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Project/File: 227708670

Michael W. Smith, PE
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Land Quality Bureau
Iowa Department of Natural Resources
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Dear Mr. Smith,

Reference: Central Disposal Landfill (95-SDP-01-72) - GU-VIII-1 Secondary Evaluation Period Results IDNR Comments Response

On behalf of Central Disposal Systems, Inc. (CDS), this letter provides responses to the Iowa Department of Natural Resources' (IDNR) comments on the GU-VIII-1 Secondary Evaluation Results letter, dated April 30, 2025 (IDNR Doc ID #112982). Comments were received in a letter addressed to John Reynolds dated May 21, 2025. For ease of review, the comments are provided below in *italics* font followed by a response.

Comment:

The DNR approves the scheduling for collection of background data at Groundwater Underdrain GU- VIII-1. Please submit the results of each monitoring event to the DNR within 30 days of receiving the laboratory results. The permit holder will evaluate any contaminate levels observed for each sampling event by comparing levels to site prediction limits. If any exceedance of site prediction limits is observed the discharge from GU-VIII-1 will be immediately managed as leachate.

Response #1:

Results from the May and November 2025 GU-VIII-1 background monitoring events were provided with the 2025 Annual Water Quality Report. Moving forward, CDS will provide the monitoring results to the IDNR within 30 days of receipt from the laboratory.

Response #2:

In accordance with the IDNR-approved 2023 Hydrologic Monitoring System Plan (2023 HMSP), CDS utilizes intrawell statistical analysis to evaluate groundwater monitoring results for the Central Disposal Landfill (Landfill) rather than interwell statistical analysis. Intrawell statistical analysis is the appropriate

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method for evaluating groundwater monitoring results for the Landfill, including monitoring results for GU-VIII-1, for the following reasons:

- Peer-reviewed research shows that interwell comparisons often generate false positives in heterogeneous, low-permeability settings such as clay till (Horseley et al., 1996; EPA Unified Guidance, 2009). Intrawell statistics avoid these issues by comparing results at each location to its own historical data.
- Interwell statistics rely on the assumption that groundwater conditions at upgradient wells represent downgradient conditions; this assumption fails in discontinuous or perched water systems and in facilities where monitoring wells and underdrains intercept different hydrostratigraphic zones (TVA, 2017; ITRC GSMC-1, 2013).
- Additionally, groundwater underdrains differ materially from traditional monitoring wells in both construction and function. Underdrains collect water from a large horizontal footprint within shallow intermittent perched zones, whereas monitoring wells collect vertically within the defined monitorable zone (see 2023 HMSP). Because these systems intercept different hydrogeologic zones, comparing GU-VIII-1 results to upgradient well-based site prediction limits would seem inappropriate.
- Intrawell statistics, which evaluate each location against its own historical conditions, provide a more scientifically defensible and IDNR-approved approach for this setting.

In recognition of the Landfill's low permeability hydrogeologic setting, intrawell statistics were incorporated into the Landfill's monitoring plan in place of interwell statistics with the approved 2018 HMSP. Intrawell statistics are appropriate for facilities where upgradient wells do not accurately characterize the natural downgradient groundwater conditions because of spatial variability and relatively slow travel times, such as those that exist at the Landfill. Intrawell statistics compare new measurements to the historical data at each groundwater monitoring well independently. It is recommended that at least eight background samples be obtained prior to performing the intrawell statistics.

During the background monitoring period, the Landfill proposes evaluating monitoring results for GU-VIII-1 by comparing to IDNR Groundwater Protection Standards (GWPS) for protected groundwater sources and EPA Maximum Contaminant Levels (MCL). Metals, such as arsenic and cobalt, are naturally occurring in the region and may exceed these standards due to natural geochemical conditions. As evidence of this, arsenic and cobalt have historically been detected above their respective water quality standards in upgradient wells at CDS Landfill, as documented in the 2012 Alternative Source Demonstration (ASD) and the 2020 Annual Water Quality Report.

Leachate is characterized by multiple inorganic and VOC exceedances and co-occurring increases in inorganic indicator parameters. If monitoring results suggest potential leachate influence based on this

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broader pattern, CDS will manage GU-VIII-1 discharge as leachate while conducting additional evaluations (e.g., an ASD), as described in the 2023 HMSP.

CDS may utilize appropriate hydrogeochemical evaluation tools (e.g., Stiff/Piper diagrams, comparison to known leachate signatures) and review site conditions—including potential non-landfill sources such as agricultural stormwater influence—to properly assess anomalies.

Finally, CDS proposes that a future evaluation of underdrain shutdown feasibility (including uplift analysis and contaminant migration evaluation) proceed after IDNR review and approval of the comparable WM Dickinson Landfill evaluation, to ensure alignment with IDNR expectations.

If you have any questions, please contact Cory Anderson at (763) 479-5185.

Regards,

Stantec Consulting Services Inc.

A handwritten signature in black ink, appearing to read 'Cory Anderson', is written over a thin red horizontal line.

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cc: Madelynn Nelson; Jeremy Klatt; Becky Jolly – Iowa Department of Natural Resources
Erin Bulson; Tyler Field; Trent Kohl; Michaela Tiefengraber; Andrew McCain, George Fletcher – Waste Management
John Reynolds – Central Disposal