



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

December 14, 2012

**RE: BOYAS/NICKY BOULEVARD LANDFILL
GROUND WATER
NOTICE OF VIOLATION**

CERTIFIED MAIL 7012 1010 0002 2260 2776

Michael Boyas
10055 Sweet Valley Drive
Valley View, OH 44125

Dear Mr. Boyas:

The Ohio Environmental Protection Agency (Ohio EPA) has reviewed the June 2005 *Ground Water Quality Assessment Report (GWQAR)* and the March 2006 *Compliance Monitoring Program Plan (CMPP)* for the Nicky Boulevard Landfill. The *GWQAR* was received by Ohio EPA on June 20, 2005, and the *CMPP* was received by Ohio EPA on March 8, 2006. Both reports were prepared by Burgess & Niple, Inc. (B & N) for Boyas Contributions, LLC, the owner/operator of the Nicky Boulevard Landfill (NBL).

JUNE 2005 GWQAR

Hydrogeologic Characterization

The *GWQAR* indicates that the uppermost aquifer at NBL is at the contact between the unconsolidated materials consisting of sand, silt, and clay and Mississippian Bedford Shale or Devonian Ohio Shale. Unconsolidated materials at the site are estimated to be 535 to 740 feet thick. According to the *GWQAR*, two significant zones of saturation are identified at NBL: Unit A (an upper sand and silt layer) and Unit C (a lower sand and silt layer). Unit B (a silty clay that grades into a dense, plastic clay silt) acts as a confining layer between Unit A and Unit C in the northeastern portion of the facility. The *GWQAR* states (pg. 5): "*Ground Water from Unit A migrates through waste materials and combines with ground water from Unit C, creating a ground water composite of these two units downgradient of the landfill.*"

Unit A has a hydraulic gradient of about 0.033. The hydraulic gradient in Unit C varies from 0.022 (north to south) to 0.046 (southeast to southwest). Based on slug test results, Unit A's hydraulic conductivity is estimated to be from 2.55×10^{-4} centimeters per second (cm/s), and Unit C's hydraulic conductivity is estimated to be 3.44×10^{-3} cm/sec.

Monitoring Well System

According to the *GWQAR*, all of the monitoring wells at NBL are currently in the monitoring program. The wells in assessment include downgradient monitoring wells MW-13, MW-15, and MW-16R that are screened in Unit C, and upgradient monitoring wells MW-8 and MW-9 that are screened in Unit A, and MW-5R, MW-12, MW-17, MW-18, PZ-4 that are screened in Unit C. Also, upgradient piezometers EGMP-1, MW-1, PZ-1, and PZ-2 that are screened in Unit A and MW-6 and MW-14 are utilized only to collect ground water elevation data.

Monitoring wells/piezometers PZ-1, PZ-2, PZ-4, MW-6, MW-13, MW-15, and MW-16 are located within the limits of waste placement. While MW-13, MW-14, and MW-15 may be able to provide data regarding ground water quality vertically downgradient of the limits of waste placement, the monitoring well system does not contain monitoring wells to provide ground water data for the area located horizontally downgradient of the limits of waste placement. The reliability of ground water data obtained from monitoring wells installed through waste is uncertain due to concerns about the integrity of the annular space seal.

The aforementioned raises concerns regarding the adequacy of the design/installation of monitoring wells such that casings maintain the integrity of well boreholes, and annular spaces are sealed to prevent contamination of ground water and ground water samples in accordance with OAC Rule 3745-30-08(B)(3), and sufficiency of the monitoring system to provide ground water samples that represent the quality of ground water passing directly downgradient of the limits of waste placement in accordance with OAC Rule 3745-30-08(E)(6). These concerns were raised in a notice of violation (NOV) dated December 14, 2012 which reviews *Ground Water Quality Assessment Monitoring Program Reports (GWQAMPR)* for the September 2011 and March 2012 sampling events.

Lost Monitoring Wells

According to information in the *GWQAR*, MW-2, MW-7, and PZ-3 are lost or could not be located. Only MW-7 is located within the limits of waste placement. The *GWQAR* indicates that triangulation techniques, global positioning system (GPS) field units, metal detectors, and a visual search have been completed in order to attempt to locate MW-2 and MW-7. Further, the *GWQAR* indicates that PZ-3, a one-inch-diameter well with no protective outer casing is likely located beneath a large pile of debris. It was determined that it was impractical to excavate the debris pile in an attempt to locate PZ-3, and that it was likely that the top portion of the PVC casing was pulverized by the debris pile.

Concentration

The *GWQAR* includes Table 9 that summarizes historical ground water quality results for each monitoring well at NBL. The tables show ground water samples from monitoring wells at NBL have, between 2004 and the first half of 2012, only been analyzed for an abbreviated set of parameters (barium, calcium, iron, and magnesium). Additionally, parameters including pH, specific conductance, temperature, and turbidity of ground water samples have been measured in the field. From 2000 until 2004, assessment samples were analyzed for a similar limited set of parameters with slight variation, and generally with the addition of dioxins and furans. Of particular concern is that while elevated levels of gross alpha (1.3 to 71.1 pCi/L) and gross beta (5 to 658 pCi/L) radiation were detected in ground water samples from NBL, ground water wells have not been sampled for gross alpha or beta radiation since 1999.

In the December 14, 2012 NOV regarding the *GWQAMPR* for the September 2011 and March 2012 sampling events at NBL, Ohio EPA raised a concern (Violation #1) that ground water assessment samples were not being analyzed for all parameters in Appendix III that are applicable to the facility in accordance with OAC Rule 3745-30-08(E)(4). Based on waste streams that the facility reportedly received, it appears that a composite of parameter lists "B" (Waste Generated from Foundry Operations), "D" (Wastes Generated from Steelmaking Operations), and "H" (Industrial Solid Waste Facilities) apply to NBL. Violation #1 in requests that the owner/operator explain why ground water samples from NBL's assessment monitoring well system have not been sampled in accordance with OAC Rule 3745-30-08(E)(4), and clarify which Appendix III parameters apply to NBL.

At this time, it does not appear that the concentration of all applicable waste-derived parameters have been adequately determined in accordance with OAC Rule 3745-30-08(E)(2).

Extent

Isoconcentration maps (Figures 9-12) in the *GWQAR* indicate that concentrations above tolerance limits have migrated in ground water about 25 feet off-property and to the west of NBL, and that concentrations of iron above tolerance limits have migrated in ground water off-property to the south of NBL to an undetermined extent.

The monitoring well system does not contain monitoring wells directly horizontally downgradient of the limits of waste placement. This concern was raised in a notice of violation (NOV) dated December 14, 2012. At this time, it does not appear that the extent of migration of waste-derived parameters has been adequately determined in accordance with OAC 3745-30-08(E)(2).

Rate

The modified Darcy equation was utilized to calculate seepage velocity in Unit C. The hydraulic conductivity of Unit C was estimated from slug test data. A hydraulic gradient was calculated between MW-13 and MW-16 for each sampling event between 2000 and 2004. The report indicates that the calculated estimated seepage velocity in Unit C ranged from 0.158 feet/day in August 2002 to 0.223 feet/day in February 2004. Further, the report states (pg.15) "...so it takes three to five years for ground water to travel from MW-14 offsite." It should be noted that isoconcentration maps (Figures 9 through 12) of barium, calcium, iron, and magnesium, indicate that these waste-derived constituents have already migrated off NBL property.

2006 CMPP

The 2006 *CMPP* states (p. v) that the plan is appropriate for the following reasons:

1. *"The saturated units beneath the facility are designated as significant saturated zones. Additionally, there is no potable ground water use within 1.0 mile of the landfill. Therefore, ground water is not reasonably expected to be a source of drinking water."*
2. "Except for barium, none of the waste-derived constituents have a promulgated U.S. EPA Primary MCL and are, therefore, not considered to be a threat to human health and safety or the environment. Based upon the rate of ground water travel through the saturated unit and the decrease in barium concentrations observed between MW-13 and MW-16R, it appears that barium concentrations are being naturally attenuated and are not anticipated to migrate off site at concentrations that are a threat to human health and safety or the environment."
3. "The Nicky Boulevard Landfill was capped and certified closed in 1997. Therefore, infiltration of surface water through waste is unlikely, which should minimize leachate generation and further ground water impact."

Contrary to what is stated above, there may be a good amount of infiltration of the landfill cap at NBL which is poorly maintained. During a February 8, 2012 site visit, Ohio EPA, NEDO personnel observed ponding and subsidence on the landfill, and erosional rills (some over a foot wide) along the south, west, and east slopes of NBL. Slumping of soil was also observed along the west slope. Non-functioning ditches and tree growth on top of the cap and side slopes was observed. Additionally, numerous leachate outbreaks from the landfill were observed entering the stream at the base of the southwest slope.

According to the 2006 *CMPP* (p.21), "As discussed in Section 3.3 above, it appears that barium concentrations that may be a threat to human health and safety or the environment are being controlled through natural attenuation processes. The certified landfill cap should continue to minimize or eliminate additional surface water recharge into the waste, as well as leachate generation. Over time, it is anticipated that ground water quality beneath the landfill will improve. No additional activities for controlling further releases are currently proposed other than routine cap maintenance."

According to OAC Rule 3745-30-08(E)(7)(h), a compliance monitoring program plan must contain provisions for controlling the source(s) of releases in order to reduce or eliminate, to the extent practicable, further releases of waste-derived constituents into the environment.

Based on observations made during the February 8, 2012, Ohio EPA inspection of NBL, the provisions outlined in the 2006 *CMPP* are not adequate for controlling, reducing, or eliminating, to the extent practicable, releases of waste-derived constituents into the environment.

Finally, review of the 2005 *GWQAR* indicates it has not been adequately demonstrated that the concentrations and extent of migration of waste-derived constituents in ground water has been determined. According to OAC Rule 3745-30-08(E)(7), the owner/operator cannot request that the director approve a compliance monitoring program until a determination is made in accordance with paragraph (E)(2) of the rule.

COMPLIANCE

Ohio EPA has identified the following violations regarding ground water monitoring at NBL:

- 1. OAC Rule 3745-30-08(B)(1) requires that the ground water monitoring system include a sufficient number of wells, installed at appropriate locations and depths, to yield representative ground water samples.**

The *GWQAR* claims that Unit B acts as a confining layer between Unit A and Unit C in the northeast portion of NBL.

However, the *GWQAR* does not adequately demonstrate that Unit B is acting as an aquitard in this area. To ensure that the ground water monitoring system includes a sufficient number of wells installed at appropriate locations and depths to yield representative ground water samples, the characterization of the site's ground water hydrogeology must be accurate.

To demonstrate that Unit B is acting as an aquitard, the owner/operator should use a weight-of-evidence approach that considers a host of factors such as: Hydraulic conductivity, unit thickness, hydraulic gradients and other factors as outlined in the 2009 Ohio EPA *Technical Guidance Manual: Assessment of an Aquitard During a Ground Water Contamination Investigation*.

2. **OAC Rule 3745-30-08(E)(2) requires that the owner/operator implement a ground water quality assessment plan which satisfies the requirements of paragraph (E)(1) of this rule to determine concentration, rate, and extent of migration of waste-derived constituents in ground water.**

Information in the *GWQAR* does not demonstrate that concentration and extent of waste-derived parameters has been adequately determined.

A. Concentration

The *GWQAR* includes Table 9 that summarizes historical ground water quality results for each monitoring well at NBL. The tables show ground water samples from monitoring wells at NBL have been analyzed for an abbreviated set of parameters for the last decade. It does not appear that ground water samples are being analyzed for all applicable parameters. Of particular concern is that while elevated levels of gross alpha (1.3 to 71.1 pCi/L) and gross beta (5 to 658 pCi/L) radiation were detected in ground water samples from the NBL, ground water wells have not been sampled for gross alpha or beta radiation since 1999.

In Ohio EPA's NOV dated December 14, 2012 regarding the *GWQAMPs* for the September 2011 and March 2012 sampling events at NBL, violation #1 raised the concern that ground water assessment samples were not being analyzed for all parameters in Appendix III that are applicable to the facility in accordance with OAC Rule 3745-30-08(E)(4). Based on waste streams that the facility reportedly received, it appears that a composite of parameter lists "B" (Waste Generated from Foundry Operations), "D" (Wastes Generated from Steelmaking Operations), and "H" (Industrial Solid Waste Facilities) apply to NBL. Violation #1 in the NOV dated December 14, 2012 requests that the owner/operator explain why ground water samples from NBL's assessment monitoring well system have not been sampled in accordance

with OAC Rule 3745-30-08(E)(9) and clarify which Appendix III parameters apply to NBL.

B. Extent

Isoconcentration maps (Figures 9-12) in the GWQAR indicate that concentrations above tolerance limits have migrated in ground water about 25 feet off-property and to the west of NBL, and that concentrations of iron above tolerance limits have migrated in ground water off-property to the south of NBL to an undetermined extent.

The monitoring well system does not contain monitoring wells directly horizontally downgradient of the limits of waste placement. This concern was identified in violation #3 of the NOV dated December 14, 2012.

In order to demonstrate that rate and concentration have been adequately determined, the owner/operator needs to comply with OAC Rule 3745-30-08(B) which requires the ground water monitoring system to include a sufficient number of monitoring wells to represent ground water quality passing directly downgradient of the limits of waste placement.

- 3. OAC Rule 3745-30-08(E)(7) requires that a determination be made in accordance with paragraph E(2) prior to the owner/operator requesting that the director approve a compliance monitoring program.**

The owner/operator has not adequately demonstrated the concentration and extent of migration of waste-derived parameters in accordance with OAC Rule 3745-30-08(E)(2). Refer to violation #2 above.

COMMENTS

- 4. OAC Rule 3745-30-08(E)(7)(h) requires that a compliance monitoring program plan contain provisions for controlling the source(s) of releases in order to reduce or eliminate, to the extent practicable, further releases of waste-derived constituents into the environment.**

According to the 2006 CMPP (p.21), "As discussed in Section 3.3 above, it appears that barium concentrations that may be a threat to human health and

safety or the environment are being controlled through natural attenuation processes. The certified landfill cap should continue to minimize or eliminate additional surface water recharge into the waste, as well as leachate generation. Over time, it is anticipated that ground water quality beneath the landfill will improve. No additional activities for controlling further releases are currently proposed other than routine cap maintenance.”

During a February 8, 2012 site visit, Ohio EPA, NEDO personnel observed ponding and subsidence on top of the landfill, erosional rills (some over a foot wide) along the south, west, and east slopes of NBL. Slumping of soil was also observed along the west slope. Non-functioning ditches and tree growth on top of the cap and side slopes was observed. Additionally, numerous leachate outbreaks from the landfill were observed entering the stream at the base of the southwest slope.

Based on observations made during the February 8, 2012 Ohio EPA site inspection of NBL, the provisions outlined in the 2006 *CMPP* are not adequate for controlling, reducing, or eliminating, to the extent practicable, releases of waste-derived constituents into the environment.

- 5. OAC Rule 3745-9-10 requires that abandoned monitoring wells need to be properly sealed. OAC Rule 3745-34-11(A) requires that no person shall inject industrial waste or other waste into an underground source of drinking water (USDW) without first obtaining a underground injection control (UIC) permit to drill or a permit to operate in accordance with 3745-34-12.**

According to information in the *GWQAR*, MW-2, MW-7, and PZ-3 are lost or could not be located.

Since two of these wells, MW-7 and PZ-3, are located below waste, they likely are acting as a conduit for leachate into ground water. MW-7 and PZ-3 may be considered unpermitted Class V injection wells. Since leachate is an industrial waste, and no permit was issued to inject leachate, then the facility may be in violation of OAC 3745-34-11(A).

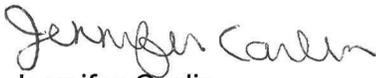
The owner/operator has made previous attempts to locate the lost wells. The owner/operator needs to attempt to locate the wells again, and the wells need to be properly sealed in accordance with OAC 3745-9-10 and 1996 *State of Ohio Technical Guidance for Sealing Used Wells*. Once an abandoned well is sealed, ORC 1521.05 requires that a sealing report be submitted to ODNR.

Michael Boyas
December 14, 2012
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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 submit a response to this notice of violation 30 days from receipt of this letter. If you have any questions concerning this letter, please contact me at (330) 963-1133.

Sincerely,



Jennifer Carlin
Division of Materials and Waste Management

JC:cl

cc: Albert Muller, DDAGW-NEDO
Dane Tussel, Cuyahoga County Health Department
File: [Sowers/LAND/Boyas (Nicky Blvd)/GRO/18]