page 4-15 describes background well MW-24R as being completed in an area that was not surfaced mined, and where the water quality has not been influenced by AMD. It should also be noted that the ground water at this location is unaffected by waste-derived constituents as well, which makes it a good background well for the detection of both AMD and waste impacts in the downgradient wells. However, without a background well that is impacted by AMD and not by waste, it cannot be conclusively determined that AMD is the only reason for the elevated parameters in the downgradient wells. With the presence of VOCs in nine wells, which also exhibit elevated inorganics, it is likely that the ground water chemistry is a mixture of both AMD influence and waste-derived constituents.

   Since the influence from AMD and waste-derived constituents cannot be differentiated, Ohio EPA considers all parameters elevated above background as being waste-derived. Therefore, the following list of parameters at each affected well shall be addressed in accordance with OAC 3745-27-10(F)(1):

   Arsenic

   MW-20D, 22, and 23R

   Barium

   MW-23R

Beryllium

MW-15R

Cobalt

MW-7R, 8R, 11R, 12R, 13RR, 15R, 17, 18, 19, 20R, and 22

Nickel

MW-8R, 11R, 15R, 18, and 20D

Selenium

MW-20D

Zinc

MW-11R, 15R, and 20D

Ammonia

MW-13RR, 15R, 20R, 22, and 23R

Chloride

MW-8R, 12R, 13RR, 15R, 19, 20R, 20D, 21, 22, and 23R

Potassium

MW-13RR, 15R, 17, 18, 19, 20R, 22, and 23R

TDS

MW-7R, 8R, 11R, 12R, 13RR, 15R, 16R, 17, 18, 19, 20R, 21, 22, and 23R

Alkalinity

MW-8R, 12R, 16R, 17, 18, 19, 20R, 20D, 21, 22, and 23R

Sulfate

MW-7R, 8R, 11R, 12R, 13RR, 15R, 16R, 17, 18, 19, 20R, and 22

Magnesium

MW-11R, 12R, 13RR, 15R, 17, 18, 19, 20R, 20D, 21, 22, and 23R

Calcium

MW-7R, 8R, 11R, 12R, 13RR, 15R, 16R, 17, 18, 19, 20R, 20D, 21, 22, and 23R

Iron

MW-11R, 12R, 13RR, 15R, 17, 18, 20R, 20D, 21, 22, and 23R

Manganese

MW-7R, 8R, 11R, 12R, 13RR, 15R, 17, 18, 19, 20R, 20D, 21, 22, and 23R

1,1-dichloroethane

MW-8R, 15R, 16R, and 19

Cis-1,2-dichloroethene

MW-8R, 15R, 20R, and 22

Chloroethane

MW-8R, 17, and 21

CFC-12

MW-19 and 20D

The lateral extent of the waste-derived constituents is depicted on Figure 16, but only takes into consideration the nine wells that exhibit VOCs.

In order to return to compliance, the owner operator must determine the rate, extent, and migration rate of the inorganic constituents listed above, which are considered to be waste derived. The owner/operator should revise the report and maps as necessary, and state that all of the parameters listed above are waste derived.

The following deficiency was identified during the review of the Ground Water Quality Assessment Report:

1. The topography used as the base for the geologic cross-sections and site maps is based on an aerial photograph taken on February 11, 2001; since then, the newer cell to the

north has closed and a C&DD landfill opened and closed on the east side of the facility, both of which are not depicted on the figures. The owner/operator must update the base maps to show the most recent topography and any alterations made since 2001.

Ohio EPA has the following statements regarding the Ground Water Quality Assessment Report:

1. While Ohio EPA agrees that the nine wells which exhibit VOCs (chloroethane, 1,1-dichloroethane, and cis-1,2-dichloroethene) are impacted by waste-derived constituents, the Agency does not agree that landfill gas is the sole cause. The wells also have numerous inorganic parameters elevated above background that are considered to be waste-derived (see Violation #1).

   The owner/operator also states that these VOCs are not present in the leachate on a consistent basis; however, all three have been detected at one time or another indicating that these parameters are present in the waste. Also, the majority of the landfill is unlined, which brings into question the reliability of the leachate analysis (i.e., the analysis can determine what's in the leachate but not necessarily what's absent).

   Furthermore, if VOCs generated by landfill gas can dissolve in ground water and migrate down to the UAS, then it would be expected that leachate-derived constituents could as well.

2. The vertical extent of waste-derived constituents is limited to the UAS (Homewood Sandstone) for the entire site except at well location MW-20D where the limit is the Mercer Limestone.

3. The rate of ground water flow (i.e., migration of waste-derived constituents) in the UAS is 0.06 ft/day (21.8 ft/yr). The calculated rate in the Mercer Limestone is 0.04 ft/day (14.6 ft/yr).

4. The historical concentrations of the waste-derived constituents are presented in tables in Appendix C.

The owner/operator has not made an adequate determination of the concentration, rate, and extent of migration of waste-derived constituents in the ground water. The *GWGAR* should be revised as necessary. Please submit a revised *GWQAR* within 45 days of the receipt of this correspondence.

If you have any technical questions regarding this review, please contact Russ Kocher, Ohio EPA, Northeast District Office, Division of Drinking and Ground Waters at (330) 963-1203. Please submit all correspondence to Clarissa Gereby, Division of Materials and 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 other applicable federal or state laws or regulations except as specified herein. This letter shall not be interpreted to release the owner or operator from responsibility under Ohio Revised Code (ORC) Chapters 3704, 3714, 3734, or 6111; under the Federal Clean Water Act, the Resource Conservation and Recovery Act, or the Comprehensive Environmental Response, Compensation, and Liability Act; or from other applicable requirements for remedying conditions resulting from any release of contaminants to the environment.

Sincerely,

Clarissa Gereby
Environmental Specialist
Division of Materials and Waste Management

CG/cl

cc: Ken Eng, Wayne County Health Department
John Hujar, DMWM, NEDO
Rich Heier, Norton Environmental Company
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