

**Response to Comments**

**Advanced Disposal Services Blue Ridge Landfill – Groundwater Assessment Report**

**Agency Interest No. 998 / Application I.D. AIN20160001**

The Kentucky Division of Waste Management (DWM), Solid Waste Branch received the Groundwater Assessment Report from Advanced Disposal Services Blue Ridge Landfill (Permit No. 033-00004) for review on March 11, 2016. A public notice was issued on November 8, 2018 with a thirty (30) day comment period.

The following includes the comments received and provides DWM’s response

**Comment 1:** A comment was submitted as follows: “According to the Cabinet characterization of the groundwater assessment report, the exceedances identified for chlorides and total dissolved solids in groundwater monitoring well MW-7 are ‘most likely a product of natural groundwater conditions (i.e., salt water impacts) in the New Albany (Chattanooga) Shale.’

The Cabinet has indicated that it intends to approve the report and release the Blue Ridge Landfill from groundwater contamination assessment.

Respectfully, the Cabinet has acknowledged, as has the groundwater assessment report, that the groundwater monitoring system in place for the Blue Ridge Landfill is, at least in part and perhaps for more than MW-7, incapable of functioning as is required by the applicable regulation. The Cabinet should **not** release the Landfill from the groundwater contamination assessment, but instead should hold the matter in abeyance pending immediate reopening of the landfill permit and requiring the design, location, and construction of new well(s) finished into locations and depths appropriate for accurately sampling the movement of any leachate from the landfill into the surrounding environment. To the extent that the sampling results in MW-7 are being confounded by background levels of chlorides, TDS, or any other constituents, the well is incapable of functioning properly as a groundwater monitoring well

401 KAR 48:300 Section 5 requires that the groundwater monitoring system be able to accurately analyze groundwater quality. Downgradient wells are required to be capable of early detection of any contamination from the landfill. The compromised nature of MW-7 requires that the well be replaced with a new well or wells at the depth and location that will provide such early detection free of confounding influences. Additionally, sampling of the leachate in conjunction with groundwater monitoring will be able to confirm whether the contamination detected in well MW-7 is the result of background or of a leachate outbreak.

For these reasons, the Council respectfull [sic] requests that the facility not be released from groundwater assessment, and that the permit be reopened for submittal of a properly-functioning downgradient groundwater monitoring system.”

**Response:** DWM agrees with both the commenter and the assessment report that the subject well (MW-7) is screened in the New Albany Shale at a location and depth sufficient to result in impacts from connate water (i.e., brine). Connate water commonly contains high levels of constituents that are also typically elevated in contained landfill leachate (e.g., sodium, chloride, metals, and total dissolved solids).

DWM acknowledges that as a result of its depth, the subject well is less likely to intercept releases of landfill pollutants in a timely fashion consistent with the intent of 401 KAR 48:300 Section 5(2) (i.e., to “provide early detection of groundwater contamination” at the facility).

DWM further notes that if some common landfill pollutants were to migrate to the screened interval of the subject well, their presence could potentially be masked by naturally elevated levels of the same constituents in the well.

In response to this comment, DWM has added a permit condition requiring the submittal of a revised groundwater monitoring plan for the facility. The revised groundwater monitoring system shall meet the requirements of 401 KAR 48:300, including the design standards of 401 KAR 48:300 Section 5.

However, DWM disagrees that the facility should remain in groundwater assessment for the exceedances of chloride and Total Dissolved Solids in Monitoring Well MW-7. Based upon the information provided in the assessment report, the exceedances detected in MW-7 are not likely to be the result of landfill impacts to groundwater. No further investigation regarding the origin of the elevated constituents in MW-7 is necessary.

Regarding leachate sampling, DWM agrees that such sampling would be advantageous. As a result, a condition requiring annual leachate sampling has been added to the permit for the same parameters as the quarterly sampling of the underdrain discharges.

Special Condition 1 was added to the permit, and pertains to GSTR0001 (Groundwater Monitoring Group).

*“Groundwater Monitoring: The permittee shall submit a revised groundwater monitoring plan for DWM review by July 1, 2019. The monitoring plan shall meet all requirements of 401 KAR 48:300, and shall be sufficient to provide early detection of groundwater contamination at the facility pursuant to 401 KAR 48:300 Section 5(2). The plan shall consider all relevant geological conditions at the facility, including the potential for flow along fractures in bedrock. [401 KAR 47:120 Section 2, 401 KAR 48:300]”*

Special Condition 3 was added to the permit, and pertains to the Contained Landfill Activity (ACTV0007).

*“Leachate shall be monitored annually for the for the full list of parameters in 401 KAR 48:300 Section 11(3)(b), plus pH, Arsenic (Total), Barium (Total), Cadmium (Total), Chromium (Total), Lead (Total), Mercury (Total), Selenium (Total), and Silver (Total). Leachate shall be thoroughly agitated prior to sample collection. Samples shall be collected during the third quarter of each calendar year, and leachate analytical results shall be submitted in the third quarter groundwater / surface water compliance monitoring reports. [401 KAR 47:120 Section 1, 401 KAR 47:120 Section 2]”*

**Comment 2:** The draft permit has added an additional compliance monitoring point to the groundwater sampling network as monitoring condition GSTR0003 – Groundwater Monitoring – SWB: Underdrain Monitoring Group. The new condition requires that the underdrain discharges at the facility be sampled quarterly for the following parameters: the full list in 401 KAR 48:300 Section 11(3)(b); plus pH, flow rate, and total metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver). The permit states that statistical analysis is not required on the data; however, if a detection of a parameter from 401 KAR 48:300 Section 1(3)(b) occurs or an MCL exceedance of a metals parameter occurs the permit provides that the Division of Waste Management (DWM) should be contacted to arrange a split-sampling event.

ADS objects to the added monitoring condition for the following reasons:

The underdrains at the facility were installed as a means to intercept and collect water present within cell construction areas during installation of the liner to drain the construction area so that liner could be put down. The underdrains were not designed to be used as compliance monitoring points to collect samples of groundwater and were never intended to be used as such. Groundwater monitoring wells are drilled and installed to strict standards per 401 KAR 6:350 and are required to be installed by well drillers certified by the Cabinet (401 KAR 6:320). The underdrain system was installed as part of the landfill construction and was neither designed nor intended to be part of the strictly regulated groundwater monitoring network.

The underdrains were designed to collect surface water and groundwater present during construction activities to keep the construction area free of standing water and liquid for the waste disposal cell liner installation. The intent of the interceptor/underdrain system is to collect liquids flowing beneath and adjacent to the cell during construction and operation, not leachate generated by the waste disposal cell. Leachate is collected via a leachate collection system installed above the liner. Samples collected from the underdrain would not be representative of groundwater flowing under the facility since it collects all water under the liner. The underdrain system was not constructed to target a specific water-bearing aquifer and was not constructed as an enclosed system to keep surface water infiltration out of the network. The underdrain drains to a manhole northwest of the waste boundary which is open to the environment and could be influenced by surface water infiltration. The manhole is located in near proximity to a sediment pond that has had numerous KPDES permit exceedances for metals and low pH detections as a result of the New Albany Shale Formation present at the site.

Samples have never been collected from the underdrains historically, and therefore a historical background does not exist in which to compare new data to.

The parameters required to be sampled for in this new monitoring condition include total metals. Metals are naturally occurring in the New Albany Shale Formation which underlies the facility. The abundant metals composition of the New Albany shale has been demonstrated in U.S. Geological Survey Open-File Report 30-207 by Tuttle and others (2003). It would pose numerous technical problems to determine if the presence of an elevated metal is due to impacts from the landfill or if it present [sic] due to naturally occurring conditions.

The draft permit indicates that an MCL exceedance of a required metal would result in a split-sample with the DWM and which could lead to assessment activities. It would be unreasonable to be placed into assessment for an exceedance of a metal that could be elevated due to naturally occurring conditions from a sample that is not representative of groundwater present under the facility.

In sum, requiring monitoring of the underdrain would (a) yield no useful or credible data on whether the landfill is releasing contaminants into the subsurface; and (b) create confusion and ambiguity over interpreting any data collected. Given that there is no verifiable data that the landfill is having an impact on groundwater, ADS believes there is no technical basis for the condition and requests that it be removed from the final permit.

**Response:**

This comment mischaracterizes the intent of the underdrain monitoring. The added permit conditions do not require the monitoring of underdrain discharges as groundwater, and exceedances are not stated to be subject to groundwater assessment and corrective action pursuant to 401 KAR 48:300 Section 8.

Regarding the lack of statistical background for the underdrain discharges, no such background is necessary. Note that the permit specifically states, “Statistical analysis is not required for underdrain discharges.”

DWM is requiring underdrain monitoring to: 1) determine in a timely fashion whether a release of leachate from the lined waste disposal areas to the subgrade / underdrain has occurred; and 2) determine whether the discharge should be subject to treatment prior to entering the sedimentation basin(s) and surface water.

Note that 401 KAR 48:070 Section 2 requires that contained landfills be designed to retain separation between leachate and surface water flows. If leachate constituents are detected in the underdrain, design and operational modifications may be necessary to ensure the landfill complies with this regulatory provision.

The commenter should note that DWM requires underdrain monitoring at a number of other landfills across the Commonwealth. Monitoring of underdrain discharges at this site will facilitate a more timely recognition of leachate releases before significant negative environmental impacts occur.

DWM disagrees that elevated levels of metals and low pH in the KPDES discharges are naturally occurring because of the New Albany Shale. Although the New Albany Shale bedrock may be the ultimate source of the pollution, disturbance of the shale matrix during landfill construction by blasting and crushing can accelerate the rate of release of pollutants. ADS is responsible for all environmental impacts from the construction and operation of the facility, not just those associated with direct leachate impacts.

Special Condition 3 has been added to the permit, and pertains to GSTR0003 (Underdrain Monitoring Group). This condition clarifies that groundwater assessment will not be required as a result of elevated levels of any parameter in underdrain discharges.

*“Groundwater contamination assessment and corrective action shall not be required as a product of elevated concentrations of any constituents in the landfill underdrain discharges. However, the Energy and Environment Cabinet may require treatment of the subject water prior to discharge to the sedimentation basins in order to maintain separation of leachate and surface water flows pursuant to 401 KAR 48:070 Section 2 and to protect human health and the environment pursuant to KRS 224.10-100 and 401 KAR 47:030. [401 KAR 47:030, 401 KAR 47:120 Section 2, 401 KAR 48:070 Section 2, KRS 224.10]”*

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