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April 30, 2025

Project/File: 227702549

Mr. Mike Smith

IDNR Solid Waste Section
Wallace State Office Building
502 East 9th Street
Des Moines, Iowa 50319

Dear Mr. Smith,

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

On behalf of Central Disposal Systems, Inc. (the Landfill), this letter report and its attachments provide information to the Iowa Department of Natural Resources (IDNR) regarding an evaluation of the Phase VIII Groundwater Underdrain (GU-VIII-1) at the Landfill. GU-VIII-1 was installed beneath Phase VIII of the Landfill in November 2022 during the Phase VIII construction. The Landfill's underdrains are not points of compliance and were not installed as monitoring locations as neither the equipment nor materials used for construction were cleaned as they would be for construction of a monitoring well. GU-VIII-1 was reportedly dry during the time of installation. However, as has been the case with other underdrains, stormwater that accumulated during construction has been observed in GU-VIII-1 post-construction. Due to the presence of accumulated stormwater in GU-VIII-1, the underdrain underwent an initial three-month evaluation period, pursuant to the protocols detailed in the *2023 Hydrologic Monitoring and Sampling (2023 HMSP)*. As noted in the *2024 Annual Water Quality Report (2024 AWQR)*, the results of the initial evaluation period were inconclusive.

As described in the 2024 AWQR, in order to determine if GU-VIII-1 is monitorable, a second three-month evaluation period was proposed in an email from the Landfill to the IDNR on October 31, 2024. The IDNR approved the proposed plan via email on October 31, 2024. The second evaluation period was proposed to consist of purging of GU-VIII-1 on a weekly basis and, following purging, recording the time it takes for GU-VIII-1 to recharge and fill a five-gallon bucket. If GU-VIII-1 did not recharge to a level sufficient to fill a five-gallon bucket within an hour after purging, then GU-VIII-1 was considered non-monitorable for the given weekly evaluation. When not conducting the weekly evaluation, the underdrain pump is set to run automatically so that any water that accumulates in the underdrain is automatically evacuated, as necessary, in order to continuously maintain the required five-foot separation distance between water level and waste.

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

GU-VIII-1 Evaluation Results

The second three-month evaluation period of GU-VIII-1 was performed from December 26, 2024 through March 11, 2025, pursuant to the protocol detailed in the 2024 AWQR. Results of the evaluation are attached to this letter report as **Table 1**. The results of the second evaluation period indicate that greater than five gallons of water was recovered from GU-VIII-1 within an hour after purging during each weekly evaluation event, with the exception of the final evaluation event conducted on March 11, 2025. The results from the second evaluation period indicate that underdrain GU-VIII-1 most often yields monitorable quantities of water post purging, thus, is considered monitorable.

GU-VIII-1 Monitoring

The annual monitoring scheduled and the background monitoring schedule provided in the 2023 HMSP have been updated to account for monitoring of GU-VIII-1. The updated annual monitoring schedule and the updated background monitoring schedule are provided on the attached **Table 2** and **Table 2A**, respectively.

Pursuant to the 2023 HMSP and the 2024 AWQR, GU-VIII-1 will be sampled semi-annually for the full list of Detection monitoring parameters (i.e., Appendix I and the selected annual parameters) until eight sets of background data have been collected (see **Table 2A**). According to the 2023 HMSP, monitorable quantities include at least 5 additional gallons once the lysimeter and associated piping infrastructure has been purged. During each GU-VIII-1 sampling event, the underdrain and associated piping infrastructure will be purged, then following the initial purge, at least five additional gallons of water will be purged prior to sample collection. If monitorable quantities of water are not present in GU-VIII-1 during a given event then a sample will not be collected. GU-VIII-1 will then be checked during the next regularly scheduled monitoring event and sampled if monitorable quantities of water are present. If necessary, additional semi-annual background events will be scheduled and conducted until the full 8 sets of background data required for statistical program are obtained.

If semi-annual monitoring of the underdrain indicates presence of VOCs or elevated concentrations of leachate indicator parameters, analytical results of samples collected from GU-VIII-1 will be evaluated against leachate samples using geochemical tools (i.e., Stiff diagrams and Piper Plots) to determine if water in the underdrain is being impacted by leachate. Once the background data set is complete, assuming no leachate impacts are identified, GU-VIII-1 will be incorporated into the Landfill's seasonally rotating annual monitoring schedule (see **Table 2**) and the Landfill's statistical program. GU-VIII-1 will be checked during regularly scheduled annual monitoring events, and if monitorable quantities of water are present, then a sample will be collected. If monitorable quantities of water are not present in GU-VIII-1 during a given annual monitoring event then a sample will not be collected. The Landfill may propose discontinuing monitoring of GU-VIII-1 if the volume of water in GU-VIII-1 reduces to the point where monitorable quantities of water are consistently not present in GU-VIII-1 during monitoring events.

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

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 positioned above a solid red horizontal line.

Cory Anderson

Senior Associate, Project Manager

Phone: (763) 479-5185

cory.anderson2@stantec.com

Attachments: Table 1: GU-VIII-1 Secondary Evaluation Period Results

Table 2: Annual Monitoring Schedule (2023 HMSP – Updated April 2025)

Table 2A: Updated Background Monitoring Schedule (2023 HMSP – Updated April 2025)

cc: Madelynn Nelson; Jeremy Klatt; Becky Jolly – Iowa Department of Natural Resources
Terry Johnson; Erin Bulson; Tyler Field; Trent Kohl; Andrew McCain – Waste Management
Aaron Rebman; John Reynolds – Central Disposal

TABLES

Table 1. GU-VIII-1 Secondary Evaluation Period Results

Table 2: Annual Monitoring Schedule (2023 HMSP – Updated April 2025)

Table 2A: Updated Background Monitoring Schedule (2023 HMSP – Updated April 2025)

Table 1 - GU-VIII-1 Secondary Evaluation Period Results

Central Disposal Landfill - Lake Mills, IA

Permit No. 95-SDP-01-72

GU-VIII-1 Monitorability Evaluation:

Date	Initial Liquid Level (in)	Initial Purge Time (min)	Liquid Level 1 hour After Purge (in)	Secondary Purge Time (min)	Volume Purged (gal)
12/24/2024	33.4	7.0	23.4	3.0	5.0
12/31/2024	34.2	8.0	25.2	4.0	8.0
1/8/2025	34.8	3.0	24.7	6.0	27.5
1/14/2025	43.2	5.3	23.6	5.0	26.0
1/28/2025	61.2	7.0	42.2	2.0	33.0
2/4/2025	61.2	3.0	36.3	2.0	13.3
2/14/2025	53.4	11.0	36.5	5.0	13.0
2/18/2025	32.6	6.0	24.3	4.5	9.0
2/26/2025	36.8	--	20.1	--	9.0
3/4/2025	39.0	--	21.4	--	9.0
3/11/2025	36.4	--	23.7	--	4.5

GU-VIII-1 Pump Run-Time Information:

Date	Level (in)	Hour Meter	Date	Level (in)	Hour Meter
12/23/2024	34.7	17.68	2/3/2025	77.8	18.8
12/24/2024	--	--	2/4/2025	77.8	18.8
12/25/2024	--	--	2/5/2025	--	--
12/26/2024	--	--	2/6/2025	43.7	18.9
12/27/2024	--	--	2/7/2025	--	--
12/28/2024	38	18.06	2/8/2025	--	--
12/29/2024	--	--	2/9/2025	--	--
12/30/2024	--	--	2/10/2025	44.6	18.9
12/31/2024	--	--	2/11/2025	44.7	18.9
1/1/2025	--	--	2/12/2025	--	--
1/2/2025	36.5	18.14	2/13/2025	--	--
1/3/2025	37.2	18.14	2/14/2025	--	--
1/4/2025	39.6	18.14	2/15/2025	--	--
1/5/2025	--	--	2/16/2025	--	--
1/6/2025	38.4	18.14	2/17/2025	--	--
1/7/2025	45	18.14	2/18/2025	--	--
1/8/2025	20.4	18.48	2/19/2025	37.2	19.17
1/9/2025	--	--	2/20/2025	38.7	19.17
1/10/2025	41.8	18.48	2/21/2025	35.4	19.18
1/11/2025	--	--	2/22/2025	--	--
1/12/2025	--	--	2/23/2025	--	--
1/13/2025	--	--	2/24/2025	38.3	19.31
1/14/2025	46.3	18.48	2/25/2025	--	--
1/15/2025	--	--	2/26/2025	--	--
1/16/2025	--	--	2/27/2025	25.9	19.41
1/17/2025	--	--	2/28/2025	35.9	19.41
1/18/2025	--	--	3/1/2025	--	--
1/19/2025	--	--	3/2/2025	--	--
1/20/2025	--	--	3/3/2025	--	--
1/21/2025	--	--	3/4/2025	39	19.5
1/22/2025	--	--	3/5/2025	--	--
1/23/2025	--	--	3/6/2025	35.4	19.56
1/24/2025	--	--	3/7/2025	38.4	19.56
1/25/2025	--	--	3/8/2025	--	--
1/26/2025	--	--	3/9/2025	--	--
1/27/2025	--	--	3/10/2025	46.4	19.57
1/28/2025	--	--	3/11/2025	36.4	19.66
1/29/2025	--	--	<div>Total Pump Hours: 1.98</div> <div>Evaluation Hours: 1.36</div> <div>Non-Evaluation Hours: 0.62</div>		
1/30/2025	--	--			
1/31/2025	--	--			
2/1/2025	--	--			
2/2/2025	--	--			

Notes:

-- = Not available, or not recorded.

Denotes period where GU-VIII-1 was not monitorable, per 2023 HMSP and 2024 AWQR

Table 2
Central Disposal Landfill
Annual Monitoring Schedule
2023 HMSP - Updated April 2025

Location	Well Status (as of August 2023)	Location / Description	Annual Groundwater Event (rotating seasonal schedule)**	Semi Annual Background Monitoring Events (2023-2026)	GU-VIII-1 Semi Annual Background Monitoring Events (2025-2028)	Annual NPDES (Spring)	Leachate (per WWTP permits) Months (1,4,7,10)
MW-2A	Detection	Upgradient	Selected Annual Parameters	--	--	--	--
MW-7A	Detection	downgradient	Selected Annual Parameters	--	--	--	--
MW-11 *	Detection	downgradient	Selected Annual Parameters	--	--	--	--
MW-110	Detection	Upgradient	Selected Annual Parameters	--	--	--	--
MW-117 *	Detection	distant downgradient	Selected Annual Parameters	--	--	--	--
MW-118 *	Detection	distant downgradient	Selected Annual Parameters	--	--	--	--
MW-123 *	Detection	Upgradient	Selected Annual Parameters	--	--	--	--
MW-132	Detection	downgradient	Selected Annual Parameters	--	--	--	--
MW-133	Detection	downgradient	Selected Annual Parameters	--	--	--	--
MW-134 ¹	Background	downgradient	-- ²	Appendix I & Selected Annual Parameters	--	--	--
MW-135 ¹	Background	downgradient	-- ²	Appendix I & Selected Annual Parameters	--	--	--
MW-136 ¹	Background	downgradient	-- ²	Appendix I & Selected Annual Parameters	--	--	--
GU-V-2	groundwater underdrain	groundwater underdrain	Selected Annual Parameters	--	--	--	--
GU-VIII-1 ³	groundwater underdrain	groundwater underdrain	-- ⁴	--	Appendix I & Selected Annual Parameters	--	--
Other wells **	WL only	various	WL	--	--	--	--
Outfall 1	NPDES	stormwater pond outlet	--	--	--	NPDES	--
Leachate (4 ponds)	--	--	Selected Annual Parameters	--	--	--	WWTP parameters

Explanation

• **Selected Annual Parameters (Optimized parameter list per July 2018 HMSP)**

-- **Intrawell Statistical Detection Parameters** = Ammonia, Chloride, Sodium, Alkalinity.

-- **Supplemental Parameters** = calcium, iron, magnesium, potassium, sulfate, Total dissolved solids (TDS) and Total Suspended Solids (TSS).

• **Appendix I Metals & VOCs** once per 3 years (completed in May 2020 and May 2023, next event 2026)

• **Appendix II** parameters per IDNR rules: (includes all Appendix I parameters *plus* pesticides, herbicides, PCBs, Semi-volatiles, & cyanide, mercury, sulfide and tin).

* = Well added to detection schedule beginning fall 2014 in accordance with Permit Amendment #5

** **Other wells** available for collection of water elevation: MW-101, MW-104, MW-112, MW-112, MW-120, P120S, MW-121, P121S, P-15, P-16, P-17 and P-18

*** **Annual events** on a seasonal rotating schedule: 2023 April-May; 2024 June-July; 2025 Oct-Nov. Winter excluded. 2026 April-May; 2027 June-July; 2028 Oct-Nov. Winter Excluded. 2029 April-May; and so on

Appendix I inorganics (metals) and VOCs, every third year (Completed May 2023, next event 2026)

¹ = Monitoring wells MW-134, MW-135, and MW-136 installed May-June 2023

² = Monitoring wells MW-134, MW-135, and MW-136 to be incorporated into Annual Groundwater Event (rotating seasonal schedule) once the 8 rounds of background monitoring have been completed (anticipated 2027)

³ = New groundwater underdrain GU-VIII-1

⁴ = GU-VIII-1 to be incorporated into the seasonally rotating annual monitoring schedule once the 8 rounds of background monitoring data required by the statistical program have been collected and evaluated (anticipated 2029)

Leachate management system includes 4 ponds (Ponds 1, 2, 3 and 4); sample collection and analyses per wastewater treatment plant agreements on quarterly basis (List 1-quarterly parameters 4X per year) (List 2-semi-annual parameters 2X per year). Sample collection required during first month of given quarter per Mason City agreement.

Leachate samples may also be collected for selected annual parameters concurrent with Annual GW events (for statistical comparison as needed).

Current WWTP Agreements:

- Mason City, Iowa - Issued: 05/29/2024; Expires: 05/29/2027

- Northwood, Iowa - Issued: 10/01/2020; Expires: 2030

- Albert Lea, Minnesota - Issued: 01/01/2023; Expires: 12/31/2027

2023 HMSP

Updated April 2025 to include GU-VIII-1 & updated leachate WWTP agreement requirements

Table 2A
Background Monitoring Schedule
2023 HMSP - Updated April 2025
 Central Disposal Landfill - Lake Mills, IA
 Permit No. 95-SDP-01-72

Monitoring Location	2025		2026		2027			2028		2029
	Background Event #5 (new wells) ¹	Annual Event*** & Background Event #6 (new wells) ¹	Annual Event*** & Background Event #7 (new wells) ¹	Background Event #8 (new wells) ¹	--	Annual Event***	--	--	Annual Event***	Annual Event***
	Background Event #1 (GU-VIII-1) ³	Background Event #2 (GU-VIII-1) ³	Background Event #3 (GU-VIII-1) ³	Background Event #4 (GU-VIII-1) ³	Background Event #5 (GU-VIII-1) ³	--	Background Event #6 (GU-VIII-1) ³	Background Event #7 (GU-VIII-1) ³	Background Event #8 (GU-VIII-1) ³	--
	April-May 2025	October-November 2025	April-May 2026	October-November 2026	April-May 2027	June-July 2027	October-November 2027	April-May 2028	October-November 2028	April-May 2029
MW-2A	--	Selected Annual Parameters	Appendix I & Selected Annual Parameters	--	--	Selected Annual Parameters	--	--	Selected Annual Parameters	Appendix I & Selected Annual Parameters
MW-7A	--	Selected Annual Parameters	Appendix I & Selected Annual Parameters	--	--	Selected Annual Parameters	--	--	Selected Annual Parameters	Appendix I & Selected Annual Parameters
MW-11*	--	Selected Annual Parameters	Appendix I & Selected Annual Parameters	--	--	Selected Annual Parameters	--	--	Selected Annual Parameters	Appendix I & Selected Annual Parameters
MW-110	--	Selected Annual Parameters	Appendix I & Selected Annual Parameters	--	--	Selected Annual Parameters	--	--	Selected Annual Parameters	Appendix I & Selected Annual Parameters
MW-117 *	--	Selected Annual Parameters	Appendix I & Selected Annual Parameters	--	--	Selected Annual Parameters	--	--	Selected Annual Parameters	Appendix I & Selected Annual Parameters
MW-118 *	--	Selected Annual Parameters	Appendix I & Selected Annual Parameters	--	--	Selected Annual Parameters	--	--	Selected Annual Parameters	Appendix I & Selected Annual Parameters
MW-123 *	--	Selected Annual Parameters	Appendix I & Selected Annual Parameters	--	--	Selected Annual Parameters	--	--	Selected Annual Parameters	Appendix I & Selected Annual Parameters
MW-132	--	Selected Annual Parameters	Appendix I & Selected Annual Parameters	--	--	Selected Annual Parameters	--	--	Selected Annual Parameters	Appendix I & Selected Annual Parameters
MW-133	--	Selected Annual Parameters	Appendix I & Selected Annual Parameters	--	--	Selected Annual Parameters	--	--	Selected Annual Parameters	Appendix I & Selected Annual Parameters
MW-134 ¹	Appendix I & Selected Annual Parameters	Appendix I & Selected Annual Parameters	Appendix I & Selected Annual Parameters	Appendix I & Selected Annual Parameters	--	Selected Annual Parameters ²	--	--	Selected Annual Parameters	Appendix I & Selected Annual Parameters
MW-135 ¹	Appendix I & Selected Annual Parameters	Appendix I & Selected Annual Parameters	Appendix I & Selected Annual Parameters	Appendix I & Selected Annual Parameters	--	Selected Annual Parameters ²	--	--	Selected Annual Parameters	Appendix I & Selected Annual Parameters
MW-136 ¹	Appendix I & Selected Annual Parameters	Appendix I & Selected Annual Parameters	Appendix I & Selected Annual Parameters	Appendix I & Selected Annual Parameters	--	Selected Annual Parameters ²	--	--	Selected Annual Parameters	Appendix I & Selected Annual Parameters
GU-V-2	--	Selected Annual Parameters	Appendix I & Selected Annual Parameters	--	--	Selected Annual Parameters	--	--	Selected Annual Parameters	Appendix I & Selected Annual Parameters
GU-VIII-1 ³	Appendix I & Selected Annual Parameters	Appendix I & Selected Annual Parameters	Appendix I & Selected Annual Parameters	Appendix I & Selected Annual Parameters	Appendix I & Selected Annual Parameters	--	Appendix I & Selected Annual Parameters	Appendix I & Selected Annual Parameters	Appendix I & Selected Annual Parameters	Appendix I & Selected Annual Parameters ⁴
Other wells **	--	WL	WL	--	--	WL	--	--	WL	WL

Notes:

• **Selected Annual Parameters (Optimized parameter list per 2023 HMSP)**

-- **Intrawell Parameters Statistical Detection** = Ammonia, Chloride, Sodium, Alkalinity.

-- **Supplemental Parameters** = calcium, iron, magnesium, potassium, sulfate, TDS and TSS.

• **Appendix I Metals & VOCs** once per 3 years (completed in May 2020 and May 2023, next event 2026)

* **Well added** to detection monitoring program fall 2014

** **Water Elevation wells:** MW-101, MW-104, MW-112, MW-120, P120S, MW-121, P121S, P-15, P-16, P-17 & P-18

*** **Annual events on seasonal rotating schedule:** 2023 April-May; 2024 June-July; 2025 Oct-Nov. Winter excluded. 2026 April-May; 2027 June-July; 2028 Oct-Nov. Winter Excluded. 2029 April-May; and so on

¹ = **New monitoring wells MW-134, MW-135, and MW-136 installed May-June 2023**

² = **New monitoring wells are to be incorporated into the seasonally rotating annual monitoring schedule once the 8 rounds of background monitoring data required by the statistical program have been collected and evaluated.**

³ = **New groundwater underdrain GU-VIII-1**

⁴ = **GU-VIII-1 to be incorporated into the seasonally rotating annual monitoring schedule once the 8 rounds of background monitoring data required by the statistical program have been collected and evaluated.**