

June 9, 2023

Ms. Karen Knuuti
Environmental Specialist
Bureau of Remediation and Waste Management
Maine Department of Environmental Protection
17 State House Station
Augusta, ME 04333

Subject: Pine Tree Landfill
2021 Water Quality Comment Response Letter
Proposed Southwest Landfill Corrective Actions

Dear Ms. Knuuti:

On behalf of New England Waste Services of Maine, Inc. (NEWSME), dba Pine Tree Landfill (PTL), Sevee & Maher Engineers, Inc. (SME) is submitting the proposed corrective action plan in response to the Maine Department of Environmental Protection (MEDEP) PTL Hydrogeology Review of the 2021 Water Quality Summary memorandum dated July 7, 2022.

NEWSME, SME, MEDEP, the Town of Hampden (Town), and the Town's environmental consultant Drumlin Environmental, LLC (Drumlin) met on January 24, 2020 to discuss PTL post-closure and potential corrective actions that could be implemented to ensure the on- and off-site threshold criteria are met at the end of the 30-year post-closure period. MEDEP's 2021 water quality data review included a request for a corrective action proposal for the southwest side of the landfill. MEDEP noted in the request that the installation of a new extraction well was preferred, and alternative suggestions would be welcome.

Section XI (Corrective Action Plan) of the PTL board closure order specifies the use of extraction wells as part of the corrective actions and operations at the landfill. The post-closure treatment system consists of six groundwater extraction wells (EW-2R, EW-3R, EW-5R, EW-6R, EW-101, and EW-102) and pumping of the perimeter drain to extract groundwater. Extraction wells EW-2R and EW-3R and the perimeter drain pump station are used to intercept shallow groundwater outside of the south edge of the Conventional Landfill. Extraction wells EW-5R, EW-6R, EW-101, and EW-102 are used to intercept groundwater along the northeast corner of the site.

Impacts to groundwater quality from a leachate seep that was identified by NEWSME on June 21, 2016 and removed the week of July 10, 2016 have been apparent south of the PTL at monitoring wells MW03-802B, MW03-803A, MW03-803B, and MW03-804A. Review of groundwater quality at these locations in the PTL 2022 annual water quality report indicate impacts to specific conductance values from the seep have generally been resolved at the subject wells, as shown below in Table 1. Table 1 also includes the MW03-802A since it is the deeper well in a well pair with MW03-802B.

**TABLE 1
SUMMARY OF RECENT SPECIFIC CONDUCTANCE VALUES
AT SOUTHWEST PTL MONITORING LOCATIONS**

Monitoring Location	2011 Annual Mean (µmhos/cm)	Peak Impact Value (µmhos/cm)	2022 Annual Mean (µmhos/cm)	April 2023 ¹ (µmhos/cm)
MW03-802A	941	NA ²	541	367 ^{3,4}
MW03-802B	1,021	1,587 (October 2016)	820	625 ³
MW03-803A	1,077	1,867 (April 2018)	1,552	1,455
MW03-803B	1,337	1,613 (October 2021)	1,468	865
MW03-804A	725	1,070 (October 2016)	433 ^{3,4}	Not Sampled
Note: 1. April 2023 specific conductance values should be considered draft since the spring 2023 groundwater monitoring event transmittal is still forthcoming. 2. MW03-802A specific conductance values did not show a direct influence leachate seep. 3. New historical minimum value. 4. Below on-Site threshold criterion of 500 µmhos/cm for specific conductance.				

Table 1 shows a summary of specific conductance values for southwest groundwater monitoring locations. The summary includes specific conductance values at the start of post-closure monitoring in 2011, peak impact values for the subject leachate seeps that were addressed in 2016, 2022 annual mean values, and the recent spring 2023 measurements at those locations. The recent spring 2023 measurements should be considered draft since SME is still awaiting laboratory reports and the transmittal is still forthcoming.

The improvements to groundwater quality with respect to specific conductance at the PTL southwest monitoring locations are supported by the lack of statistically significant increasing trends for specific conductance at MW03-802B, MW03-803A, MW03-803B, and MW03-804A from the end of 2022 looking back three years and five years. There was also a statistically significant decreasing trend for specific conductance at MW03-803A over the past three years.

Of note in Table 1 are the following:

- All of the monitoring locations that showed impacts from the leachate seeps had peak impact values between 2016 and 2021 and have since improved with respect to specific conductance values;
- All southwest monitoring locations with the exception of MW03-803A show 2022 annual mean specific conductance values that have decreased since the start of the post-closure in 2011, which indicates an overall improvement to water quality at these locations during post-closure;
- All April 2023 specific conductance values at the southwest monitoring locations were lower than the 2022 annual mean specific conductance values at those locations; and

- Three of the five southwest monitoring locations had new historical minimum values for specific conductance during the most recent monitoring events and two of these locations were below the on-site threshold criteria of 500 µmhos/cm for specific conductance.

The recent groundwater quality data southwest of the PTL with respect to specific conductance show very positive signs of improvements and are generally consistent with other noted improvements surrounding the PTL to the south/southeast, east, and northeast.

SME has assessed installing a new extraction well in the southwest corner to enhance improvements to the water quality in the vicinity of bedrock monitoring well MW03-803A. The open borehole extraction well would likely be six-inches in diameter. The well casing would be set 5 feet into competent bedrock and drilled to a total depth of approximately 52 feet below the ground surface, which aligns with the bottom of screen elevation of adjacent well MW03-803A. SME recommends the casing not be grouted into bedrock, which may allow some for hydraulic connection with overburden in addition to the bedrock groundwater. The attached site plan shows the proposed location and the tentative construction details for the proposed extraction well. The final construction details will be selected based on conditions observed during drilling. SME recommends the fall 2023 water quality monitoring results be evaluated in order to confirm the location of the new groundwater extraction well. If needed NEWSME plans to install the well in 2024.

Please feel free to contact us if you have any questions on the information in this letter.

Sincerely,

SEVEE & MAHER ENGINEERS, INC.



Rhonda N. Forrester, P.E.
Project Manager

Attachment

cc:

Wayne Boyd, PTL
Jeffrey Pelletier, PTL
Kathy Tarbuck, MEDEP
Matthew Burke, MEDEP

